National Aeronautics and
Space Administration

**Lyndon B. Johnson Space Center**
Houston, Texas 77058

JSC-11731

# DETAILED REQUIREMENTS DOCUMENT
# FOR THE
# MASTER MEASUREMENTS DATA BASE SYSTEM (MMDBS)

Job Order 820FG

(NASA-CR-161037) DETAILED REQUIREMENTS DOCUMENT FOR THE MASTER MEASUREMENT DATA BASE SYSTEM (MMDBS) (Computer Sciences Corp., Houston, Tex.) 905 p

N83-75026

Unclas
00/82 09623

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Prepared By

Computer Sciences Corporation
Applied Technology Division
Houston, Texas

Contract NAS 9-15700

For

INSTITUTIONAL DATA SYSTEMS DIVISION

October 1982

Vehicle Subsystem Release 17A

Payloads Subsystem Release 08
CSC-0168

Change 7

[redacted]

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CN: 550-1028

TO: L. DeWolf

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SUBJECT: MMDBS DRD Document

Attached is a set of page changes (Change 7) for the Master Measurements Data Base System (MMDBS) Detailed Requirements Document (DRD). These changes reflect software modifications implemented in the Payloads Subsystem Release 08, and DRD corrections for the RI TLM Downlink Load Program.

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Attachments

ORIGINAL PAGE IS
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| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| JSC-11731 | | |

| 4. Title and Subtitle | 5. Report Date |
|---|---|
| Detailed Requirements Document for the Master Measurement Data Base System(MMDBS) | June 1981 |
| | 6. Performing Organization Code |
| 7. Author(s) | 8. Performing Organization Report No. |
| M. O'Rourke, D. Moorehead | |
| | 10. Work Unit No. |
| 9. Performing Organization Name and Address | |
| Computer Sciences Corporation<br>1300 Bay Area Blvd.<br>Houston, Texas 77548 | 11. Contract or Grant No.<br>NAS 9-15700 |
| | 13. Type of Report and Period Covered<br>DRD |
| 12. Sponsoring Agency Name and Address | |
| Institutional Data Systems Division<br>National Aeronautics and Space Administration<br>Lyndon B. Johnson Space Center, Houston, Texas 77058 | 14. Sponsoring Agency Code |

15. Supplementary Notes

16. Abstract

This document contains the requirements for the MMDBS - a storage and retrieval system for Shuttle measurement/stimuli data and related information.

| 17. Key Words (Suggested by Author(s)) | | 18. Distribution Statement |
|---|---|---|
| Measurement | Command Uplink | Unlimited |
| Stimulus | CRT | |
| Telemetry | FTR | |
| Calibration | Status | |
| Systems Management | | |

| 19. Security Classif. (of this report) | 20. Security Classif. (of this page) | 21. No. of Pages | 22. Price* |
|---|---|---|---|
| Unclassified | Unclassified | | |

*For sale by the National Technical Information Service, Springfield, Virginia 22161

JSC Form 1424 (Rev Nov 75)

NASA — JSC

# CHANGE SHEET
# FOR
# THE DETAILED REQUIREMENTS DOCUMENT
# FOR THE
# MASTER MEASUREMENTS DATA BASE SYSTEM (MMDBS)

Change 5

July 1982

L. C. Eversole, Section Manager
Engineering Development Department



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After the attached replacement pages have been inserted, place this change sheet between the cover and the signature page and write on the cover "Change 5 inserted".

NOTE: A black bar in the margin of affected pages indicates the information that was changed or added.

- Replace pages xviii through xxi.
- Replace pages E-20 through E-22.
- Replace pages E-75 through E-78.
- Replace pages E-127 and E-128.
- Replace pages E-141 through E-148.
- Replace pages E-153 and E-154.
- Replace pages E-179 and E-180.
- Replace pages E-183 through E-192.
- Insert pages E-193 through E-201.
- Replace Enclosure 1.

Signature of person incorporating change

Date

# CHANGE SHEET
# FOR
# DETAILED REQUIREMENTS DOCUMENT
# FOR THE
# MASTER MEASUREMENTS DATA BASE SYSTEM (MMDBS)

Change 7

01 October 1982

L. C. Eversole, Section Manager
Information Management Systems



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- Replace pages 3-359 through 3-360a.
- Replace pages 3-381 through 3-384.
- Replace pages E-2 through E-6.
- Replace pages E-39 and E-40.
- Replace pages E-63 through E-66.
- Replace pages E-111 and E-112.
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- Replace pages E-141 through E-152.
- Replace pages E-157 through E-170.
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- Replace pages E-187 through E-201.
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# DETAILED REQUIREMENTS DOCUMENT
# FOR THE
# MASTER MEASUREMENTS DATA BASE SYSTEM

Job Order 88-20H

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June 1981

Veh. S/S Rel. 15
P/L S/S Rel. 2
CSC-0168

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# 1.0 INTRODUCTION

This Master Measurement Data Base System (MMDBS) Detailed Requirements Document (DRD) has been prepared for the Johnson Space Center (JSC), Institutional Data System Division (IDSD), by the Information Management Systems Section of Computer Sciences Corporation (CSC) in response to support contractor Job Order 88-209. The MMDBS is being developed as part of the Shuttle Program Information Management System (SPIMS) under the authority of the Shuttle Program Information Coordination and Review Service (PICRS). MMDBS is being implemented for the Space Shuttle Program Office (SSPO), Technical Integration Office, designated as the Office of Prime Responsibility (OPR).

## 1.1 PURPOSE AND SCOPE

The primary objective of the Master Measurement Data Base System is to provide a storage and retrieval system that can be used as a single, authoritative source of measurement/stimuli data and related information for the Shuttle Program. The measurement/stimuli data will be information concerning the measurement and stimuli requirements and implementation for specific flights and major vehicle elements of the Shuttle program. This system will not contain the performance information obtained during flights of the Shuttle vehicles. The data and related information is grouped and identified by a tag known as a Measurement/Stimulus Identifier (M/S ID). The MMDBS will provide a computerized means of updating, coordinating and disseminating measurement/stimuli data to the users through an interactive storage/retrieval system.

In general, the measurements/stimuli that are important to the MMDBS are those of an "interface" nature between major Shuttle elements; i.e., situations where a signal from one major element feeds into another major element. It is this type of measurement which will be of concern to the MMDBS OPR. However, the system must be designed and implemented to allow input of other similar data about measurements internal to one major element and to distinguish between the two kinds of measurements.

## 1.2 BACKGROUND

Historically, measurement lists have been developed by each National Aeronautics and Space Administration (NASA) center or contractor for local needs; consequently, these lists were tailored to local user's desires and were difficult to integrate into a single, comprehensive facility/vehicle list. A single data base system, which would be available to all users, will overcome this problem and allow for increased data reliability, timed data input and extract cycles, user interface coordination improvement, and avoidance of additional 'other system' development cost.

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## 2.0 SYSTEMS REQUIREMENTS

This section contains the user requirements, delineated by data group descriptions. Interactive and batch input/output descriptions and system interfaces are addressed in section 3.0.

The system is required to track characteristics of measurement and stimulus components on the Shuttle Major Elements. The measurements and stimuli considered are those of an "interface" nature between one or more of the major elements (Level II), and those which are internal to a major element (Level III). In particular, control of the Measurement/Stimulus Identifiers (M/S IDs) is assigned to the CPR and control of other measurement/stimulus data elements will be based on respective Shuttle Program Project Offices' requirements and their interface with each other.

A Level II measurement will originate on one major element and be routed across its boundary with another major element, involving two Shuttle Major Element Project Offices and the Shuttle Program Office.

A Level III measurement will originate on a particular major element and never be routed across its boundary to another major element. The responsibility for these measurements is the Shuttle Major Element Project Office.

The MMDBS construction of a major element hardware configuration must describe each measurement (or stimulus) in terms of its relationship to any of the hardware devices used to transmit the data from source to destination.

Assumptions which apply to the individual hardware devices are included with each of the functional area descriptions (section 2.3).

In processing the measurement/stimulus data, two general requirements exist for the MMDBS: (1) To provide an existing (as built) configuration by M/S ID for each specific major element Vehicle Configuration Number, and (2) To provide pending information by Status Change Document Number (CDOC) for each functional area, except the statusing functional areas. This pending data shall be stored on CDOC files (files referenced by a Change Document Number). When the pending data becomes approved, the information on the CDOC file will be entered into the approved data base files.

The system is required to retain additional measurement descriptive data (System Management, Format, etc.) which does not directly relate to the transmission of data from one hardware device to another.

The system requires interactive capability with appropriate access codes to control data updates. Unrestricted READ-ONLY access and batch report capability is to be provided. Input/Output data tapes to/from other systems are required.

## 2.1 SOURCES OF REQUIREMENTS

Requirements have been defined by the users listed in the following sections.

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### 2.1.1 JSC/P00 - Integration Division (Office of Prime Responsibility)

This organization will exercise administrative control and coordination over the use of the system by the other users. This will include, but is not limited to, such things as authorizing and distributing access passwords to other users, maintaining and coordinating the use of archived data, and initiating the use of other software tools to perform functions where exclusive use of the system is required.

This organization will also control the Master Measurement List (MML) and its change traffic. All other functions of the system will be limited to use of M/S IDs which are already approved for an MML. As part of the MML function, update requirements for other parts of the system which originate because of MML changes will be posted as status information.

Processing requirements for data reduction will be entered by this organization for use by the Orbiter Data Reduction Complex (ODRC). Providing all calibration data for all major elements is also the responsibility of the Integration Division.

### 2.1.2 JSC/DSAD - Spacecraft Software Division (SSD)

This organization, a division within the Data Systems and Analysis Directorate (DSAD), will use several of the output tapes which contain data for the following General Purpose Computer (GPC) software development areas:

System Management (SM)
Subsystem Configuration Management (SCM)
Onbcard CRT Displays
Downlist
GPC I/O with onboard subsystems
Payload

In general, inputs to the above areas will be in the form of requirements entered by Flight Control Division (FCD) or Engineering and Development Directorate (E&D)/Avionics Systems Engineering Division (ASED).

Update tapes to the MMDES will be provided by SSD containing actual downlist format time slot assignments and general GPC Software descriptive information.

2.1.3 JSC/DSAD - Ground Data Systems Division (GDSD)

GDSD requirements will consist of output data tapes with the following information:

Downlist Formats
Downlink Formats
Multiplexer/Demultiplexer (MDM) Channelization
Calibration values (all types)
Command Uplink Requirements

No updates to the system will be performed by this division.

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2.1.4 JSC/DSAD - Institutional Data Systems Division (IDSD)

Several queries and printer reports are included to meet DRC data processing requirements for this organization. The DRC function will make use of the GDSD tapes which contain format and calibration descriptive information. IDSD will not perform any updates to the system.

2.1.5 JSC/DSAD - Flight Simulation Division (FSD)

The flight simulation function performed by this division will require the use of the same tapes as GDSD.

No system updates will be performed by FSD.

2.1.6 JSC/E&D - Avionics Systems Engineering Division (ASED)

Most of the system updates which deal with the hardware descriptive information for M/S IDs will be the responsibility of ASED. This involves all data relating to sensors, signal conditioners, panel devices, etc. ASED will also be responsible for updates to the system for general GFC Software descriptive information.

ASED will enter downlist format requirements and downlink loading information to satisfy Level II format requirements.

2.1.7 JSC/E&D - Control Systems Development Division (CSDD)



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Several printer reports are included in the MMDES to provide counts by hardware part number for hardware procurement tracking.

### 2.1.8 JSC/E&D - Tracking and Communications Development Division (TCDD)

Several printer reports are included in the MMDBS to provide counts by hardware part number for hardware procurement tracking. No system updates will be performed by this organization.

### 2.1.9 JSC/Space Shuttle Program Office (SSPO)

This organization will define and enter requirements data for flight test requirements (FTRs). Several queries and printer reports have been included to support FTR documentation.

### 2.1.10 JSC/FCD - Flight Control Division (FCD)

This organization, a division within the Flight Operations Directorate (FCD), will enter requirements for the following areas:

Onboard CRT Displays
Operational Instrumentation (OI) Telemetry Downlink Formats
Miscellaneous Meter and Display Information
Miscellaneous data for handbook documentation
Command Uplink
Nomenclature Data



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A number of system queries and printer reports are included for FCD use.

### 2.1.11 Marshall Space Flight Center (MSFC)

Data relating to the External Tank (ET), Space Shuttle Main Engine (SSME), and Solid Rocket Booster (SRB) measurements will be entered by MSFC via tape and terminal.

### 2.1.12 Kennedy Space Center (KSC)

A Shuttle Data Tape Program has been developed to provide a consistent set of data, on tape, for an entire flight for use in the Launch Processing System (LPS).

### 2.1.13 Rockwell International (RI)

It is expected that RI will provide update support (via tapes or CRT) for various organizations using the capabilities defined. No unique RI requirements have been defined in this document.

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## 2.2 CONSTRAINTS

The following sections list the constraints imposed on the MMDBS development to insure that it interfaces, as required, with other systems, and to insure that it is implemented in the proper hardware/software environment.

### 2.2.1 Interfaces

During the operational stage of the Shuttle Program, the MMDBS is required to interface with several organizations via tape. Figure 2-1 illustrates the data flow of the MMDBS; section 3.0 details the online, batch, and tape interfaces.

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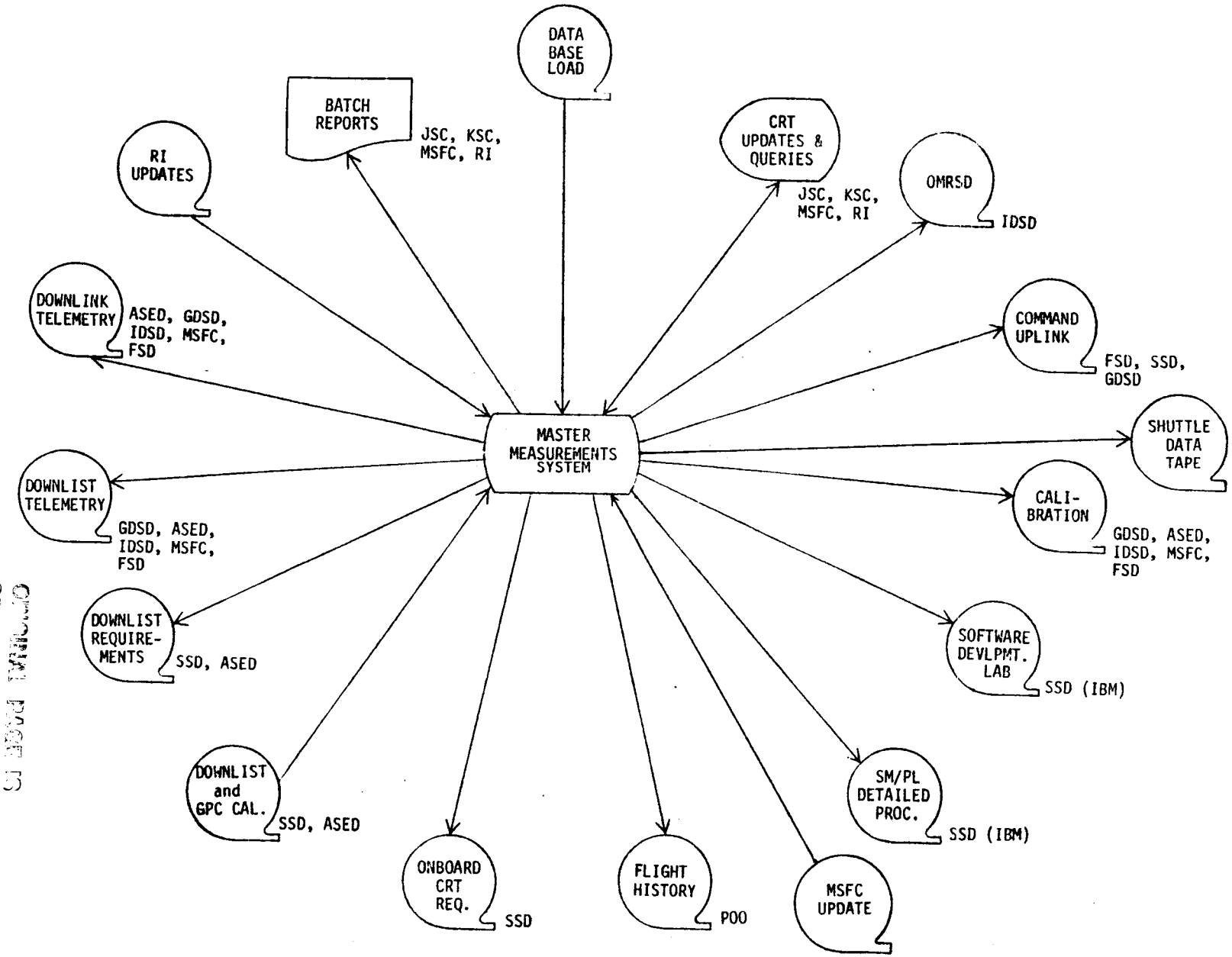


Figure 2-1 MMDBS Data Flow

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### 2.2.2 Environment

The MMDBS will utilize the JSC SPIMS computer system, and it will require shared use of the following hardware:

- CYBER 70 series computer
- CDC 844 disk mass storage
- 7-track and/or 9-track magnetic tape drives
- JSC MOPS (Hazeltine 4000G) terminals
- JSC Hazeltine 2000 terminals
- Card Reader
- High Speed Printer
- Additional terminals (type unknown)

The MMDBS is required to reside with and operate using one or more of the following software:

- NOS - Cyber operating system
- Common Software - SPIMS applications shared routines

### 2.2.3 Pacing Items

The items listed below must be available to the MMDBS in order to meet the established milestones listed in Section 4.8.

- Processing requirements for initial load and update capability via RI tapes
- Test interface tapes
- Additional terminals (See Section 4.2.1)

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## 2.3 FUNCTIONAL AREA DESCRIPTIONS

Figure 2-2 presents a pictorial representation of the various MMDBS data groups, their relationships, and the data element relationships within each group. Each MMDBS data group, with its associated data elements, is depicted separately in Figure 2-2. Since the M/S ID Related data elements are so numerous, only the data element types are listed. Tables 2-1 through 2-11 contain further descriptive information for each data element, (element name, size, edits). These are a condensation and reorganization of data contained in the Data Element Dictionary, Appendix A. If a conflict is found to exist, the Data Element Dictionary is considered to be the final authority. The identifier for each group of elements is denoted in tables by double lines or asterisks. Blanks are acceptable for all data elements except for identifiers and where explicitly stated otherwise.

Paragraphs 2.3.1 through 2.3.11 discuss each data group presented in Figure 2-2. Definitions of the Vehicle Configuration Number (VCN) and Flight Number (FLT) are basic to all of the data element relationships. They are as follows:

- Vehicle Configuration Number (VCN)
  An eight character alphanumeric data field which uniquely identifies a major hardware/software element. The first character of the VCN must correspond to the first character of the Measurement/Stimulus Identifiers (M/S IDs) with which the VCN is associated. Each VCN can appear only once for each M/S ID.

- Flight Number (FLT)

  An eight character alphanumeric data field which identifies a unique set of VCNs; the first character

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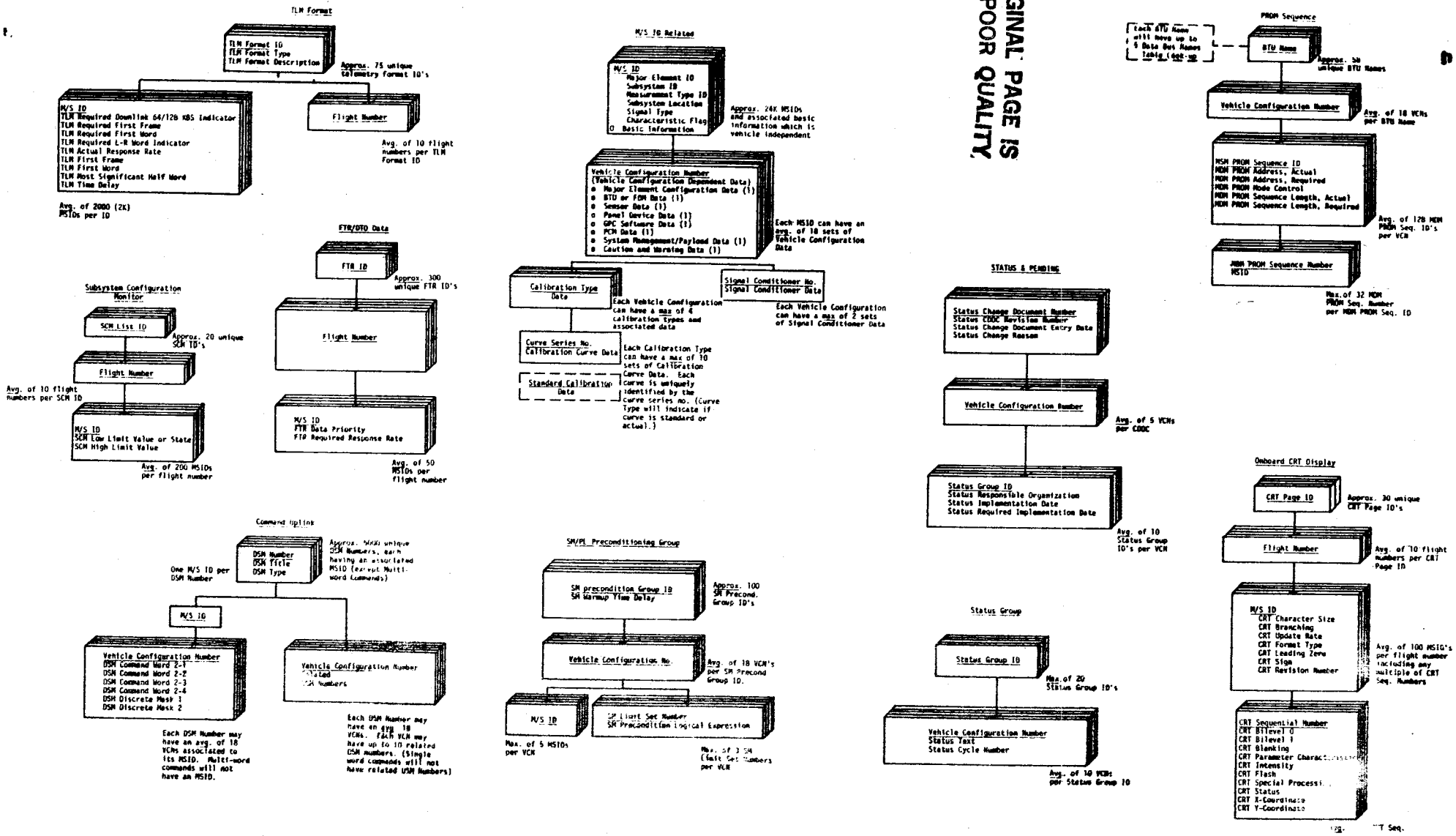


Figure 2-2.- RWBDS Data Element Relationship.

must be an asterisk '*'. An M/S ID can appear on only one of the VCNs assigned to a flight.

### 2.3.1 M/S ID Related Data

Data in this functional area consists of basic data associated with each M/S ID and Vehicle Configuration dependent data which varies by VCN for a particular M/S ID. All data groups except Signal Conditioner and Calibration data are single valued. That is, for a particular M/S ID each VCN will have one and only one set of these data. There may be up to two sets of signal conditioner data for each VCN. Likewise, each VCN may have up to four calibration types and associated data. Each of the four calibration types may have up to ten sets of calibration curve data where each of these ten sets are uniquely identified by a curve series number.

Table 2-1 further defines each data element within this functional area.

The M/S ID data element serves as the primary identifier for this functional area. All data contained in this group are directly related to an M/S ID. Associated with each M/S ID is a group of data elements called Basic Information. This group of data elements describes those M/S ID characteristics that are the same for all VCNs (i.e., the elements have the same data element value for all VCNs assigned to an M/S ID).

The Vehicle Configuration Number serves as the secondary identifier for this functional area. Each M/S ID



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may have several sets of Vehicle Configuration Dependent Data. The data elements in this group are used to describe the intended use, implementation requirements, or other general information about an M/S ID as it relates to a specific VCN.

Each VCN for a particular M/S ID may have two sets of Signal Conditioner data. By convention, the "Number 1" signal conditioner and associated data elements will be the one which interfaces with other devices. The "Number 2" signal conditioner will be between the sensor and the "Number 1" signal conditioner.

There are four types of calibration data which may be associated with each VCN for a particular M/S ID. The data element Calibration Type uniquely identifies each of these four groups. Each calibration type may have up to ten sets of calibration curve data. Each of these 10 sets is uniquely identified by the curve series number. Many M/S IDs will have identical calibration data values (standard calibrations). In such cases, the data element Calibration Curve Type will begin with an "N", and only one set of calibration data values will exist for the use of those M/S IDs.

### 2.3.2 Status Data

Data elements in this group consist of change information for each functional area. Changes may be required for one or more VCNs in one or more of the functional areas. The Status Change Document Number (CDOC) serves as the primary identifier for this functional area.



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All data in this group are directly related to a CDOC. The FLT/VCN serves as the secondary identifier.

The CDOC will also be entered on the online subsystem displays to indicate that pending data is to be referenced. Data changes or data retrieved will reference the pending data on the CDOC file.

The Status Group ID identifies the functional area in which changes are required. There may be several group IDs for each FLT/VCN assigned to a CDOC. Values for these data elements may be entered by the Program Operations Office to generate update requirements and required implementation dates against the appropriate functional areas of the system. When the changes are applied to the data base, the Status data is entered or updated by the data base update program. These data may then be displayed and changed by the using organizations.

Table 2-2 further defines each data element within this functional area.

### 2.3.3 Status Group

This functional area is a further extension of the status group discussed in 2.3.2 above, and serves primarily as a communication path for the various users. The Status Group ID is the primary identifier and the VCN, the secondary identifier. When the pending data is applied to the data base, the Status Text and Status Cycle number for the appropriate CDOC should also be updated. Table 2-3 further defines the data elements in this group.

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### 2.3.4 Command Uplink

This group of data elements describes the requirements for one or more M/S IDs (stimuli) which are related to a command sent from the ground to the Orbiter. Each command is given a specific Data Select Matrix (DSM) Number. The DSM number serves as the primary identifier for this functional area. Each DSM may have multiple associated VCNs, each serving as the secondary identifier. Depending on the DSM type (single function, multiword, or salvo) each VCN may or may not contain all data elements listed. Single Function Commands will have an M/S ID associated with the DSM number. Each VCN assigned to the DSM number must be valid for the M/S ID. Single Function Commands will not have related DSM numbers but will have command words and discrete masks. Multiword Commands will not have an M/S ID, command words, or discrete masks but will have related DSM numbers. Salvo commands will have an M/S ID and may have values for all data elements associated with the VCNs. Table 2-4 further defines the data elements in this group.

### 2.3.5 SM/PL Preconditioning Group (Not implemented)

Data elements in this group describe the precondition groups and logical expressions used to select a particular limit set for those parameters with more than one alert limit set. All M/S IDs assigned to a particular SM Precondition Group ID have the same warmup time and the same set of precondition logical expressions. SM Precondition Group ID is the primary identifier for this functional area and VCN is the secondary identifier. Each M/S ID associated

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with the SM Limit Set Number must be valid for the assigned VCN. There is a maximum of three SM limit set numbers and associated precondition logical expressions for each VCN. Table 2-5 further defines the data elements in this group.

### 2.3.6 Onboard CRT

The data elements in this functional area describe the requirements for display of an M/S ID on the onboard CRT. The CRT Page ID is the primary identifier for this group, and Flight Number is the secondary identifier. Each M/S ID and related data can appear up to three times on a given CRT page on a particular flight. The CRT Sequential Number is used as the indicator for multiple occurrences of the M/S ID. The data elements listed under M/S ID on Figure 2-1 do not repeat on the CRT page for multiple occurrences of the M/S ID. The data elements listed under CRT Sequential Number may repeat up to three times for each M/S ID on a CRT page. Table 2-6 further defines the data elements in this group.

### 2.3.7 Subsystem Configuration Monitor (Not implemented)

This group of data elements is used to define a collection of M/S IDs for a subsystem and their limit or state values which must be considered together by the SCM software. The SCM List ID is the primary identifier for this functional area and Flight Number is the secondary identifier. An M/S ID can appear in more than one collection, but the M/S ID must be valid for the assigned Flight Number. The limit or state values for any M/S ID can

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be different for each collection which contains the M/S ID. Table 2-7 further defines each data element in this group.

### 2.3.8 Data Reduction
(All requirements withdrawn)

Data elements in this functional area describe the data reduction processing requirements. The ODRC combines one or more M/S IDs for different major elements into output products, where each output product has a unique identifier. Thus, the primary identifier for this group is the DRC Group ID. Each ID and its related data may be utilized for several different flights. The secondary identifier for this group is DRC Line Number. Each DRC Group ID may have up to eighty (80) unique DRC Line Numbers and associated M/S IDs, where each M/S ID must be valid for all flight numbers assigned to the particular DRC Group ID. Table 2-8 further defines the data elements in this group.

### 2.3.9 Telemetry Format

This group of data elements describes a telemetry format in terms of the M/S ID in the format, and the location of each M/S ID in the format. Each format is one of 7 types: Downlist, OI/128KBS (downlink), OI/64KBS (downlink), DFI/128KBS (downlink), Payload, Space Shuttle Main Engine (SSME), and ET/SFB DFI.

The M/S IDs included in a format must be valid for the flight for which the format is to be used. Initial format conditions are supplied by individuals responsible for setting the requirements for a format. Each downlist format

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description contains a requirement for its inclusion in either a 128KBS or a 64KBS downlink format.

Each format is identified by a unique format ID (TLM Format ID), which serves as the primary identifier for this functional area. Each TLM Format ID and associated data may be utilized for several different flights. The secondary identifier for this group is M/S ID. Each M/S ID must be valid for all flight numbers assigned to the particular TLM Format ID. Table 2-9 further defines the data elements in this group.

2.3.10 MDM PROM Sequence

Data elements in this functional area describe the individual MDM Fetch PROM sequence programs which are built into the MDM hardware. These fetch sequences are executed on command from the GPC or the PCM MU and cause the data for the appropriate M/S ID to be transmitted in a predefined sequence. The fetch PROM sequence programs for the MDM are generated by the MDM Fetch PROM Assembler program using input requirements from the PCM MU Compiler program or GPC software development; it provides the fetch PROM sequence data as output.

The BTU name is the primary identifier for this functional area. Associated with each BTU name are up to five Data BTU Names which will be indexed by table look-up for storage and retrieval. Each BTU Name may be utilized on several VCNs, where VCN is the secondary identifier for this group. Associated with each VCN are multiple MDM PROM Sequence IDs and associated data. For each PROM Sequence ID

there may be thirty-two (32) MDM PROM Sequence Numbers and associated M/S IDs. The M/S ID and MDM PROM Sequence Number are on a one-to-one relationship and the M/S ID must be valid for the corresponding VCN. Table 2-10 further defines each data element in this group.

### 2.3.11 FTR/DTC Data

Data elements in this group contain the relationship of one or more M/S IDs to an FTR or DTO-FTO and describe how each M/S ID is used for the FTR or DTC-FTC. The FTR ID is the primary identifier for this functional area. Each FTR ID may be utilized on more than one flight. Hence, Flight Number is the secondary identifier. Multiple M/S IDs and associated FTR descriptive data may be assigned to a particular flight. The M/S IDs must be valid for the assigned Flight Number. Table 2-11 further describes each data element in this group.

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| Element | Size | Edits |
|---|---|---|
| **M/S ID** | | |
| Measurement/Stimulus Identifier | | Must be unique within the system. |
| Major Element ID | 1 | Table "MEID" |
| Subsystem ID | 2 | Table "SSID" |
| Measurement Type ID | 1 | A-H,J-N,P-Z |
| Subsystem Location | 4 | 0000-9999 |
| Signal Type | 1 | A-Z |
| Characteristic Flag | 1 | None |
| Associated Subsystem | 2 | Table "SSID" |
| Downlink Data Length | 2 | 0-99 |
| Data Range Units | 8 | Table "ENGUNIT" |
| Device Name | 15 | None |
| Measurement Interface Control | 1 | X |
| Measurement Purpose Category | 2 | 0-99 |
| Nomenclature, System | 34 | None. Must be entered with M/S ID. |
| Operational/Development Application | 1 | TABLE "OPDEV" |
| | | Must be entered with M/S ID. |
| Remarks | 50 | None |
| Simulator Requirement | 1 | D, S |
| Simulator Value, Static | 8 | Table "SIMVALU" |
| **M/S ID, VCN** | | Must be valid in system. |
| Vehicle Configuration Number | 8 | Must be unique for the M/S ID. |
| Accuracy, Required System | 3 | Decimal number. |
| Caution and Warning Display | 1 | TABLE "CWDISP" |
| Crew Control Device | 1 | TABLE "CREWCD" |
| CRT Applicability | 1 | TABLE "CRTAPP" |
| CRT Nomenclature | 20 | None |
| Data Range Low | 5 | None |
| Data Range High | 5 | None |
| Data Type | 4 | Table "DATATYP" |
| Dedicated Display | 2 | Any combination of A, F, G, L, M, S, T, W, X, or blank. |
| Launch Commit Criteria | 1 | None |
| Flight Phase, Aerodynamic Control | 1 | A |
| Flight Phase, Entry | 1 | E |
| Flight Phase, Launch | 1 | L |
| Flight Phase, Orbit | 1 | O (alpha) |
| Flight Phase 5 | 1 | None |
| Flight Phase 6 | 1 | None |
| Flight Phase 7 | 1 | None |
| Flight Phase 8 | 1 | None |
| KSC State Low (Formerly Flight Phase 9) | | O (alpha), F, W, D or blank |
| KSC State High (Formerly Flight Phase 10) | 1 | O (alpha), F, W, D, or blank |

Table 2-1 - M/S ID Related

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| Element | Size | Edits |
|---|---|---|
| Flight/Ground | 1 | Table "FLT/GND" |
| Master Events Controller | 1 | X |
| MCC Display MSK Number 1 | 4 | 0-9999 |
| MCC Display MSK Number 2 | 4 | 0-9999 |
| MCC Display MSK Number 3 | 4 | 0-9999 |
| MDM Utilization | 1 | TABLE "MDMUTIL" |
| Nomenclature, Operational | 21 | None |
| Operational Limits 1 High | 5 | None |
| Operational Limits 1 Low | 5 | None |
| Operational Limits 2 High | 5 | None |
| Operational Limits 2 Low | 5 | None |
| Operational Limits 3 High | 5 | None |
| Operational Limits 3 Low | 5 | None |
| Operational Limits 4 High | 5 | None |
| Operational Limits 4 Low | 5 | None |
| Operational Limits 5 High | 5 | None |
| Operational Limits 5 Low | 5 | None |
| Parallel Switch Control | 2 | TABLE "PSWCONT" |
| Parent M/S ID | | |
| Major Element ID | 1 | Table "MEID" |
| Subsystem ID | 2 | Table "SSID" |
| Measurment Type ID | 1 | A-H,J-N,P-Z |
| Subsystem Location | 4 | 0000-9999 |
| Signal Type | 1 | A-H,J-N,R,T-Y |
| Characteristic | 1 | None |
| Related M/S ID | | |
| Major Element ID | 1 | Table "MEID" |
| Subsystem ID | 2 | Table "SSID" |
| Measurement Type ID | 1 | A-H,J-N,P-Z |
| Subsystem Location | 4 | 0000-9999 |
| Signal Type ID | 1 | A-H,J-N,R,T-Y |
| Characteristic | 1 | None |
| Response M/S ID | | |
| Major Element ID | 1 | Table "MEID" |
| Subsystem ID | 2 | Table "SSID" |
| Measurement Type ID | 1 | A-H,J-N,P-Z |
| Subsystem Location | 4 | 0000-9999 |
| Signal Type ID | 1 | A-H,J-N,R,T-Y |
| Characteristic | 1 | None |
| Required Response Rate | 4 | Table "RQDRATE" |
| RF Uplink | 1 | X |
| SCM Binary 0 Text | 4 | None |
| SCM Binary 1 Text | 4 | None |
| SCM Discrepancy Message Text | 6 | None |
| Site, Edwards | 1 | E |

Table 2-1 - M/S ID Related (continued)

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| Element | Size | Edits |
|---|---|---|
| Site, Maintenance and Refurbishment | 1 | M |
| Site, Pad | 1 | P |
| Site, Palmdale | 1 | A |
| Site, Post Landing and Safing | 1 | S |
| Site, Vertical Assembly Building | 1 | V |
| SSH Drawing Number | 5 | None |
| SSH Page Number | 2 | 0-99 |
| SSH Zone Number | 2 | First character alpha, second character numeric |
| Switch Scan | 1 | None |
| Switch Signal Type | 1 | C,M |
| System Management Use | 1 | X |
| Tape Recorder 1 ID | 1 | A,B,D,I,M,P,T,U,W,X,O |
| Tape Recorder 2 ID | 1 | A,B,D,I,M,P,T,U,W,X,O |
| Tape Recorder 3 ID | 1 | A,B,D,I,M,P,T,U,W,X,O |
| Tape Recorder 1 Track | 2 | 0-99 |
| Tape Recorder 2 Track | 2 | 0-99 |
| Tape Recorder 3 Track | 2 | 0-99 |
| Telemetry Link ID | 1 | Table "TLMLID" |
| Downlink Start Bit | 2 | 0-99 |
| Homogeneous Data Set Number | 2 | 0-99 |
| Voting Logic M/S ID | | |
| Major Element ID | 1 | Table "MEID" |
| Subsystem ID | 2 | Table "SSID" |
| Measurement Type ID | 1 | A-H,J-N,P-Z |
| Subsystem Location | 4 | 0000-9999 |
| Signal Type ID | 1 | A-H,J-N,P,T-Y |
| Characteristic | 1 | None |
| BTU Card Location | 2 | 00-15 |
| BTU Card Type | 3 | None |
| BTU Channel Number | 2 | 00-31 |
| BTU Destination Equipment Name 1 | 15 | None |
| BTU Destination Equipment Name 2 | 15 | None |
| BTU Destination Equipment Name 3 | 15 | None |
| BTU MIA Address | 2 | 0-99 |
| BTU Name | 4 | Table "BTUNAME" |
| BTU Number of Bits | 2 | 01-64 |
| BTU Number of Words | 2 | 0-99 |
| BTU Plug and Pin/Subsystem | 11 | None |
| BTU Reference Designator | 12 | None |
| BTU Signal Type | 1 | Table "BTUSIGL" |
| BTU Start Bit Number | 2 | 00-64 |
| BTU Transfer Rate | 4 | Table "BTURATE" |
| BTU Type | 2 | TABLE "BTUTYP" |
| BTU Word Number | 2 | 01-45 |

Table 2-1 - M/S ID Related (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| Element | Size | Edits |
|---|---|---|
| BTU/MDM Half Word 1 Bit Format | 16 | None |
| BTU/MDM Half Word 2 Bit Format | 16 | None |
| BTU/MDM Half Word 3 Bit Format | 16 | None |
| BTU/MDM Half Word 4 Bit Format | 16 | None |
| Downlink Byte Bit Format | 8 | None |
| FDM Channel Center Frequency | 3 | Decimal number |
| FDM Channel Frequency Response | 1 | TABLE "FDMCFR" |
| FDM Input Plug and Pin | 10 | None |
| FDM Name | 4 | None |
| FDM Package and Channel Code | 5 | None |
| FDM Reference Designator | 12 | None |
| Sensor Installation Drawing Number | 11 | None |
| Sensor Location Coordinates | 27 | None |
| Sensor Location Descriptor | 19 | None |
| Sensor Package Reference Designator | 12 | None |
| Sensor Part Number | 15 | None |
| Sensor Responsibility | 2 | Table "SSID" |
| Sensor Serial Number | 14 | None |
| Sensor Type | 1 | TABLE "SNSTYP" |
| Sensor - S/C Supplier | 1 | None |
| Device Accuracy | 4 | Decimal number |
| Device Input Plug and Pin (1,2,3) | 12 each | None |
| Device Panel Nomenclature | 34 | None |
| Device Panel Number (1,2,3) | 8 each | None |
| Device Reference Designator (1,2,3) | 12 each | None |
| Device Switch Panel Nomenclature | 34 | None |
| Device Switch and Panel Number (1,2,3) | 12 each | None |
| Device Switch Reference Designator (1,2,3) | 12 each | None |
| GPC Software Compool Name | 32 | None |
| GPC Software Data Length | 2 | 1-64 |
| GPC Software Destination Module | 47 | None |
| GPC Software Downlist Availability | 1 | None |
| GPC Software Downlist Data Type | 1 | None |
| GPC Software HAL Name | 32 | None |
| GPC Software Input/Output/Compute | 1 | TABLE "GPCIOC" |
| GPC Software Required Update Rate | 29 | None |
| GPC Software Signal Mnemonic | 10 | None |
| GPC Software Source Module | 47 | None |
| GPC Software Start Bit | 2 | 0-64 |
| GPC Software Units | 8 | Table "GPCUNIT" |
| PCM MU Actual Data RAM Address | 4 | 0-9999 |
| PCM MU Actual Fetch Command | 4 | 0-9999 |
| PCM MU Fetch Command Address | 4 | 0-9999 |
| PCM MU Predefined Data RAM Address | 4 | 0-9999 |
| PCM MU Predefined Fetch Command | 4 | 0-9999 |

Table 2-1 - M/S ID Related (continued)



ORIGINAL PAGE IS
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| Element | Size | Edits |
|---|---|---|
| SM Acquisition Rate | 2 | Decimal number |
| SM Alarm Class Alert | 1 | 0-9 |
| SM Alarm Class C & W | 1 | 0-9 |
| SM Alarm Class Non FDA | 1 | 0-9 |
| SM Alarm Indicator Alert | 2 | 0-99 |
| SM Alarm Indicator C & W | 2 | 0-99 |
| SM Alarm Indicator Non FDA | 2 | 0-99 |
| SM Constant Initial Value | 16 | Decimal number |
| SM Desired Curve Series | 1 | 0-9 |
| SM Major Message ID Alert | 3 | Table "MAJMSG" |
| SM Major Message ID C & W | 3 | Table "MAJMSG" |
| SM Major Message ID Non FDA | 3 | Table "MAJMSG" |
| SM Minor Message ID Alert | 2 | Table "MINMSG" |
| SM Minor Message ID C & W | 2 | Table "MINMSG" |
| SM Minor Message ID Non FDA | 2 | Table "MINMSG" |
| SM Noise Filter Value Alert | 2 | 0-15 |
| SM Noise Filter Value C & W | 2 | 0-15 |
| SM Number of Alert Limit Sets | 1 | 0-3 calculated |
| SM Parameter Source | 3 | None |
| SM Parameter Type | 1 | None |
| SM Payload Use | 1 | X |
| SM Source | 4 | TABLE "SMSOURC" |
| SM Subsystem ID | 2 | 0-99 |
| SM Limit Set 1 | 1 | 1 |
| SM Limit Set 1 High Value | 5 | Decimal number |
| SM Limit Set 1 Low Value or State | 5 | Decimal number |
| SM Limit Set 2 | 1 | 2 |
| SM Limit Set 2 High Value | 5 | Decimal number |
| SM Limit Set 2 Low Value or State | 5 | Decimal number |
| SM Limit Set 3 | 1 | 3 |
| SM Limit Set 3 High Value | 5 | Decimal number |
| SM Limit Set 3 Low Value or State | 5 | Decimal number |
| SM Limit Set C | 1 | C |
| SM Limit Set C High Value | 5 | Decimal number |
| SM Limit Set C Low Value or State | 5 | Decimal number |
| C&W Annunciator Nomenclature | 22 | None |
| C&W Channel Number | 3 | 0-999 |
| C&W Limit Sense | 1 | TABLE "CWLIMIT" |
| C&W Limit Value, EU | 10 | None |
| C&W Limit Value, Volts | 9 | Decimal number |
| C&W Matrix Number | 2 | None |

Table 2-1 - M/S ID Related (continued)



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| Element | Size | Edits |
|---|---|---|
| **M/S ID, VCN, S/C ID** | | |
| S/C ID | 1 | 1 or 1 and 2 per VCN |
| Signal Conditioner Card and Channel | 7 | None |
| Signal Conditioner Input Plug and Pin | 18 | None |
| Signal Conditioner Installation Drawing # | 11 | None |
| Signal Conditioner Name | 4 | None |
| Signal Conditioner Output Plug and Pin | 15 | None |
| Signal Conditioner Package Reference Designator | 12 | None |
| Signal Conditioner Part Number | 15 | None |
| Signal Conditioner Responsibility | 2 | Table "SSID" |
| Signal Conditioner Serial Number | 14 | None |
| **M/S ID, VCN, Calibration Type** | | |
| Calibration Type | 2 | Table "CALTYPE" |
| Calibration Data Fit | 1 | TABLE "CALFIT" |
| Calibration Independent Variable Unit | 4 | TABLE "CALUNIT" |
| Calibration Number of Sets | 1 | 0-9, A-Z |
| **M/S ID, VCN, Calibration Type, Calibration Effectivity Curve Series** | | |
| Calibration Effectivity, Curve Series | 1 | 0-9, A-Z |
| Calibration Effectivity, Revision Number | 1 | 0-9 |
| Calibration Effectivity, Date | 8 | Date in format YY/MM/DD |
| Calibration Curve Type | 5 | NXXXX=Standard, DXXXX or OXXXX = Actual Must be entered with curve series. |
| Calibration Accuracy | 4 | Decimal number |
| Calibration Low Valid Data Point | 8 | None |
| Calibration Valid Data Point 10 Pct. | 8 | None |
| Calibration Valid Data Point 20 Pct. | 8 | None |
| Calibration Valid Data Point 30 Pct. | 8 | None |
| Calibration Valid Data Point 40 Pct. | 8 | None |
| Calibration Valid Data Point 50 Pct. | 8 | None |
| Calibration Valid Data Point 60 Pct. | 8 | None |
| Calibration Valid Data Point 70 Pct. | 8 | None |
| Calibration Valid Data Point 80 Pct. | 8 | None |
| Calibration Valid Data Point 90 Pct. | 8 | None |
| Calibration High Valid Data Point | 8 | None |
| Calibration Data Tolerance | 8 | None |
| Calibration Degree of Curve | 1 | 0-5 |
| Calibration Dependent Composite Data Point 01 | 8 | Decimal number |

Table 2-1 - M/S ID Related (continued)



ORIGINAL PAGE IS
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| Element | Size | Edits |
|---|---|---|
| Calibration Dependent Composite Data Point 02 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 03 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 04 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 05 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 06 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 07 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 08 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 09 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 10 | 8 | Decimal number |
| Calibration Dependent Composite Data Point 11 | 8 | Decimal number |
| Calibration GPC OFFSET Value | 10 | Decimal number |
| Calibration Independent Composite Data Point 01 | 8 | Decimal number |
| Calibration Independent Composite Data Point 02 | 8 | Decimal number |
| Calibration Independent Composite Data Point 03 | 8 | Decimal number |
| Calibration Independent Composite Data Point 04 | 8 | Decimal number |
| Calibration Independent Composite Data Point 05 | 8 | Decimal number |
| Calibration Independent Composite Data Point 06 | 8 | Decimal number |
| Calibration Independent Composite Data Point 07 | 8 | Decimal number |
| Calibration Independent Composite Data Point 08 | 8 | Decimal number |
| Calibration Independent Composite Data Point 09 | 8 | Decimal number |
| Calibration Independent Composite Data Point 10 | 8 | Decimal number |
| Calibration Independent Composite Data Point 11 | 8 | Decimal number |
| Calibration High Independent Variable | 6 | None |
| Calibration Low Independent Variable | 6 | None |

Table 2-1 - M/S ID Related (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| Element | Size | Edits |
|---|---|---|
| Calibration Most Significant Bit Value | 10 | Note: Replaced by Calibration Units (below) |
| Calibration Units | 8 | None |
| Calibration Number of Data Pairs | 2 | 0-11 |
| Calibration Poly. Coeff. A0, Intercept | 14 | None |
| Calibration Poly. Coeff. A1 Curve Order 1 | 14 | None |
| Calibration Poly. Coeff. A2 Curve Order 2 | 14 | None |
| Calibration Poly. Coeff. A3 Curve Order 3 | 14 | None |
| Calibration Poly. Coeff. A4 Curve Order 4 | 14 | None |
| Calibration Poly. Coeff. A5 Curve Order 5 | 14 | None |
| Calibration Scale Factor | 10 | None |

Table 2-1 - M/S ID Related (concluded)



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| Element | Size | Edits |
|---|---|---|
| **CDOC** | | |
| Status Change Document Number | 7 | Must be unique within the system |
| Status CDOC Revision Number | 1 | None |
| Status Change Document Entry Date | 8 | Date in form MM/DD/YY |
| Status Change Reason | 30 | None |
| **CDOC, FLT/VCN** | | |
| Vehicle Configuration Number or Flight Number | 8 | Must be valid in system and unique for the CDOC. Flight *STS-0 is special flight for BASIC Status Group |
| **CDOC, FLT/VCN Status Group ID** | | |
| Status Group ID | 10 | Tables (3) |
| Status Responsible Organization | 5 | None |
| Status Implementation Date | 8 | Date in form MM/DD/YY |
| Status Required Implementation Date | 8 | Date in form MM/DD/YY |

Table 2-2 - Status



ORIGINAL PAGE IS
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| Element | Size | Edits |
|---|---|---|
| Status Group ID | | |
| Status Group ID | 10 | Tables (3) |
| Status Group ID, VCN | | |
| Vehicle Configuration Number | 8 | Must be valid in system and unique to the ID. |
| Status Text | 420 | None |
| Status Cycle Number | 4 | None |

Table 2-3 - Status Group



ORIGINAL PAGE IS
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| Element | Size | Edits |
|---|---|---|
| **DSM Number** | | |
| DSM Number | 4 | 0-9999. Must be unique within the system. |
| DSM Title | 21 | None |
| DSM Type | 1 | F, M, or S. Must be entered. |
| Measurement/Stimulus Identifier | 10 | Valid M/S ID for VCNs specified. Must be entered if DSM type equal F or S. |
| **DSM Number, VCN** | | |
| Vehicle Configuration Number | 8 | Must be valid in the system and valid for M/S ID specified and unique to the ID. |
| DSM Command Word 2-1 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| DSM Command Word 2-2 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| DSM Command Word 2-3 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| DSM Command Word 2-4 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| DSM Discrete Mask 1 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| DSM Discrete Mask 2 | 16 | Any combination of 1s and 0s. DSM Type must equal F or S. |
| **DSM Number, VCN** | | |
| Vehicle Configuration Number | 8 | Must be valid in the system |
| Related DSM Number 1 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 2 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 3 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 4 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 5 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 6 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 7 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 8 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 9 | 4 | Must be valid DSM Type = F* or S* |
| Related DSM Number 10 | 4 | Must be valid DSM Type = F* or S* |
| | | *All Related DSM Numbers must have M/S IDs of the same Major Element Type. |

Table 2-4 - Command Uplink



ORIGINAL PAGE IS OF POOR QUALITY

| Element | Size | Edits |
|---|---|---|
| **Group ID** | | |
| SM Precondition Group ID | 3 | 0-999. Must be unique within the system. |
| SM Warmup Time Delay | 3 | Decimal number |
| **Group ID, VCN** | | |
| Vehicle Configuration Number | 8 | Must be valid in the system. Unique to the ID. |
| **Group ID, VCN, M/S ID** | | |
| M/S ID | 10 | Must be valid for the VCN. Must be unique for the ID & VCN. |
| **Group ID, VCN, Set Number** | | |
| SM Limit Set Number | 1 | 1, 2, 3. Must be valid for the M/S IDs. |
| SM Precondition Logical Expression | 70 | None |

Table 2-5 - SM/PL Preconditioning Group



ORIGINAL PAGE IS
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| Element | Size | Edits |
|---|---|---|
| **CRT Page ID** | | |
| CRT Page ID | 4 | 0-9999. Must be unique within the system. |
| **CRT Page ID, FLT** | | |
| Flight Number | 8 | Must be valid within the system. Must be unique to the ID. '*' in first character. |
| **CRT Page ID, FLT, M/S ID** | | |
| M/S ID | 10 | Must be valid and unique for the flight. |
| CRT Character Size | 1 | X |
| CRT Branching | 1 | None |
| CRT Update Rate | 1 | TABLE "CRTUPDT" |
| CRT Format Type | 4 | TABLE "CRTFMT" |
| CRT Leading Zeros | 1 | X |
| CRT Sign | 1 | None |
| CRT Revision Number | 1 | None |
| **CRT Page ID, FLT, M/S ID, Sequential Number** | | |
| CRT Sequential Number | 1 | 0-9. Must be unique for the M/S ID. |
| CRT Bilevel - 0 | 4 | None |
| CRT Bilevel - 1 | 4 | None |
| CRT Blanking | 1 | None |
| CRT Parameter Characteristic | 4 | Decimal number |
| CRT Intensity | 1 | None |
| CRT Flash | 1 | None |
| CRT Special Processing | 4 | None |
| CRT Status | 1 | None |
| CRT X-Coordinate | 4 | 1-1024 |
| CRT Y-Coordinate | 4 | 0-9999 |

Table 2-6 - Onboard CRT Display



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| Element | Size | Edits |
|---|---|---|
| **SCM List ID** | | |
| SCM List ID | 2 | 0-99. Must be unique within the system. |
| **SCM List ID, FLT** | | |
| Flight Number | 8 | Must be valid within the system. Unique for List ID. |
| **SCM List ID, FLT, M/S ID** | | |
| M/S ID | 10 | Must be valid and unique for the flight. |
| SCM Low Limit Value or State | 11 | Decimal number |
| SCM High Limit Value | 11 | Decimal number |

Table 2-7 - Subsystem Configuration Monitor



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All requirements for the implementation of ODRC have been cancelled per OPR request.

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Table 2-8 - DRC Related

| Element | Size | Edits |
|---|---|---|
| **TLM Format ID** | | |
| TLM Format ID | 4 | Must be unique within the system |
| TLM Format Type | 1 | 1-7. Must be entered with ID. |
| TLM Format Descriptor | 34 | None |
| **TLM Format ID, FLT** | | |
| Flight Number | 8 | Must be valid within the system. Must be valid for M/S IDs specified. Unique to the ID. |
| **TLM Format ID, M/S ID** | | |
| M/S ID | 10 | Must be valid for flights specified. |
| TLM Low Bit Rate Indicator | 1 | 0,1 |
| TLM Required First Frame | 2 | 0-99. TLM Format Type ≠ 1 |
| TLM Required First Word | 3 | 0-999. TLM Format Type ≠ 1 |
| TLM Required L-R Word Indicator | 1 | L, R. TLM Format Type ≠ 1 |
| TLM Required Response Rate | 4 | Decimal number |
| TLM Actual Response Rate | 4 | Decimal number |
| TLM First Frame | 2 | 0-99 |
| TLM First Word | 3 | 0-999 |
| TLM Most Significant Half Word | 1 | L, R. TLM Format Type ≠ 1 |
| TLM Time Delay | 5 | Char. 1-3 = 000-999, char. 4 =. char. 5 = 0-9 |

Table 2-9 - Telemetry Format



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| Element | Size | Edits |
|---|---|---|
| **BTU Name** | | |
| BTU Name | 4 | Table "BTUNAME" |
| **BTU Name, VCN** | | |
| Vehicle Configuration Number | 8 | Must be valid in the system and unique to the BTU name. |
| **BTU Name, VCN, Seq. ID** | | |
| MDM EPCM Sequence ID | 2 | None |
| MDM EPOM Address, Actual | 3 | 0-512 |
| MDM EPCM Address, Required | 3 | 0-512 |
| MDM EPCM Mode Control | 2 | 0-99 |
| MDM EPCM Sequence Length, Actual | 2 | 0-31 |
| MDM EPCM Sequence Length, Required | 2 | 0-31 |
| **BTU Name, VCN, Sequence Number** | | |
| MDM EPCM Sequence Number | 2 | 0-31 |
| M/S ID | 10 | Must be valid for the VCN |

Table 2-10 - PROM Sequence



ORIGINAL PAGE IS OF POOR QUALITY

| Element | Size | Edits |
|---|---|---|
| FTR ID | | |
| FTR ID | 8 | Must be unique within the system. |
| FTR ID, FLT | | |
| Flight Number | 8 | Must be valid within the system and unique to the ID. |
| FTR ID, FLT, M/S ID | | |
| M/S ID | 10 | Must be valid and unique for the FLT. |
| FTR Data Priority | 1 | TABLE FTRDPR |

Table 2-11 - FTR/DTO Data



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# 3.0 USER REQUIREMENTS

As indicated previously, various users are dependent on MMDBS data tapes, created by MMDBS programs, for use in flight support activities. Both batch and interactive capabilities, as defined in the following sections, are required for MMDBS.

When selected data is required to be sorted by M/S ID, the M/S IDs will appear in ascending order sorted by Major Element ID, Subsystem ID, Subsystem Location, Measurement Type ID, Signal Type, and Characteristic Flag.

## 3.1 INTERACTIVE INPUT/OUTPUT

Two types of interactive displays are required within this application: (1) those supporting the retrieval and update of approved or pending data; (2) those which support input query requests and show the results of the queries.

Online data entry will be provided, but actual system updates will be deferred to batch runs. Retrievals of approved data will reflect data entries as of the last batch update. Retrievals of pending data will reflect the last change to the Status Change Document Number (CDOC) file.

Each of the displays require certain data element qualifiers to be input by the user. If these qualifiers are not entered, an error message will result and no action will be taken. Error or informative messages to the user appear on the last line of the display.

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All displays will contain an Action Code (A/C) to direct processing of the data being input or retrieved. These will indicate the functions to be performed--add, update, delete, and retrieve.

The special character @ when entered as the first character in a data field, will indicate that the data for the element is to be removed.

When the qualifier FLT/VCN (Flight Number/Vehicle Configuration Number) is to be specified, the user may enter one of the following:

(1) Vehicle Configuration Number
(2) Flight Number - May be used for retrieval only. (translated by the system into a Vehicle Configuration Number)

A user access code will be required to permit access to the interactive update capability, reference Section 4.3, System Security. The user may change the user access code during a session without performing the 'sign-off' and 'sign-on' operations.

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When updating, multiple Flight Number/Vehicle Configuration Numbers may be entered as qualifiers on the applicable displays; however, for retrievals of approved data, a single value must be entered. Retrievals of data from a CDOC file require the qualifier(s) to be entered exactly as they were entered when the data was input.

The requirements for each of the displays in the following sections are given in terms of input requirements needed for retrieval and/or updates, output requirements, a list of the headings which will be used on the display and their corresponding data elements, and the display layout.

Pending data resulting from a Status Change Document Number may be entered or changed by entering a CDOC value on the display. Changes to the pending data which will be stored on a CDOC file will be complete replacements of what is reentered on the terminal. A retrieval of the pending record is suggested. The action codes must be entered as they would apply to approved data base.

Constraint:

A sequential search will be performed for retrievals/updates of a CDOC file, based on the fact updates for a Change Document Number will be few.

### 3.1.1 Level II/Level III Requirements Display

This display, Figure 3-1, is required by the POO Integration Division to define the Level II/Level III requirements (MML data). Action codes which trigger the requested operation will be defined in the MMDBS User's Guide. The top key element may not be deleted using this form. See Section 3.1.40. The following functions may be performed via the display:

Approved MML Data

Approved MML data may be retrieved on this form by entering the M/S ID and Flight Number/Vehicle Configuration Number. It may be updated by entering the M/S ID and VCN(s).

Pending MML Data

The M/S ID, the Status Change Document Number and the VCN(s) are the only qualifiers when updating or retrieving pending data. Conversions of pending data to approved data as well as data adjustments of approved data will be reflected in the delta column of the Master Measurement List.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 1 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

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| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| TITLE | Nomenclature, System |
| O/D | Operational/Development Application |
| CAT | Measurement Purpose Category |
| DRLCHI | Data Range Low, Data Range High |
| DRUNIT | Data Range Units |
| ACC | Accuracy Required System |
| RATE | Required Response Rate |
| TLID | Telemetry Link ID |
| RCDR1 | Tape Recorder 1 ID |
| RCDR2 | Tape Recorder 2 ID |
| RCDR3 | Tape Recorder 3 ID |
| SMU | System Management Use |
| CWD | Caution and Warning Display |
| DSP | Dedicated Display |
| CRT | CRT Applicability |
| RFUP | RF Uplink |
| CCD | Crew Control Device |
| F/G | Flight/Ground |
| KLO | KSC State Low |
| KHI | KSC State High |
| PARA | Parallel Switch Control |
| SWSIG | Switch Signal Type |
| SCAN | Switch Scan |
| SUP | Sensor - S/C Supplier |
| LCC | Launch Commit Criteria |
| DATA TYP | Data Type |
| RESP | Response M/S ID |

| Heading | Data Element |
| --- | --- |
| Parent | Parent M/S ID |
| VOT LOG | Voting Logic M/S ID |
| RELA | Related M/S ID |
| REM | Remarks |

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```
A/C<   >  MMDBS - LEVEL II/LEVEL III REQUIREMENTS DISPLAY   DATE

MSID<            >     CDOC<        >
FLT/VCN<          > <         > <         > <         > <         >

LEVEL II
TITLE<                                  >  O/D< >   CAT<   >
DRLOHI<      -      >  DRUNIT<         >      ACC<    > RATE<     >

LEVEL III
TLID< >     RCDR 1< > 2< > 3< >     SMU< >   CWD< >
DSP<  >     CRT< >     RFUP< >      CCD< >   F/G< >

ENG DATA
KLO< > KHI< > PARA<  > SWSIG< > SCAN< > SUP< > LCC< > DATA TYP<     >
RESP<            > PARENT<           > VOT LOG<           > RELA<
REM<                                                      >
```

Figure 3-1  Level II/Level III Requirements Display

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### 3.1.2 Sensor and S/C Display

This display, Figure 3-2, is required by E&D/CSDD, MSFC, and KSC for updating the sensor and/or signal conditioner data and by FCD/FCD for retrieval.

The M/S ID and VCN(s) are always qualifiers when using this form. The VCN must be valid in the system. The CDOC is a qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID - VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of the approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 2 to implement identical changes of M/S ID related data involving more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| DRWNG NO | Sensor Installation Drawing Number |
| LOC COORD | Sensor Location Coordinates |
| REF DES | Sensor Package Reference Designator |
| LOC DESCR | Sensor Location Descriptor |
| P/N | Sensor Part Number |
| RSP | Sensor Responsibility |

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| | |
|---|---|
| TYPE | Sensor Type |
| SER NO | Sensor Serial Number (retrieval only) |
| SUPPLIER | Sensor - S/C Supplier (retrieval only) |
| NAME | Signal Conditioner Name |
| RSP | Signal Conditioner Responsibility |
| DRWNG NO | Signal Conditioner Installation Drawing Number |
| REF DEG | Signal Conditioner Package Reference Designator |
| CRD/CHN | Signal Conditioner Card and Channel |
| P/N | Signal Conditioner Part Number |
| SER NO | Signal Conditioner Serial Number (retrieval only) |
| IN P+P | Signal Conditioner Input Plug and Pin |
| OUT P+P | Signal Conditioner Output Plug and Pin |

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```
A/C< >                MMDBS - SENSOR AND S/C                    DATE

MSID<            > CDOC<          >
FLT/VCN<          > <          > <          > <          > <          >

                                SENSOR
DRWNG NO<              >          LOC COORD<                                  >
REF DEG<               >          LOC DESCR<                          >
P/N<                  >           RSP<   >          TYPE< >
SER NO<                >          SUPPLIER< >

          SIG/COND NO 1            SIG/COND NO 2
NAME      <     >                  <     >
RSP       <   >                    <   >
DRWNG NO  <             >          <             >
REF DEG   <               >        <               >
CRD/CHN   <         >              <         >
P/N       <                  >     <                  >
SER NO    <                >       <                  >
IN P+P    <                    >   <                      >
OUT P+P   <                  >     <                  >
```

Figure 3-2  Sensor and S/C Display

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### 3.1.3 FDM and RCDR Track Display

This display, Figure 3-3, is required by the POO Integration Division and MSFC for updating the Tape Recorder Track data and by E&D/TCDD for updating FDM data.

The M/S ID and VCN(s) are always qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID - VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 3 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| ID1 | Tape Recorder 1 ID (retrieval only) |
| ID2 | Tape Recorder 2 ID (retrieval only) |
| ID3 | Tape Recorder 3 ID (retrieval only) |
| TRK | Tape Recorder 1 Track |
| TRK | Tape Recorder 2 Track |

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| Heading | Data Element |
|---|---|
| TRK | Tape Recorder 3 Track |
| NAME | FDM Name |
| CHN CNTR FRQ | FDM Channel Center Frequency |
| PKG/CHN Code | FDM Package and Channel Code |
| REF DEG | FDM Reference Designator |
| CHN FRQ RSP | FDM Channel Frequency Response |
| INPUT P+P | FDM Input Plug and Pin |

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```
A/C< >                MMDBS - FDM AND RCDR TRACK                PAGE 1 OF 1
MSID<                > CDOC<          >                          DATE
FLT/VCN<             > <          > <          > <          > <          >

                    TAPE RECORDER
ID1 < >               ID2 < >          ID3 < >
TRK <  >              TRK <  >         TRK <  >

                                FDM
NAME<      >                CHN CNTR FRQ<    >  PCK/CHN CODE<       >
REF DEG<                >   CHN FRQ RSP< >      INPUT P+P<           >
```

Figure 3-3 FDM and RCDR Track Display

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### 3.1.4 BTU Display

This display, Figure 3-4, is required by E&D/ASED for updating the BTU data.

The M/S ID and VCN(s) are qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID - VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 4 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| NAME | BTU Name |
| REF DEG | BTU Reference Designator |
| TYPE | BTU Type |
| RATE | BTU Transfer Rate |
| BYTE | Downlink Byte Bit Format |
| CRD LOC | BTU Card Location |

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| Heading | Data Element |
|---|---|
| CRD TYP | BTU Card Type |
| CHNL NO | BTU Channel Number |
| MIA AD | BTU MIA Address |
| SIG TYPE | BTU Signal Type |
| NO BTS | BTU Number of Bits |
| ST BT NO | BTU Start Bit Number |
| NO WRDS | BTU Number of Words |
| WRD NO | BTU Word Number |
| P+P | BTU Plug and Pin/Subsystem |
| HALF WRD1 | BTU/MDM Half Word 1 Bit Format |
| HALF WRD2 | BTU/MDM Half Word 2 Bit Format |
| HALF WRD3 | BTU/MDM Half Word 3 Bit Format |
| HALF WRD4 | BTU/MDM Half Word 4 Bit Format |
| NAME 1 | BTU Destination Equipment Name 1 |
| NAME 2 | BTU Destination Equipment Name 2 |
| NAME 3 | BTU Destination Equipment Name 3 |
| DOWNLINK DATA LEN | Downlink Data Length |
| DOWNLINK START BIT | Downlink Start Bit |

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```
A/C< >                    MMDBS - BTU                          DATE
MSID<            > CDOC<          >
FLT/VCN<          > <          > <          > <          > <          >

NAME<      >  REF DEG<              > TYPE<   >  RATE<     >  BYTE<          >
CRD LOC<   > CRD TYP<    >        CHNL NO<   >  MIA AD<   >  SIG TYPE< >
NO BTS<   >  ST BT NO<   >        NO WRDS<   >  WRD NO<   >
P+P<             >
HALF WRD 1<                  >        HALF WRD 2<                  >
HALF WRD 3<                  >        HALF WRD 4<                  >
DESTINATION EQUIPMENT:
 NAME 1<                  > NAME 2<                  > NAME 3<                  >
DOWNLINK DATA LEN<   >    DOWNLINK START BIT<   >
```

Figure 3-4  BTU Display

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### 3.1.5 MDM PROM Sequence Display

This display, Figure 3-5, is required by E&D/ASED for updating the MDM PROM Sequence data.

The BTU Name, VCN, and MDM PROM Sequence ID are always qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". The M/S IDs entered will be assigned to the corresponding MDM PROM Sequence Number in the specified MDM PROM Sequence ID. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Thirty-two PROM Sequence Numbers can be listed for each PROM Sequence ID. From one to thirty-two M/S IDs may be entered and will be assigned the corresponding sequence number in the specified PROM Sequence ID.

Constraints:

- A maximum of thirty-two M/S IDs may be entered.
- The top key element may not be deleted using this form. See Section 3.1.40.

| Heading | Data Element |
|---|---|
| MDM NAME | BTU Name (qualifier only) |
| PROM ID | MDM PROM Sequence ID |
| CDOC | Status Change Document Number |
| VCN | Vehicle Configuration Number |
| REQ START ADDR | MDM PROM Address, Required |
| ACT START ADDR | MDM PROM Address, Actual |
| REQ LENGTH | MDM PROM Sequence Length, Required |
| ACT LENGTH | MDM PROM Sequence Length, Actual |
| DATA BUS NAMES | BTU Data Bus Names (retrieval only) |
| MODE CNTRL | MDM PROM Mode Control |
| SEQ | MDM PROM Sequence Number |
| M/S ID | Measurement/Stimulus Identifier |

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```
A/C<   >                MNDBS - MDM PROM SEQUENCE                PAGE 1 OF 1
MDM NAME<      > PROM ID<   > CDOC<         >                     DATE
WCN<          >

REQ START ADDR<    >  ACT START ADDR<    >  REQ LENGTH<   >  ACT LENGTH<   >
DATA BUS NAMES<                           >  MODE CNTRL<   >

  SEQ   M/S ID        SEQ   M/S ID        SEQ   M/S ID
   00<            >     01<            >     02<            >
   03<            >     04<            >     05<            >
   06<            >     07<            >     08<            >
   09<            >     10<            >     11<            >
   12<            >     13<            >     14<            >
   15<            >     16<            >     17<            >
   18<            >     19<            >     20<            >
   21<            >     22<            >     23<            >
   24<            >     25<            >     26<            >
   27<            >     28<            >     29<            >
   30<            >     31<            >
```

Figure 3-5  MDM PROM Sequence Display

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### 3.1.6 Calibration Display

This display, Figure 3-6, is required by POO Integration Division and MSFC for the update and retrieval of calibration data.

The M/S ID and VCN(s) are always the qualifiers when using this form. The VCN must be valid in the system. The Calibration Type and Calibration Effectivity, Curve Series are additional qualifiers used to identify specific calibrations. The CDOC is a qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID-VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 6 to implement identical changes in M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| TYPE | Calibration Type |
| CRV SER | Calibration Effectivity, Curve Series |
| CRV TYP | Calibration Curve Type |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |

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| Heading | Data Element |
|---|---|
| DATA FIT | Calibration Data Fit |
| IND VAR UNITS | Calibration Independent Variable Units |
| NO MULTI CALS | Calibration Number of Sets |
| EFF:REV | Calibration Effectivity, Revision Number |
| DATE | Calibration Effectivity, Date |
| ACC | Calibration Accuracy |
| TOLERANCE | Calibration Data Tolerance |
| DEG OF CURVE | Calibration Degree of Curve |
| CAL UNITS | Calibration Units (1st 8 characters of MSB) |
| A0 | Calibration Poly. Coeff. A0, Intercept |
| A1 | Calibration Poly. Coeff. A1 Curve Order 1 |
| A2 | Calibration Poly. Coeff. A2 Curve Order 2 |
| A3 | Calibration Poly. Coeff. A3 Curve Order 3 |
| A4 | Calibration Poly. Coeff. A4 Curve Order 4 |
| A5 | Calibration Poly. Coeff. A5 Curve Order 5 |
| LOW IND VAR | Calibration Low Independent Variable |
| HIGH IND VAR | Calibration High Independent Variable |
| LO | Calibration Low Valid Data Point |
| 10 | Calibration Valid Data Point, 10 Pct. |
| 20 | Calibration Valid Data Point, 20 Pct. |
| 30 | Calibration Valid Data Point, |

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| Heading | Data Element |
|---|---|
| | 30 Pct. |
| 40 | Calibration Valid Data Point, 40 Pct. |
| 50 | Calibration Valid Data Point, 50 Pct. |
| 60 | Calibration Valid Data Point, 60 Pct. |
| 70 | Calibration Valid Data Point 70 Pct. |
| 80 | Calibration Valid Data Point, 80 Pct. |
| 90 | Calibration Valid Data Point, 90 Pct. |
| HI | Calibration High Valid Data Point |
| NO DATA PAIRS | Calibration Number of Data Pairs |
| SER NOS: SEN | Sensor Serial Number |
| S/C 1 | Signal Conditioner 1 Serial Number |
| S/C 2 | Signal Conditioner 2 Serial Number |
| X1 | Calibration Independent Composite Data Point 01 |
| Y1 | Calibration Dependent Composite Data Point 01 |
| X2 | Calibration Independent Composite Data Point 02 |
| Y2 | Calibration Dependent Composite Data Point 02 |
| X3 | Calibration Independent Composite Data Point 03 |
| Y3 | Calibration Dependent Composite Data Point 03 |
| X4 | Calibration Independent Composite |

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| Heading | Data Element |
|---|---|
| | Data Point 04 |
| Y4 | Calibration Dependent Composite Data Point 04 |
| X5 | Calibration Independent Composite Data Point 05 |
| Y5 | Calibration Dependent Composite Data Point 05 |
| X6 | Calibration Independent Composite Data Point 06 |
| Y6 | Calibration Dependent Composite Data Point 06 |
| X7 | Calibration Independent Composite Data Point 07 |
| Y7 | Calibration Dependent Composite Data Point 07 |
| X8 | Calibration Independent Composite Data Point 08 |
| Y8 | Calibration Dependent Composite Data Point 08 |
| X9 | Calibration Independent Composite Data Point 09 |
| Y9 | Calibration Dependent Composite Data Point 09 |
| X10 | Calibration Independent Composite Data Point 10 |
| Y10 | Calibration Dependent Composite Data Point 10 |
| X11 | Calibration Independent Composite Data Point 11 |
| Y11 | Calibration Dependent Composite Data Point 11 |

| Heading | Data Element |
| --- | --- |
| RANGE | Data Range Low, Data Range High (retrieval only) |
| UNITS | Data Range Units (retrieval only) |
| TITLE | Nomenclature, System (retrieval only) |
| DATA TYPE | Data Type (retrieval only) |

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```
A/C<   >                    MMDBS - CALIBRATION                    DATE
MSID<            > TYPE<  > CRV SER< > CRV TYP<      > CDOC<         >
FLT/VCN<          > <          > <          > <          > <          >
DATA FIT< > IND VAR UNITS<     > NO MULTI CALS< > EFF:REV< > DATE<          >
ACC<     > TOLERANCE<          > DEG OF CURVE< > CAL UNITS<          >
POLYNOMIALS
A0<                > A1<                > A2<                >
A3<                > A4<                > A5<                >
LO IND VAR<        > HIGH IND VAR<        >
VALID PTS:LO<          > 10<          > 20<          > 30<          > 40<          >
          50<          > 60<          > 70<          > 80<          > 90<          >
          HI<          >      NO DATA PAIRS<   >
SER NOS:  SEN<                > S/C 1<                > S/C 2<                >
COMPOSITE PTS
          X1<          >  Y1<          >  X2<          >  Y2<          >
          X3<          >  Y3<          >  X4<          >  Y4<          >
          X5<          >  Y5<          >  X6<          >  Y6<          >
          X7<          >  Y7<          >  X8<          >  Y8<          >
          X9<          >  Y9<          > X10<          > Y10<          >
         X11<          > Y11<          > RANGE<      -      > UNITS<          >
TITLE<                                        > DATA TYPE<     >
```

Figure 3-6  Calibration Display

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### 3.1.7 GPC Software Display

This display, Figure 3-7, is required by E&D/SSD for updating the GPC Software data.

The M/S ID and VCN(s) are always qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID-VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 7 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| COMPOOL | GPC Software COMPOOL Name |
| HAL | GPC Software HAL Name |
| SOURCE | GPC Software Source Module |
| DEST | GPC Software Destination Module |
| RQD RATE | GPC Software Required Update Rate |
| START BIT | GPC Software Start Bit |

| Heading | Data Element |
|---|---|
| DATA TYPE | GPC Software Downlist Data Type |
| DOWNLIST AVAILABLE | GPC Software Downlist Availability |
| DATA LNGTH | GPC Software Data Length |
| IN/OUT CMP | GPC Software Input/Output/Compute |
| UNITS | GPC Software Units |
| SIGNAL MNEMONIC | GPC Software Signal Mnemonic |
| HCMC | Homogeneous Data Set Number |

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```
A/C< >                    MMDBS - GPC SOFTWARE                    DATE
MSID<            > CDOC<          >
FLT/VCN<          > <          > <          > <          > <          >

COMPOOL <                                    >
HAL <                                  >
SOURCE <                                                    >
DEST <                                                  >
RQD RATE <                                >
START BIT  <  >    DATA TYPE  < >    DOWNLIST AVAILABLE < >
DATA LNGTH <  >    IN/OUT/CMP < >
UNITS <          >  SIGNAL MNEMONIC <            >  HOMO<   >
```

Figure 3-7  GPC Software Display

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### 3.1.8 SM/PL Display

This requirement has not been implemented.

This display, Figure 3-8, is required by ASED to enter SM/PL processing requirements for a measurement.

The M/S ID and VCN(s) are always qualifiers when using this form. The CDOC is a required qualifier when referencing the CDOC file. Flight Number may only be used as a qualifier for retrieval of approved data. The Payload (PL) used parameters are determined by an input to the "PL" field - no input to the "PL" field means SM data. An M/S ID can be used for SM or for PL, but not both under the same vehicle configuration. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Constraints:

- If the M/S ID has an SM Constant Initial Value, it can not have associated limit sets.

- If the M/S ID has an SM Parameter Source, it is non-FDA. It can have major and minor message IDs, and SM Alarm class, and an SM Alarm Indicator; it can not have associated limit sets.

- If the M/S ID has alert limits it can have a noise filter value, major and minor message IDs, and alarm class, an alram indicator, and up to 3 limit sets and associated data.

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- If the M/S ID has a C&W limit, it can have a noise filter value, major and minor message IDs, an alarm class, an alarm indicator, and one limit set and associated data.

- An M/S ID can have both alert and C&W limits.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| PL | SM Payload Use |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| PAR TYP | SM Parameter Type |
| ACQ. RATE | SM Acquisition Rate |
| SS ID | SM Subsystem ID |
| ADD/SRCE | SM Source |
| CONST VALUE | SM Constant Initial Value |
| ENG UNITS | Data Range Units (retrieval only) |
| CRV SER | SM Desired Curve Series |
| NOISE FIL | SM Noise Filter Value |
| MSG ID | SM Major Message ID |
| | SM Minor Message ID |
| ALARM CLASS | SM Alarm Class |
| INDICATOR | SM Alarm Indicator |
| ID 1 LOW | SM Limit Set 1 Low Value or State |
| ID 1 HIGH | SM Limit Set 1 High Value |
| ID 2 LOW | SM Limit Set 2 Low Value or State |
| ID 2 HIGH | SM Limit Set 2 High Value |
| ID 3 LOW | SM Limit Set 3 Low Value or State |
| ID 3 HIGH | SM Limit Set 3 High Value |
| ID C LOW | SM Limit Set C Low Value |

| HEADING | DATA ELEMENT |
| --- | --- |
| ID C HIGH | SM Limit Set C High Value |
| PAR SRCE | SM Parameter Source |

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```
A/C<  >                    MMDBS - SM/PL                          PAGE 1 OF 1
                                                                  DATE
MSID<            > CDOC<        > PL< >
VCN<          >

PAR TYP< >  ACQ RATE<  >  SS ID<  >  ADD/SRCE<     >  CRV SER< >
CONT VALUE<                  >    ENG UNIT<          >

ALERT LIMITS:
NOISE FIL<  >     MSG ID<    -  >
ALARM CLASS< >    INDICATOR<  >
LIMIT NO 1     LOW<       >    HIGH<      >
LIMIT NO 2     LOW<       >    HIGH<      >
LIMIT NO 3     LOW<       >    HIGH<      >

C&W LIMITS:
NOISE FIL<  >     MSG ID<    -  >
ALARM CLASS< >    INDICATOR<  >
LIMIT: LOW<      >   HIGH<      >

NON FDA:
PAR SRCE<    >    MSG ID<    -  >
ALARM CLASS< >    INDICATOR<  >
```

Figure 3-8 SM/PL Display

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### 3.1.9 SM/PL Precondition Display

This requirement has not been implemented.

This display, Figure 3-9, is required by ASED to enter SM/PL processing requirements for a measurement.

The SM Precondition Group ID and VCN are always qualifiers when using this form. The CDOC is an additional qualifier when referencing the CDOC file. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Constraints:

- All M/S IDs assigned to an SM Precondition Group ID for a particular VCN must be existing and approved M/S IDs for that configuration.
- A maximum of five (5) M/S IDs can be assigned to a precondition group for a given VCN.
- The SM Limit Set Numbers must be valid for the M/S IDs.

| Heading | Data Element |
|---|---|
| GROUP ID | SM Precondition Group ID |
| VCN | Vehicle Configuration Number |
| CDOC | Status Change Document Number |
| WARM UP TIME | SM Warmup Time Delay |
| PRECONDITION LOGIC | |
| LIMIT SET 1 | SM Precondition Logical Expression 1 |
| LIMIT SET 2 | SM Precondition Logical Expression 2 |
| LIMIT SET 3 | SM Precondition Logical Expression 3 |

| HEADING | DATA ELEMENT |
| --- | --- |
| M/S ID | Measurement/Stimulus Identifier |

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```
A/C<  >        MMDBS - SM/PL PRECONDITION                    PAGE 1 OF 1
                                                             DATE
GROUP ID<    > VCN<          > CDOC<          >

WARMUP TIME DELAY<    >

PRECONDITION LOGIC:
LIMIT SET 1
<
LIMIT SET 2
<
LIMIT SET 3
<

     MSID          MSID          MSID          MSID          MSID
 <          >  <          >  <          >  <          >  <          >
```

Figure 3-9  SM/PL Precondition Display

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### 3.1.10 SCM List Display

This requirement has not been implemented.

This display, Figure 3-10, is required by ASED to enter SCM processing requirements for a measurement.

The M/S ID, Flight Number(s), and the SCM List ID are required when entering the SCM Low Limit or State and the SCM High Limit. The M/S ID and VCN(s) are required when entering the SCM text fields. The CDOC is an additional qualifier when referencing the CDOC file. Flight Number may only be used as a qualifier for text fields on a retrieval of approved data. Action codes which trigger the requested information will be defined in the MMDES Users Guide.

Constraint:

All M/S IDs assigned to an SCM List ID for a particular flight must be existing and approved M/S IDs for that flight.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| LIST ID | SCM List ID |
| FLT | Flight Number |
| LOW LIM/STATE | SCM Low Limit or State |
| HIGH LIM | SCM High Limit |
| VCN | Vehicle Configuration Number |
| BIN 0 TEXT | SCM Binary 0 Text |
| BIN 1 TEXT | SCM Binary 1 Text |
| DISC. MSG. TEXT | SCM Discrepancy Message Text |

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```
A/C<  >                    MMDBS - SCM LIST                    PAGE 1 OF 1
MSID<            >  CDOC<        >                             DATE

LIST ID<  >
FLT<          > <          > <          > <          > <          >
LOW LIM/STATE<              >    HIGH LIM<              >

VCN<          > <          > <          > <          > <          >
BIN 0 TEXT<     >
BIN 1 TEXT<     >
DISC. MSG TEXT<       >
```

Figure 3-10  SCM List Display

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### 3.1.11 On-board CRT Requirements Display

This display, Figure 3-11, is required by POO Integration Division for updating the Onboard CRT requirements data.

The CRT Page ID, Flight Number(s), and M/S ID are always qualifiers when using this form. The CDOC is required when referencing the CDOC file. The CRT Sequential Number is an additional qualifier when referencing the data which varies by sequence number. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Constraints:

- The M/S ID must be approved and unique for the flight.
- The top key element may not be deleted using this form. See Section 3.1.40.

| Heading | Data Element |
|---|---|
| PG ID | CRT Page ID |
| CDOC | Status Change Document Number |
| FLT | Flight Number |
| MSID | Measurement/Stimulus Identifier |
| SIZE | CRT Character Size |
| BRANCHING | CRT Branching |
| UPDAT RATE | CRT Update Rate |
| CRT TYP | CRT Format Type |
| LEAD ZERO | CRT Leading Zero |
| SIGN | CRT Sign |
| CRT TITLE | CRT Nomenclature |
| SEQ | CRT Sequential Number |

| Heading | Data Element |
|---|---|
| REV | CRT Revision Number |
| BILEVEL 0 | CRT Bilevel 0 |
| BILEVEL 1 | CRT Bilevel 1 |
| BLANKING | CRT Blanking |
| CHAR | CRT Parameter Characteristic |
| INTENSITY | CRT Intensity |
| FLASH | CRT Flash |
| SPCL PROC | CRT Special Processing |
| STATUS | CRT Status |
| X-COOR | CRT X-Coordinate |
| Y-COOR | CRT Y-Coordinate |

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```
A/C<  >                MMDBS - ONBOARD CRT REQUIREMENTS                PAGE 1 OF 1
                                                                        DATE
PG ID<     > CDOC<        >
FLT<        > <        > <        > <        > <        >

MSID<            >
SIZE < >          BRANCHING < >      UPDAT RATE < >
CRT TYP <     >   LEAD ZERO < >      SIGN < >
CRT TITLE <                      > REV < >

SEQ< >
BILEVEL 0 <     >    BILEVEL 1 <     >    BLANKING< >        CHAR <     >
INTENSITY < >        FLASH < >           SPCL PROC <     >  STATUS < >
X-COOR<     >        Y-COOR<     >
```

Figure 3-11 On-board CRT Requirements Display

### 3.1.12 Command Uplink Display

This display, Figure 3-12, is required by FOD for update and retrieval of command data.

DSM Number is always a qualifier when using this form. The VCN is required to qualify all configuration dependent data, and the CDOC is a required qualifier when referencing the CDOC file. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Constraints:

- An M/S ID assigned to a single function or salvo DSM Number must be valid for the VCN(s) assigned to that number.
- Command Words and Discrete Masks may only be assigned for single function and salvo commands.
- A DSM Title may only be input for a multi-word command.
- Related DSM Numbers must be either single-function or salvo commands and their assigned M/S IDs must be valid for the VCN specified.
- DSM Type must be entered when adding a DSM Number.
- The top key element may not be deleted using this form. See Section 3.1.40.

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| Heading | Data Element |
|---|---|
| DSM | DSM Number |
| VCN | Vehicle Configuration Number |
| CDOC | Status Change Document Number |
| TYP | DSM Type |
| MSID | Measurement/Stimulus Identifier |
| TITLE | DSM Title - Multiword Only (Nomenclature, Operational - retrieval only) |
| COMMAND WORD | DSM Command Word 2-1 |
| | DSM Command Word 2-2 |
| | DSM Command Word 2-3 |
| | DSM Command Word 2-4 |
| DISCRETE MASK | DSM Discrete Mask 1 |
| | DSM Discrete Mask 2 |
| DSM NO | Related DSM Number |
| MSID | Measurement/Stimulus Identifier (retrieval only) |
| TITLE | Nomenclature, Operational (retrieval only) |

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```
A/C<  >                    MMDBS - COMMAND UPLINK                    PAGE 1 OF 1
                                                                     DATE
DSM<     > VCN<            > CDOC<        >
TYP< > MSID<               > TITLE<                                  >

      COMMAND WORD                  DISCRETE MASK          SEQ NO
   <                  >          <                  >        <1>
   <                  >          <                  >        <2>
   <                  >
   <                  >

     DSM NO        MSID                    TITLE
 1   <     >   <            >   <                          >
 2   <     >   <            >   <                          >
 3   <     >   <            >   <                          >
 4   <     >   <            >   <                          >
 5   <     >   <            >   <                          >
 6   <     >   <            >   <                          >
 7   <     >   <            >   <                          >
 8   <     >   <            >   <                          >
 9   <     >   <            >   <                          >
10   <     >   <            >   <                          >
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Figure 3-12 Command Uplink Display

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### 3.1.13 Downlist Assignments Table Display

This display, Figure 3-13, is required by the Flight Operations Directorate and F&D/ASED for update and retrieval of telemetry data.

The TLM Format ID, Flight Number, and up to fifteen (15) M/S IDs are always qualifiers when using this form to reference M/S ID dependent data. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using a TLM Format ID and M/S ID which have not been added to the approved data base. If this occurs, a message will be displayed indicating M/S ID invalid, but update accepted. To retrieve data from the CDOC file, only the first M/S ID (from the list of M/S IDs on the form) is required. Action codes which trigger the requested information will be in the MMDBS Users Guide.

Constraints:

- The TLM Format ID must be unique within the system.
- The M/S IDs must be valid for the flight specified when the data is applied to the data base.
- The Flight Number must be unique for the ID.
- The TLM Format type must equal 1.
- The Flight Number assigned to a TLM Format ID must be valid in the system; it will not be validated for each M/S ID previously assigned to the TLM Format ID. Conversely, M/S IDs will not be validated for previously assigned Flights.
- The TLM actual data cannot be updated via this form.
- If identical qualifiers appear on more than one CDOC record, only the first CDOC record will be retrieved.

- The top key element may not be deleted using this fo
  See Section 3.1.40.

| Heading | Data Element |
|---|---|
| FRMT ID | TLM Format ID |
| FLT | Flight Number |
| CDOC | Status Change Document Number |
| DESCRIP | TLM Format Descriptor |
| TYPE | TLM Format Type (always 1) |
| MSID | Measurement/Stimulus Identifier |
| 64/128 | TLM Low Bit Rate Indicator |
| HOMO SET | Homogeneous Data Set Number (retrieval only) |
| REQ S/S | TLM Required Response Rate |
| ACT S/S | TLM Actual Response Rate (retrieval only) |
| 1ST FR | TLM First Frame (retrieval only) |
| 1ST WRD | TLM First Word (retrieval only) |
| ST BIT | GPC Software Start Bit (retrieval only) |
| NO BITS | GPC Software Data Length (retrieval only) |
| Parent MSID | Parent M/S ID (retrieval only) |

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FRMT ID< > FLT< > CDOC< >
DESCRIP< > TYPE< >

| MSID | 64/ 128 | HOMO SET | REQ S/S | ACT S/S | 1ST FRM | 1ST WRD | ST BIT | NO BIT | PARENT MSID |
|---|---|---|---|---|---|---|---|---|---|
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Figure 3-13 Downlist Assignments Table Display

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### 3.1.14 Downlink Assignments Table Display

This display, Figure 3-14, is required by POO Integration Division, FOD, and E&D/ASED for update and retrieval of telemetry data.

The TLM Format ID, Flight Number, Required/Actual Action Code, and up to fifteen (15) M/S IDs are always qualifiers when using this form to reference M/S ID dependent data. The CDOC is a required qualifier when referencing the CDOC file. The CDOC file may be updated using a TLM Format ID and M/S ID which have not been added to the approved data base. If this occurs, a message will be displayed indicating M/S ID invalid, but update accepted. To retrieve data from the CDOC file, only the first M/S ID (from the list of M/S IDs on the form) is required. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Constraints:

- The TLM Format ID must be unique within the system.
- The M/S IDs must be valid for the flight indicated when the data is applied to the data base.
- The TLM Format Type must be entered when adding a TLM Format ID.
- The TLM actual data cannot be updated via this form.
- A Flight Number assigned to a TLM Format ID must be a valid flight in the system; it will not be validated for each M/S ID previously assigned to the TLM Format ID. Conversely, M/S IDs will not be validated for previously assigned Flights.
- The Flight Number must be unique for the ID.

- The top key element may not be deleted using this form. See Section 3.1.40.
- If identical qualifiers appear on more than one CDOC record, only the first CDOC record will be retrieved.

| Heading | Data Element |
|---|---|
| FRT ID | TLM Format ID |
| FLT | Flight Number |
| A/R | (Actual/required retrieval code) |
| TYPE | TLM Format Type |
| CDOC | Status Change Document Number |
| DESCRIP | TLM Format Descriptor |
| M/S ID | Measurement/Stimulus Identifier |
| REQ S/S | TLM Required Response Rate |
| ACT S/S | TLM Actual Response Rate (retrieval only) |
| 1ST FRM | TLM Required First Frame, TLM First Frame (retrieval only) |
| 1st WRD | TLM Required First Word, TLM First Word (retrieval only) |
| HOMO | Homogeneous Data Set Number (retrieval only) |
| L/R | TLM Required L-R Word Indicator |
| ST BIT | Downlink Start Bit (retrieval only) |
| NO BITS | Downlink Data Length (retrieval only) |
| PARENT MSID | Parent M/S ID (retrieval only) |

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```
A/C<  >        MMDBS - DOWNLINK ASSIGNMENTS TABLE                DATE

FMT ID<     > FLT<          > A/R< > TYPE< > CDOC<          >
DESCRIP<                                   >

                REQ     ACT    1ST    1ST                    ST      NO      PARENT
   M/S ID       S/S     S/S    FRM    WRD   HOMO   L/R     BIT     BITS     MSID
<           > <     > <     > <   > <     > <   > <   > <   > <   > <
<           > <     > <     > <   > <     > <   > <   > <   > <   > <
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```

Figure 3-14  Downlink Assignments Table Display

### 3.1.15 FTR/DTO-FTO Display

This display, Figure 3-15, is required by the SSPO for adding or updating the FTR/DTO-FTO data.

The FTR ID, Flight Number, and M/S ID are always required when using this form. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base. If this occurs, a message will be displayed indicating M/S ID invalid, but update accepted. To retrieve data from the CDOC file, only the first M/S ID (from the list of M/S Ids on the form) is required. Action codes which trigger the requested information will be in the MMDES Users Guide.

Constraints:

- The FTR ID must be unique within the system.
- The Flight Number must be valid within the system and unique to the ID.
- The M/S ID must be valid and unique for the flight except when updating a CDOC file.
- If identical qualifiers appear on more than one CDOC record, only the first CDOC record will be retrieved.
- The top key element may not be deleted using this form. See Section 3.1.40.

| Heading | Data Element |
|---|---|
| FTR ID | FTR ID |
| FLT | Flight Number |
| CDOC | Status Change Document Number |
| MSID | Measurement/Stimulus Identifier |



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| HEADING | DATA ELEMENT |
| --- | --- |
| DAT PRI | FTR Data Priority |
| FTR S/S | FTR Required Response Rate |

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```
A/C<  >                       MMDBS - FTR/DTO-FTO                         PAGE 1 OF 1
FTR ID<          > FLT<             > CDOC<         >                     DATE
                  DAT  FTR                       DAT  FTR                      DAT  FTR
      MSID        PRI  S/S           MSID        PRI  S/S          MSID        PRI  S/S
<               > < > <      > <               > < > <      > <              > < > <      >
<               > < > <      > <               > < > <      > <              > < > <      >
<               > < > <      > <               > < > <      > <              > < > <      >
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<               > < > <      > <               > < > <      > <              > < > <      >
<               > < > <      > <               > < > <      > <              > < > <      >
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<               > < > <      > <               > < > <      > <              > < > <      >
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>
```

Figure 3-15 FTR/DTO-FTO Display

### 3.1.16 ODRC Product Requirements Display

All requirements for the implementation of ODRC have been cancelled per OPR request.

This display, Figure 3-16, is required by POO Integration Division for adding, updating, deleting or retrieving ODRC product data in the MMDBS and by DSAD/IDSD for retrieval only.

The DRC Group ID and Flight Number are always qualifiers when using this form for retrieval. DRC Line Number is an additional qualifier when retrieving/updating line number information. The CDOC is a required qualifier when referencing the CDOC file. Action codes which trigger the requested information will be in the MMDBS Users Guide.

Multi-page capabilities will be provided for retrievals.

Constraints:

- The DRC Group ID must be unique within the system.
- The Flight Number and DRC Line Number must be unique for the ID.
- The M/S ID must be valid and unique for the flight.
- A Flight Number assigned to a DRC Group ID must be a valid flight in the system; it will not be validated for each M/S ID previously assigned to a DRC line number for the DRC Group ID.

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| Heading | Data Element |
| --- | --- |
| GRP ID | DRC Group ID |
| FLT | Flight Number |
| CDOC | Status Change Document Number |
| LN | DRC Line Number |
| M/S ID | Measurement/Stimulus Identifier |
| SYSTEM TITLE | Nomenclature, System (retrieval only) |
| PLOT RANGE | DRC Plot Range, Low-High |
| B/P | DRC Band/Pass Limits |

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```
A/C<  >          MMDBS - ODRC PRODUCT REQUIREMENTS          PAGE     OF
GRP ID<      > FLT<          > CDOC<          >             DATE
 LN    M/S ID       SYSTEM TITLE                            PLOT RANGE    B/P
<  > <          >                                          <     -     > <   >
<  > <          >                                          <     -     > <   >
<  > <          >                                          <     -     > <   >
<  > <          >                                          <     -     > <   >

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```

Figure 3-16 ODRC Product Requirements Display

### 3.1.17 Status by Change Document Display

This display, Figure 3-17, is used by authorized organizations for the retrieval and update of information (Status Data) concerning the authority, functional areas, reason, and status of data base update requirements. The authorization, a Status Change Document Number (CDOC), is the top qualifier for access to its related Status Data. This data may be established through the use of this form, or by the batch data base update program at the time the update requirement is implemented.

The Status Change Document Number (CDOC) and Flight(s) or VCN(s) are always qualifiers when using this form. Status Group ID is an additional qualifier when updating a CDOC. Action codes which trigger the requested information will be documented in the MMDBS Users Guide.

Constraints:

- The CDOC must be unique within the system.
- The Flight and/or VCN must be unique for the CDOC.
- Flights, Special Flights, and VCNs may not be entered on the same display since each has its own set of Status Group Ids.
- If a Status Group ID is deleted from the Status Data for a CDOC, any information entered on the corresponding pending file for that group, will not be deleted.

| Heading | Data Element |
|---|---|
| CDOC | Status Change Document Number |
| REV | Status CDOC Revision Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| CHNG REASON | Status Change Reason |
| GROUP ID | Status Group ID |



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| | |
|---|---|
| RSP ORG | Status Responsible Organization |
| DATE REQUIRED | Status Required Implementation Date |
| DATE IMPLEMENTED | Status Implementation Date |

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```
A/C<   >        MMDBS - STATUS BY CHANGE DOCUMENT                    DATE
CDOC<          > REV< >
FLT/VCN<          > <          > <          > <          > <          >
CHNG REASON<                                          >
    GROUP ID        RSP ORG      DATE REQUIRED      DATE IMPLEMENTED
  <             >   <       >    <            >     <            >
  <             >   <       >    <            >     <            >
  <             >   <       >    <            >     <            >
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Figure 3-17 Status By Change Dccument Display

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### 3.1.18 Group Status Text Display

This display, Figure 3-18, is used by an organization responsible for a functional area of the system to enter (or retrieve) status information about that group. Other organizations may retrieve the status information.

The Status Group ID and VCN are always qualifiers when using this form. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Constraint:

The VCN must be unique to the ID.

| Heading | Data Element |
|---|---|
| GROUP ID | Status Group ID |
| VCN | Vehicle Configuration Number |
| CYCLE NO | Status Cycle Number |
| TEXT | Status Text |

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```
A/C<  >            MMDBS - GROUP STATUS TEXT                PAGE 1 OF 1
GROUP ID<            > VCN<          >                      DATE
CYCLE NUMBER<     >

 TEXT:
<                                                                  >
<                                                                  >
<                                                                  >
<                                                                  >
<                                                                  >
<                                                                  >
```

Figure 3-18  Group Status Text Display

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### 3.1.19 Device Display

This display, Figure 3-19, is required by E&D/ASED and FOD for updating and retrieving device data and DSAD/FSD for retrieval only.

The M/S ID and VCN(s) are normally qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S-ID VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be a qualifier for retrieval of approved data. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 19 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

Constraint:

If Device Name is changed via this display, it affects all configurations for the M/S ID - Device Name is basic to an M/S ID. VCN is not a required qualifier for Device Name changes.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration |

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| Heading | Data Element |
|---|---|
| | Number |
| NAME | Device Name |
| ACC | Device Accuracy |
| PNL NOM | Device Panel Nomenclature |
| SWITCH PNL NOM | Device Switch Panel Nomenclature |
| PNL NO 1 | Device Panel Number 1 |
| PNL NO 2 | Device Panel Number 2 |
| PNL NO 3 | Device Panel Number 3 |
| REF DEG 1 | Device Reference Designator 1 |
| REF DEG 2 | Device Reference Designator 2 |
| REF DEG 3 | Device Reference Designator 3 |
| IN P+P 1 | Device Input Plug and Pin 1 |
| IN P+P 2 | Device Input Plug and Pin 2 |
| IN P+P 3 | Device Input Plug and Pin 3 |
| SW PNL #1 | Device Switch and Panel Number 1 |
| SW PNL #2 | Device Switch and Panel Number 2 |
| SW PNL #3 | Device Switch and Panel Number 3 |
| SW RF DG 1 | Device Switch Reference Designator 1 |
| SW RF DG 2 | Device Switch Reference Designator 2 |
| SW RF DG 3 | Device Switch Reference Designator 3 |
| OPS TITLE | Nomenclature, Operational (retrieval only) |

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```
A/C< >                          MMDBS - DEVICE                          DATE

MSID<              > CDOC<          >
FLT/VCN<            > <          > <          > <          > <          >

NAME<                    >  ACC<     >
PNL NOM<                                          >
SWITCH PNL NOM<                                          >
PNL NO 1<          >        PNL NO 2<          >        PNL NO 3<          >
REF DEG 1<                > REF DEG 2<                > REF DEG 3<
IN P+P 1<                >  IN P+P 2<                >  IN P+P 3<
SW PNL 1<                >  SW PNL 2<                >  SW PNL 3<
SW RF DG 1<                >SW RF DG 2<                >SW RF DG 3<
OPS TITLE<                          >
```

Figure 3-19  Device Display

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### 3.1.20 MCC and C&W Display

This display, Figure 3-20, is required by FOD for updating and retrieval.

The M/S ID and VCN(s) are qualifiers when using this form. The VCN must be valid in the system. The CDOC is a required qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID - VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 20 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| SYSTEM TITLE | Nomenclature, System (retrieval only) |
| OPS TITLE | Nomenclature, Operational |
| SSH DRWNG NO | SSH Drawing Number |
| SSH ZONE/PG | SSH Zone No./SSH Page No. |
| DISPLAY MSK | |
| NUMBER 1 | MCC Display MSK Number 1 |
| 2 | MCC Display MSK Number 2 |

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| Heading | Data Element |
|---|---|
| 3 | MCC Display MSK Number 3 |
| ANNUNCIATOR TITLE | C&W Annunciator Nomenclature |
| CHAN NO | C&W Channel Number |
| LIMIT SENSE | C&W Limit Sense |
| MATRIX NO | C&W Matrix Number |
| LIMIT VALUE, EU | C&W Limit Value, EU |
| LIMIT VALUE, VOLTS | C&W Limit Value, Volts |
| OP LIMITS: | Operational Limits 1 Low |
| LOW,HIGH | Operational Limits 1 High |
| | Operational Limits 2 Low |
| | Operational Limits 2 High |
| | Operational Limits 3 Low |
| | Operational Limits 3 High |
| | Operational Limits 4 Low |
| | Operational Limits 4 High |
| | Operational Limits 5 Low |
| | Operational Limits 5 High |

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```
A/C< >                    MMDBS - MCC AND C&W                    PAGE 1 OF 1
MSID<            > CDOC<          >                              DATE
FLT/VCN<          > <          > <          > <          > <          >

                                MCC
SYSTEM TITLE<                                          >
OPS TITLE<                          >
SSH DRWNG NO<       >   SSH ZONE/PG<   /   >
DISPLAY MSK NUMBER 1 <      >  2 <      >  3 <      >

                                C&W
ANNUNCIATOR TITLE <                          >
CHAN NO <    >      LIMIT SENSE < >      MATRIX NO <   >
LIMIT VALUE,EU <            >            LIMIT VALUE,VOLTS<            >
OP LIMITS:   ID        LOW        HIGH
             1       <      >    <      >
             2       <      >    <      >
             3       <      >    <      >
             4       <      >    <      >
             5       <      >    <      >
```

Figure 3-20  MCC and C&W Display

### 3.1.21 Measurement Commonality Diagnostic Query Display

This display, Figure 3-21, is required by the Flight Operations Directorate for retrieval only.

The Flight Number/Vehicle Configuration Number and one to ten (10) M/S IDs are always qualifiers when using this form.

| Heading | Data Element |
|---|---|
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| MEAS NO | Measurement/Stimulus Identifier |
| OPERATIONAL TITLE | Nomenclature, Operational |
| NAME | Signal Conditioner (#1) Name |
| CARD/CH | Signal Conditioner Card and Channel |
| NAME | BTU Name |
| CARD LOC | BTU Card Location |
| CHAN NO | BTU Channel Number |

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A/C< >  MMDBS-MEASUREMENT COMMONALITY DIAGNOSTIC  PAGE 01 OF 01
FLT/VCNK  >  DATE

| | MEAS NO | OPERATIONAL TITLE | *SIGNAL COND* NAME | CARD/CH | * NAME | MDM CARD LOC | * CHAN NO |
|---|---|---|---|---|---|---|---|
| 1 | < > | | | | | | |
| 2 | < > | | | | | | |
| 3 | < > | | | | | | |
| 4 | < > | | | | | | |
| 5 | < > | | | | | | |
| 6 | < > | | | | | | |
| 7 | < > | | | | | | |
| 8 | < > | | | | | | |
| 9 | < > | | | | | | |
| 10 | < > | | | | | | |

Figure 3-21 Measurement Commonality Diagnostic Query Display

### 3.1.22 Signal Conditioner Assignments Query Display

This display, Figure 3-22, is required by the Flight Operations Directorate for retrieval only. It will be implemented using the Programmers' Report Capability (ref. 3.2.48).

The Flight Number/Vehicle Configuration Number and Signal Conditioner Name are always qualifiers when using this form. Ten (10) M/S IDs and associated data will be displayed on one page.

| Heading | Data Element |
|---|---|
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| NAME | Signal Conditioner Name |
| MEAS NO | Measurement/Stimulus Identifier |
| C/D | Operational/Development Application |
| CARD/CHAN | Signal Conditioner Card and Channel |
| INPUT | Signal Conditioner Input Plug & Pin |
| OUTPUT | Signal Conditioner Output Plug & Pin |
| MDM NAME | BIU Name |

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A/C< >  MMDBS - S/C ASSIGNMENTS QUERY  PAGE  OF
FLT/VCN<  > S/C NAME<  >  DATE

| MEAS NO | O/D | CARD/ CHAN | * SIGNAL CONDITIONER PLUG & PIN INPUT | OUTPUT * | MDM NAME |
|---|---|---|---|---|---|

Figure 3-22 Signal Conditioner Assignments Query Display

### 3.1.23 MDM Assignments Query Display

This display, Figure 3-23, is required by the Flight Operational Directorate for retrieval only. It will be implemented using the Programmers' Report Capability (ref. 3.2.48).

The Flight Number/Vehicle Configuration Number and BTU Name are always qualifiers when using this form. Ten (10) M/S IDs and associated data will be displayed on one page.

| Heading | Data Element |
|---|---|
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| MDM NAME | BTU Name |
| MEAS NO | Measurement/Stimulus Identifier |
| CARD LOC | BTU Card Location |
| CARD TYPE | BTU Card Type |
| CHAN NO | BTU Channel Number |
| START BIT | BTU Start Bit Number |
| NO BITS | BTU Number of Bits |
| WORD NO | BTU Word Number |
| PLUG/PIN | BTU Plug and Pin/Subsystem |
| S/C 1 | Signal Conditioner 1 Name |
| S/C 2 | Signal Conditioner 2 Name |

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A/C< >  MMDBS - MDM ASSIGNMENTS QUERY  PAGE  OF
FLT/VCN<  > MDM NAME<  >  DATE
*  *

| MEAS NO | CARD LOC | CARD TYPE | CHAN NO | MDM START BIT | NO BITS | WORD NO | PLUG/PIN | S/C 1 | S/C 2 |
|---|---|---|---|---|---|---|---|---|---|

Figure 3-23 MDM Assignments Query Display

### 3.1.24 M/S ID ODRC Product Assignments Query Display

All requirements for the implementation of ODRC have been cancelled per CPR request.

This display, Figure 3-24, is required by DSAD Institutional Data Systems Division for retrieval only.

One to eighteen (18) M/S IDs are always qualifiers when using this form.

Constraint:

Only the first ten (10) group IDs will be displayed for an M/S ID.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| GROUP | DRC Group ID |

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```
A/C< >          MMDBS - M/S ID ODRC PRODUCT ASSIGNMENTS      PAGE 1 OF 1
                                                             DATE
   M/S ID     GROUP GROUP GROUP GROUP GROUP GROUP GROUP GROUP GROUP GROUP
<             >
<             >
<             >
<             >
<             >
<             >
<             >
<             >

<             >
<             >
<             >
<             >
<             >
<             >
<             >
<             >
<             >
```

Figure 3-24 M/S ID ODRC Product Assignments Query Display

### 3.1.25 M/S ID Format Assignments Query Display

This display, Figure 3-25, is required by the Flight Operations Directorate for retrieval only. It will be implemented using the Programmers' Report Capability (ref. 3.2.48).

The TLM Format Type and from one to ten (10) M/S IDs are always qualifiers when using this form.

Constraint:

A maximum of twelve (12) formats will be displayed for an M/S ID

| Heading | Data Element |
|---|---|
| FRMT TYPE | TLM Format Type |
| MEAS NO | Measurement/Stimulus Identifier |
| FRMT | TLM Format ID |
| ACT S/S | TLM Actual Response Rate |

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A/C< >
FRMT TYPE< >

MMDBS - M/S ID FORMAT ASSIGNMENTS

PAGE 1 OF 1
DATE

| MEAS NO | FRMT | ACT S/S | FRMT | ACT S/S | FRMT | ACT S/S | FRMT | ACT S/S | FRMT | ACT S/S | FRMT | ACT S/S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |
| < > | | | | | | | | | | | | |

Figure 3-25 M/S ID Format Assignments Query Display

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### 3.1.26 FTR/DTO-FTO by M/S ID Query Display

This requirement has not been implemented.

This display, Figure 3-26, is required by SSPO for retrieving all FTR or DTC-FTC information for a given M/S ID.

The M/S ID is always a qualifier when using this form. All FTR IDs in which the M/S ID is used and associated information will be displayed for the M/S ID.

Constraints:

- Only the first six Flight Numbers will be output for each FTR ID.
- The first FTR Data Priority and FTR Required Response Rate values retrieved for an FTR ID will be displayed. The values may/may not be the same for each of the Flight Numbers listed for the FTR ID.

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| NOMENCLATURE | Nomenclature, System |
| FTR ID | FTR ID |
| DAT PRI | FTR Data Priority |
| FTR S/S | FTR Required Response Rate |
| FLIGHT | Flight Number |

```
A/C< >          MMDBS - FTR/DTO-FTO BY M/S ID QUERY          PAGE     OF
MSID <            >                                          DATE
NOMENCLATURE <                                        >

        DAT  FTR
 FTR ID PRI  S/S   FLIGHT   FLIGHT   FLIGHT   FLIGHT   FLIGHT   FLIGHT
```

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Figure 3-26 FTR/DTO-FTO by M/S ID Query Display

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### 3.1.27 Parent Word Query Display

This display, Figure 3-27, is required by POO Integration Division for retrieving Parent Word data. It will be implemented using the Programmers' Report Capability (ref. 3.2.48).

The Parent Word M/S ID and Flight Number/Vehicle Configuration Number are always qualifiers when using this form. From one to sixteen sibling M/S IDs will be listed in sibling M/S ID TLM Actual Start Bit value order if the first sibling M/S ID has a TLM Actual Start Bit value, or sibling M/S ID GPC Software Start Bit value order if the first sibling M/S ID has a GPC Software Start Bit value.

| Heading | Data Element |
|---|---|
| MSID | Parent M/S ID |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| ST BIT | TLM Actual Start Bit/GPC Software Start Bit |
| M/S ID | Measurement/Stimulus Identifier |
| NOMENCLATURE | Nomenclature, System |
| LNTH | Data Length |

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```
A/C< >                MMDBS - PARENT WORD QUERY                    PAGE     OF
MSID<              > FLT/VCN<          >                           DATE

  ST
  BIT        M/S ID                          NOMENCLATURE                  LNTH
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
<   >    <          >      <                                      >    <   >
```

Figure 3-27  Parent Word Query Display

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### 3.1.28 Status by Group ID Query Display

This requirement has not been implemented.

This display, Figure 3-28, is used to retrieve status information for a particular group.

The Flight Number/Vehicle Configuration Number, Status Group ID, and "required date" ranges are always qualifiers when using this form. A maximum of sixteen (16) Status Change Document Numbers will be displayed on one page.

Constraint:

The Status Change Document Numbers selected for output will have the Status Group ID assigned and a Status Required Implementation Date for the Group ID within the date range entered by the user.

| Heading | Data Element |
|---|---|
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| GROUP ID | Status Group ID |
| DATE RANGE | Status Required Implementation Date |
| CHNG DOC NO | Status Change Document Number |
| REV NO | Status CDOC Revision Number |
| DATE REQUIRED | Status Required Implementation Date |
| DATE IMPLEMENTED | Status Implementation Date |

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```
A/C< >              MMDBS - STATUS BY GROUP ID QUERY      PAGE     OF
FLT/VCN<            > GROUP ID<          >                DATE
DATE RANGE - FROM<          > TO<          >

CHNG DOC NO.    REV NO       DATE REQUIRED      DATE IMPLEMENTED
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
<        >      < >          <          >       <          >
```

Figure 3-28 Status by Group ID Query Display

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### 3.1.29 Change M/S ID

This display, Figure 3-29, is required by POO Integration Division to change one M/S ID to another. Only the number will change; all attached data will remain the same. The change is only applicable to the M/S ID related area of the data base. (i.e., only the top key changes; the user must change Parent, Related, etc.)

CDOC is always a qualifier when using this form. The first Old M/S ID will be used for the CDOC search on update and retrieval.

| Heading | Data Element |
|---|---|
| CDOC | Status Change Document Number |
| M/S ID | Measurement/Stimulus Identifier |

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```
R/C< >
(DAC<         >        MMDBS - CHANGE M/S ID
                                                                PAGE 1 OF 1
                                                                DATE
 OLD M/S ID          NEW M/S ID          OLD M/S ID          NEW M/S ID
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
<          >        <          >        <          >        <          >
```

Figure 3-29 - Change M/S ID Display

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### 3.1.30 Flight Assignments Display

This display, Figure 3-30, is required by the POO Integration Division to define a Flight Number in terms of Vehicle Configuration Numbers.

The Flight Number is always a qualifier when using this form. 'FIRST' or 'NEXT' may be entered for a Flight Number when requesting the retrieval of the first flight in the data base or the next flight. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Constraints:

- A Flight Number must always have at least one Vehicle Configuration Number.
- A retrieve should be made prior to an update since there will be complete replacement of the VCNs, deleted values omitted.
- A VCN deleted from a flight via this form will not delete the VCN and its related data from the flight throughout the system; i.e., M/S IDs which were previously valid for a flight in a flight dependent functional area may no longer be valid, but they will remain in the system as part of the flight for the functional area. (See Vehicle Deletion Program, Section 3.2.43.)

| Heading | Data Element |
|---|---|
| FLT/FIRST/NEXT | Flight Number |
| VCN | Vehicle Configuration Number |

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```
A/C< >              MMDBS - FLIGHT ASSIGNMENTS                PAGE 1 OF 1
                                                              DATE
FLT/FIRST/NEXT <          >
      VCN          VCN          VCN          VCN          VCN
 1 <          > <          > <          > <          > <          >
 6 <          > <          > <          > <          > <          >
11 <          > <          > <          > <          > <          >
16 <          > <          > <          > <          > <          >
21 <          > <          > <          > <          > <          >
26 <          > <          > <          > <          > <          >
```

Figure 3-30 Flight Assignments Display

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### 3.1.31 Standard Calibration Display

This display, Figure 3-31, is required by POO Integration Division to add and update standard calibration data within the MMDBS.

Calibration Curve Type is the qualifier for this form. New Curve Types may be added to the system and data associated with the Curve Type may be updated but the Curve Type itself may only be deleted by the Standard Cal Deletion Program (section 3.2.51).

| Heading | Data Element |
|---|---|
| CRV TYP | Calibration Curve Type |
| CDOC | Status Change Document Number |
| ACC | Calibration Accuracy |
| DEG OF CURVE | Calibration Degree of Curve |
| DATA TOLERANCE | Calibration Data Tolerance |
| DATA PRS | Calibration Number of Data Pairs |
| UNITS | Calibration Units (1st 8 characters of MSB) |
| A0 | Calibration Poly. Coeff. A0, Intercept |
| LO | Cal. Low Valid Data Pt. |
| X1 | Cal. Ind. Composite Data Pt. 01 |
| Y1 | Cal. Dep. Composite Data Pt. 01 |
| A1 | Calibration Poly. Coeff. A1 Curve Order 1 |
| 10 | Cal. Valid Data Pt. 10 Pct. |
| X2 | Cal. Ind. Composite Data Pt. 02 |
| Y2 | Cal. Dep. Composite Data Pt. 02 |
| A2 | Calibration Poly. Coeff. A2 Curve Order 2 |

| HEADING | DATA ELEMENT |
|---|---|
| 20 | Cal. Valid Data Pt. 20 Pct. |
| X3 | Cal. Ind. Composite Data Pt. 03 |
| Y3 | Cal. Dep. Composite Data Pt. 03 |
| A3 | Calibration Poly. Coeff. A3 Curve Order 3 |
| 30 | Cal. Valid Data Pt. 30 Pct. |
| X4 | Cal. Ind. Composite Data Pt. 04 |
| Y4 | Cal. Dep. Composite Data Pt. 04 |
| A4 | Calibration Poly. Coeff. A4 Curve Order 4 |
| 40 | Cal. Valid Data Pt. 40 Pct. |
| X5 | Cal. Ind. Composite Data Pt. 05 |
| Y5 | Cal. Dep. Compssite Data Pt. 05 |
| A5 | Calibration Poly. Coeff. A5 Curve Order 5 |
| 50 | Cal. Valid Data Pt. 50 Pct. |
| X6 | Cal. Ind. Composite Data Pt. 06 |
| Y6 | Cal. Dep. Composite Data Pt. 06 |
| 60 | Cal. Valid Data Pt. 60 Pct. |
| X7 | Cal. Ind. Composite Data Pt. 07 |
| Y7 | Cal. Dep. Composite Data Pt. 07 |
| LOW IND VAR | Cal. Low Independent Variable |
| 70 | Cal. Valid Data Pt. 70 Pct. |
| X8 | Cal. Ind. Composite Data Pt. 08 |
| Y8 | Cal. Dep. Composite Data Pt. 08 |
| 80 | Cal. Valid Data Pt. 80 Pct. |
| X9 | Cal. Ind. Composite Data Pt. 09 |
| Y9 | Cal. Dep. Composite Data Pt. 09 |
| 90 | Cal. Valid Data Pt. 90 Pct. |
| X10 | Cal. Ind. Composite Data Pt. 10 |
| Y10 | Cal. Dep. Composite Data Pt. 10 |
| HIGH IND VAR | Cal. High Independent Variable |



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| HEADING | DATA ELEMENT |
|---|---|
| HI | Cal. High Valid Data Pt. |
| X11 | Cal. Ind. Composite Data Pt. 11 |
| Y11 | Cal. Dep. Composite Data Pt. 11 |

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```
A/C< >              MMDBS-STANDARD CALS                                  DATE

CRV TYP<       > CDOC<         >
ACC<     >       DEG OF CURVE< >          DATA TOLERANCE<          >
DATA PRS<    > UNITS<         >
                          VALID DATA PTS
A0<                >       LO<          >     X1<          >   Y1<          >
A1<                >       10<          >     X2<          >   Y2<          >
A2<                >       20<          >     X3<          >   Y3<          >
A3<                >       30<          >     X4<          >   Y4<          >
A4<                >       40<          >     X5<          >   Y5<          >
A5<                >       50<          >     X6<          >   Y6<          >
LOW IND VAR                60<          >     X7<          >   Y7<          >
  <       >                70<          >     X8<          >   Y8<          >
                           80<          >     X9<          >   Y9<          >
HIGH IND VAR               90<          >    X10<          >  Y10<          >
  <       >                HI<          >    X11<          >  Y11<          >
```

Figure 3-31 Standard Calibration Display

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### 3.1.32 PCM MU Display

This display, Figure 3-32, is required by E&D/ASED for updating the PCM data.

The M/S ID and VCN(s) are qualifiers when using this form. The VCN must be valid in the system. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base, or an M/S ID - VCN combination which is not valid. If this occurs, a message will indicate the error condition and note "update accepted". Flight Number may only be used as a qualifier for retrieval of approved data. Action codes which trigger the requested operation will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 32 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| FLT/VCN | Flight Number/Vehicle Configuration Number |
| ACT FET CMD | PCM MU Actual Fetch Command |
| ACT RAM ADR | PCM MU Actual Data RAM Address |
| FET CMD ADR | PCM MU Fetch Command Address |
| PRED FET CMD | PCM MU Predefined Fetch Command |
| PRED RAM ADR | PCM MU Predefined Data RAM Address |

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```
A/C< >                    MMDBS - PCM MU                          PAGE 1 OF 1
MSID<            > CDOC<          >                               DATE
FLT/VCN<          > <          > <          > <          > <          >

ACT FET CMD<     >  ACT RAM ADR<     >  FET CMD ADR<     >
PRED FET CMD<     > PRED RAM ADR<     >
```

Figure 3-32 PCM MU Display

### 3.1.33 Simulator Display

This display, Figure 3-33, is required by FOD/CTPD for updating and retrieving simulator data.

The M/S ID is always a qualifier when using this form. The CDOC is an additional qualifier when referencing the CDOC file. The CDOC file may be updated using an M/S ID which has not been added to the approved data base. Action codes which trigger the requested information will be defined in the MMDBS Users Guide.

Display 41 (ref. 3.1.41) may be used in conjunction with Display 33 to implement identical changes of M/S ID related data to more than one M/S ID concurrently.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| CDOC | Status Change Document Number |
| REQUIREMENT | Simulator Requirement |
| VALUE STATIC | Simulator Value, Static |

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```
A/C< >                    MMDBS - SIMULATOR                    PAGE 1 OF 1
MSID<          > CDOC<          >                              DATE

REQUIREMENT< >          VALUE STATIC<          >
```

Figure 3-33 Simulator Display

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### 3.1.34 VCN Assignments Display

This display, Figure 3-34, is required by the POO Integration Division to define the valid Vehicle Configuration Numbers (VCN) by Major Element ID.

The Major Element ID and from 1 to 60 VCNs are always qualifiers when using this form. Action codes which trigger the requested information will be in the MMDBS Users Guide.

Constraints:

A VCN may not be deleted via this form. (See Vehicle Configuration Deletion Program Section 3.2.43.

| Heading | Data Element |
|---|---|
| MAJOR ELEMENT | Major Element ID |
| VCN | Vehicle Configuration Number |

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A/C< > MMDBS - VCN ASSIGNMENTS PAGE 1 OF 1
DATE

MAJOR ELEMENT < >

| | VCN | VCN | VCN | VCN | VCN | VCN |
|---|---|---|---|---|---|---|
| 01 | | | | | | |
| 07 | | | | | | |
| 13 | | | | | | |
| 19 | | | | | | |
| 25 | | | | | | |
| 31 | | | | | | |
| 37 | | | | | | |
| 43 | | | | | | |
| 49 | | | | | | |
| 55 | | | | | | |

Figure 3-34 VCN Assignments Display

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### 3.1.35 TLM Actual Display

This display, Figure 3-35, is required by the Program Operations Office (POO) to update or retrieve TLM actual data.

The TLM Format ID, Flight Number, and up to fifteen (15) M/S IDs are always qualifiers when using this form. The CDOC is an additional qualifier when referencing the CDOC File. The CDOC file may be updated using a TLM Format ID and an M/S ID which have not been added to the approved data base. If this occurs, a message will be displayed indicating M/S ID invalid, but update accepted. To retrieve data from the CDOC file, only the first M/S ID (from the list of M/S IDs on the form) is required. Action codes which trigger the requested information will be in the MMDB Users Guide.

Constraints:

- The TLM Format ID must exist in the data base except when updating the CDOC file.
- The M/S IDs must exist for the TLM Format ID entered except when updating the CDOC file.
- The Flight must exist for the TLM Format ID except when updating the CDOC file.
- If identical qualifiers appear on more than one CDOC record, only the first CDOC record will be retrieved.

| Heading | Data Element |
|---|---|
| FRMT ID | TLM Format ID |
| FLT | Flight Number |
| CDOC | Status Change Document Number |

| Heading | Data Element |
|---|---|
| MSID | Measurement/Stimulus Identifier |
| T DLY | TLM Time Delay |
| ACT S/S | TLM Actual Response Rate |
| 1ST WD | TLM First Word |
| 1ST FR | TLM First Frame |
| H/W (DLNK) | TLM Most Significant Half Word |

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```
A/C< >                    MMDBS TLM ACTUAL DISPLAY                    PAGE 1 OF 1
PRMT ID<     > FLT<          > CDOC<        >                         DATE

    MSID            T DLY        ACT S/S      1ST WD     1ST FR   H/W (DLNK)
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
<          >      <     >      <     >      <     >      <     >      <     >
```

Figure 3-35 TLM Actual Display

### 3.1.36 CDOC Query Display

This display is required by the Program Operations Office to retrieve data from a particular CDOC File. The CDOC is the only qualifier. The action codes will be F or N, i.e., retrieve and display the first occurrence on the CDOC file, or the next occurrence on the CDOC file respectively. Data will be displayed as input on the appropriate form. No updating of the CDOC file will be permitted utilizing this form.

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3.1.37

Reserved for future use.

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Reserved for future use.

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3.1.39

Reserved for future use.

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### 3.1.40 Top Key Element Delete

This display, Figure 3-40, is required by POO Integration Division to mark top key elments for deletion.

Form 40 is a general purpose "delete" form. That is, it may be used to delete any of the following top key elements:

1. M/S ID
2. CRT PAGE ID
3. TLM FORMAT ID (DOWNLIST/DOWNLINK)
4. FTR ID
5. BTU NAME (MDM PRCM)
6. DSM NUMBER

Appropriate action codes to be used with this form may be found in the MMDBS User's Guide. The top key element to be addressed is indicated by placing an "X" next to the appropriate indicator; only one top key element may be so indicated for each transaction.

The CDOC, top key element indicator, and first key value, are required.

| Heading | Data Element |
|---|---|
| A/C | Action Code |
| CDOC | Status Change Document Number |
| MSID | M/S ID Top Key Element Indicator |
| CRT | CRT Page ID Top Key Element Indicator |



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| Heading | Data Element |
| --- | --- |
| FMT | TLM Format ID Top Key Element Indicator |
| FTR | FTR ID Top Key Element Indicator |
| BTU | BTU Name Top Key Element Indicator |
| DSM | DSM Number Top Key Element Indicator |
| KEY VALUES | Value of Top Key Element to be deleted |

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```
A/C<   >                MMDBS - TOP LEVEL DELETE                PAGE 1 OF 1
CDOC<          >                                                DATE
MSIB< > CRT< > FMT< > FTR< > BTU< > DSM< >

 KEY VALUES
<             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
<             > <             > <             > <             > <             >
```

Figure 3-40 Top Key Element Delete

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### 3.1.41 M/S IDs for Change Documents

This display, Figure 3-41, is required by POO Integration Division to implement identical changes of M/S ID related data, via CDOC, to a group of M/S IDs.

The CDOC and the first M/S ID are always required when using this form. A list of up to seventy-six (76) M/S IDs may be entered on the form. The appropriate action codes will be defined in the MMDBS User's Guide. Changes to the CDOC record may be made in the normal manner using the CDOC name and the first M/S ID as qualifiers.

Display 41 may be used only with M/S ID related data forms (i.e., forms 1, 2, 3, 4, 6, 7, 19, 20, 32, and 33). The action codes on these forms that may be used in conjunction with form 41 are (U)pdates, (A)dds, and (D)eletes of M/S ID related data. Other data forms, that do not involve M/S ID related data, may be entered on the same CDOC file and these forms will not be affected by form 41.

The M/S IDs entered on form 41 will be changed by all forms that appear on the CDOC file after the record for form 41 on the CDOC file. The first M/S ID entered on form 41 will be the M/S ID qualifier on all following M/S ID related data forms. Whenever the transaction record qualifier does not match the Form 41 qualifier, single form updates will be processed, ignoring the previous Form 41, until the next occurrence of a Form 41 record.

For example, to (U)pdate three data elements using form 6, four data elements using form 2 and one data element

using form 20 for a list of seventy-six (76) M/S IDs, the following steps would be taken to create a CDOC.

Step 1 - Request form 41 to enter all M/S IDs to be updated.

Step 2 - Request form 6 and enter appropriate updates to the 3 data elements.

Step 3 - Request form 2 and enter appropriate updates to the 4 data elements.

Step 4 - Request form 20 and enter appropriate update to the 1 data element.

All of the updates on the three forms would be applied to all seventy-six (76) M/S IDs entered on form 41.

A maximum of two form 41's may be entered consecutively. These M/S IDs (up to 152) will be changed by all M/S ID related data forms that occur before the next form 41, or a form where the M/S ID qualifer does not match the Form 41 qualifier. Many sets of data may be on the same CDOC (i.e., form 41, its change forms, form 41, its change forms, etc.).

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```
A/C< >          MMDBS - MSIDS FOR CHANGE DOCUMENTS                PAGE 1 OF 1
CDOC<        >                                                    DATE
MSID<           >

    MSID          MSID          MSID          MSID          MSID
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
<         >   <         >   <         >   <         >   <         >
```

**Figure 3-41** - M/S IDs for Change Documents

## 3.2 BATCH INPUT/OUTPUT

The following sections list the batch reports which are to be produced by the system. Each report is described in terms of report input requirements, which are to be entered by the user, and report output requirements. A format for each report is given.

All batch reports will reflect the date the report was produced and will have page numbers. The report formats indicate the report headings required. The figures depicting report headings are to show relative positioning and content only. The narrative description of the report shall be used to define inclusive column positions for the data. The user requesting a batch report can specify the output medium - paper or microfiche.

The first page of each batch output listing will be a summary of user input data and an error report. The second page will contain Status Cycle Numbers for the configuration specified (or for each configuration in the flight if Flight Number is given) for each Status Group ID. The order - MML, CAL, MDM, FDM, SENSIG, DISPCON, GPCSW, PCM, OPCWLT, SIM, FMTLKREQ, FMTLKAC, FMTLTRQ, FMTLTAC, SM, SCM, DFC, CRT, UPLNK, FTR - will be followed on all listings.

In describing input requirements, the term 'blank for all' means, if the user does not enter a value, the field is to remain blank and all values which exist for the data element will be used for data selection. The sort order of the data is given by listing the primary sort data element followed by the secondary sorts, processed in the order listed.



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### 3.2.1 Master Measurement List

This report, Figure 3-42, is required by the POO - Integration Division to levy Level II/Level III requirements.

**Input Requirements**

- Flight Number/Vehicle Configuration Number.
- Major Element ID (blank for all Major Elements).
- Operational/Development Application (blank for all).
- Telemetry Link ID (max. of five or blank for all).
- Subsystem ID (max. of five or blank for all).
- MML Date (MM/DD/YY)

**Output Requirements**

- Paging: (1) Control breaks at each subsystem ID and Major Element.
  (2) Page numbers re-cycle at each control break.
- Sort: M/S ID
- The report is to be a double line report.
- The Action Code will indicate action/nonaction on a particular M/S ID and associated data since the MML Date entered. Any action taken (add, change, delete) will be indicated by printing the Action Code (A, C, D,) processed against only the MML fields of the M/S ID - VCN. No activity will be indicated by blanks.

| Delta Column | Significance |
|---|---|
| blank | No update activities. |
| A | M/S ID has been approved. |
| C | Update activities to M/S ID, such as changes or deletions of data element values, have occurred. |
| D | M/S ID and its associated M/S ID related data elements have been |

completely removed from the VCN.

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## Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1 | DLT | (Delta Column) |
| 2-11 | MEAS. ID | Measurement/Stimulus Identifier |
| 14-47 | TITLE | Nomenclature, System |
| 49-53 | LOW | Data Range Low |
| 55-59 | HIGH | Data Range High |
| 61-68 | UNITS | Data Range Units |
| 70-72 | RQD ACC | Accuracy, Required System |
| 74-77 | RESP RATE | Required Response Rate |
| 79 | O/D | Operational/Development Application |
| 81-82 | CAT | Measurement Purpose Category |
| 84 | F/G | Flight/Ground |
| 86 | T/L | Telemetry Link ID |
| 88-90 | RCD EFF | Tape Recorder ID 1, 2, 3 |
| 92 | SMU | System Management Use |
| 94 | CRT | CRT Applicability |
| 96-97 | DSP EFF | Dedicated Display |
| 99 | CWD | Caution & Warning Display |
| 101 | RF | RF Uplink |
| 103 | CCD | Crew Control device |
| 105 | LCC | Launch Commit Criteria |
| 107 | KLO | KSC State Low |
| 109 | KHI | KSC State High |
| 111 | TYP | Switch Signal Type |
| 113 | SUP | Sensor - S/C Supplier |
| 115 | SCN | Switch Scan |
| 117-118 | PSW | Parallel Switch Control |
| 120-123 | DATA TYPE | Data Type |
| 125-132 | VCN | Vehicle Configuration Number (VCN) |

| Col. | Heading | Data Element |
|---|---|---|
| | | Line 2 |
| 14-23 | RESP MSID | RESPONSE M/S ID |
| 25-34 | PARENT WRD | Parent M/S ID |
| 36-45 | VOTING LOG | Voting Logic M/S ID |
| 47-56 | RELA MSID | RELATED M/S ID |
| 58-107 | REMARKS | Remarks |

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```
FLT/VCN                                  MASTER MEASUREMENT DATA BASE SYSTEM                                  PREVIOUS DATE
                                                  MASTER MEASUREMENT LIST                                     CURRENT DATE
                                                                                                              PAGE
D                                            *   DATA RANGE    *          O C  F T     S C DE C   C L K K T S S P
L                                                                RQD RESP / A  / / PCD M R SF W R C C L H Y U C S DATA
T   M/S ID   TITLE                           LOW   HIGH UNITS    ACC RATE D T  G L EFF U T PF D F D C O I P P N W TYPE VCN
             ---------------------------------------------------------------------------------------------------------------
             RESP MSID  PARENT WRD VOTING LOG RELA MSID  REMARKS
```

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Figure 3-42  Master Measurement List

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### 3.2.2 Instrumentation Parts and Component List

This report, Figures 3-43 and 3-44, is required by the E&D Control Systems Development Division to provide information for instrumentation hardware.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Major Element (blank for all Major Elements).
- Operational/Development Application (blank for all).
- Subsystem ID (maximum of five or blank for all).
- Sort Option:

| Code | Sort Order |
|---|---|
| 1 | M/S ID. |
| 2 | Sensor Part Number. |
| 3 | Sensor Package Reference Designator. |

Output Requirements

- The Calibration Curve Type value will be selected for output on this report based on the following criteria: Select the Calibration Curve Type for the first curve retrieved for the Calibration Type. Calibration Types will be retrieved in the following order: 01,03,04,02. The first Calibration Type to exist will be selected. If the M/S ID does not have a Calibration Type, the value of the Calibration Curve Type will be blank.
- Paging: (1) Page breaks at each Subsystem and Major Element within O/D sections.
  (2) Page numbers will re-cycle at each Major Element.
- The report will be a two-page format with multiple line entries for each format. If more than one set of device data is to be output, it will appear on lines 3-6.

- The report is to be output in the following order: Page 1 - Part 1, Page 2 - Part 2, Page 3 - Part 1, Page 4 - Part 2, etc.
- The M/S IDs appearing on each page of Part 2 will appear on the corresponding page of Part 1.

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Page 1
Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | TITLE | Nomenclature, System |
| 47-56 | LOW HIGH | Data Range Low, Data Range High |
| 58-65 | UNITS | Data Range Units |
| 67-69 | ACC RQD | Accuracy, Required System |
| 72-75 | RESP RATE | Required Response Rate |
| 77-91 | PART NUMBER | Sensor Part Number |
| 97-98 | RSP | Sensor Responsibility |
| 100 | SUP | Sensor-S/C Supplier |
| 102-116 | PART NUMBER 1 | Signal Conditioner 1 Part Number |
| 118-119 | RP | Signal Conditioner 1 Responsibility |
| 121-131 | DRWNG NO 1 | Signal Conditioner 1 Installation Drawing # |

Page 1
Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 12-38 | COORDINATES | Sensor Location Coordinates |
| 40-58 | COORDINATE DESCRIPTOR | Sensor Location Descriptor |
| 70 | T/L | Telemetry Link ID |
| 77-87 | DRAWING NO. | Sensor Installation Drawing Number |
| 89-100 | REF. DEG. | Sensor Package Reference Designator |
| 102-116 | PART | Signal Conditioner 2 Part Number |

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| Col. | Heading | Data Element |
|---|---|---|
| | NUMBER 2 | |
| 118-119 | RP | Signal Conditioner 2 Responsibility |
| 121-131 | DRWNG NO 2 | Signal Conditioner 2 Installation Drawing # |

Page 2
Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-23 | REF. DEG. 1 | Signal Conditioner 1 Package Reference Designator |
| 25-31 | CARD 1 | Signal Conditioner 1 Card and Channel |
| 33-50 | INPUT PLUG & PIN 1 | Signal Conditioner 1 Input Plug & Pin |
| 52-66 | OUTPUT P&P1 | Signal Conditioner 1 Output Plug & Pin |
| 68-79 | D/C REF.DEG. | Device Reference Designator (1,2,3) |
| 81-92 | MDM REF.DEG. | BTU Reference Designator |
| 94-104 | MDM INPUT | BTU Plug & Pin/Subsystem |
| 106-109 | MDM/FDM NAME | BTU Name/FDM Name |
| 111-114 | MDM TRNS RATE | BTU Transfer Rate |
| 116-117 | MCRD LOC | BTU Card Location |
| 118-119 | MDM CHN | BTU Channel Number |
| 121-122 | MST BIT | BTU Start Bit Number |
| 123 | TYPE | BTU Signal Type |
| 125 | TR1 | Tape Recorder ID 1 |
| 126-127 | TRK | Tape Recorder Track 1 |
| 129 | TR2 | Tape Recorder ID 2 |

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| Col. | Heading | Data Element |
|---|---|---|
| 130-131 | TRK | Tape Recorder Track 2 |

Page 2
Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 12-23 | REF.DEG.2 | Signal Conditioner 2 Package Reference Designator |
| 25-31 | CARD 2 | Signal Conditioner 2 Card and Channel |
| 33-50 | INPUT PLUG & PIN 2 | Signal Conditioner 2 Input Plug & Pin |
| 52-66 | OUTPUT P&P2 | Signal Conditioner 2 Output Plug & Pin |
| 68-79 | D/C INPUT | Device Input Plug & Pin (1,2,3) |
| 81-92 | FDM REF.DEG. | FDM Reference Designator |
| 94-103 | FDM INPUT | FDM Input Plug and Pin |
| 106-110 | CH+CD | FDM Package and Channel Code |
| 112-114 | FDM FRQ | FDM Channel Center Frequency |
| 116 | FSP | FDM Channel Frequency Response |
| 118-119 | DSP EFF | Dedicated Display |
| 121-122 | WRD NO. | BTU Word Number |
| 124-125 | MIA ADD | BTU MIA Address |
| 126 | CAL | Calibration Curve Type ('A' if A, 'S' otherwise) (Use Curve Type of first series for Cal. Types in the following order: 01,03,04,02) |
| 128-131 | RAM ADD. | PCM MU Actual Data RAM Address |

FLT/VCN
O/D

MASTER MEASUREMENT DATA BASE SYSTEM
INSTRUMENTATION PARTS AND COMPONENTS LIST PART 1

DATE
PAGE

| M/S ID | TITLE | * DATA RANGE * LOW | HIGH | UNITS | ACC REQ | RESP RATE | * SENSOR PART NUMBER | RSP | SUP | * SIGNAL CONDITIONER * PART NUMBER 1 | RP DRWNG NO 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | COORDINATES | COORDINATE DESCRIPTOR | | | T/L | | DRAWING NO. REF. DEG. | | | PART NUMBER 2 | RP DRWNG NO 2 |

Figure 3-43 Instrumentation Parts and Components List - Part 1

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```
FLT/VCN                     MASTER MEASUREMENT DATA BASE SYSTEM                                  DATE
O/D                   INSTRUMENTATION PARTS AND COMPONENTS LIST PART 2                           PAGE

                                                                                      M M    T
      *        S I G N A L   C O N D I T I O N E R        *             MDM/ MDM  CLDC MBY TT  TT
                                                                         FCM TENS ROMH SIP RR  RR
M/S ID  REF. DEG. 1  CARD 1  INPUT PLUG + PIN 1 OUTPUT P + P  1 D/C REF.DEG. MDM REF.DEG. MDM INPUT  NAME RATE DC N TTE 1K  2K
------------------------------------------------------------------------------------------------------------------------
        REF. DEG. 2  CARD 2  INPUT PLUG + PIN 2 OUTPUT P + P  2 D/C INPUT    FDM REF.DEG. FDM INPUT  CH+CD FDM R DE WN MAC RAM
                                                                                                          FRQ S SP RO IDA ADD
                                                                                                              P PP D. ADL
```

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Figure 3-44 Instrumentation Parts and Components List - Part 2

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### 3.2.3 GPC Software Input/Output Report

These reports, Figures 3-45 and 3-46, are required by E&D/ASED for correlating hardware inputs to GPC Software, or GPC Software output to hardware systems.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Report Option

Output Requirements

- Sort: M/S ID.
- Continuous page numbering.

GPC Software Input Report (Figure 3-45)

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-21 | SIGNAL MNEMONIC | GPC Software Signal Mnemonic |
| 23-56 | NOMENCLATURE | Nomenclature, System |
| 58-104 | SOURCE | GPC Software Source Module |
| 106-109 | DATA TYPE | GPC Software Downlist Data Type (If it does not exist, use Data Type) |
| 111-114 | TRNS RATE | BTU Transfer Rate |
| 116-123 | ENG UNITS | Data Range Units |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 58-86 | SOFT RATE | GPC Software Required Update Rate |

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| M/S ID | SIGNAL MNEMONIC | NOMENCLATURE | SOURCE | DATA TYPE | TRNS RATE | ENG UNITS |
|---|---|---|---|---|---|---|
| | | | SOFT RATE | | | |

Figure 3-45 GPC Software Input Report



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GPC Software Output Report (Figure 3-46)

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-21 | SIGNAL MNEMONIC | GPC Software Signal Mnemonic |
| 23-56 | TITLE | Nomenclature, System |
| 58-104 | DESTINATION | GPC Software Destination Module |
| 106 | D/L | GPC Software Downlist Available |
| 108-117 | LOW HIGH | Data Range Low, Data Range High |
| 119-126 | UNITS | Data Range Units |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 58-86 | SOFT RATE | GPC Software Required Update Rate |

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| M/S ID | SIGNAL MNEMONIC | TITLE | DESTINATION | D / L | * LOW | DATA RANGE HIGH | UNITS | * |
|---|---|---|---|---|---|---|---|---|
| | | | SOFT RATE | | | | | |

Figure 3-46 GPC Software Output Report

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### 3.2.5 Display and Recorder Summary

This requirement has not been implemented.

This report, Figure 3-47, is required by the E&D Control Systems to provide a count of unique M/S IDs assigned.

<u>Input Requirements</u>

- Flight Number/Vehicle Configuration Number.
- Major Element ID (blank for all Major Elements).
- Operational/Development Application (blank for all).

<u>Output Requiremets</u>

- Sort: Subsystem ID.
- Paging: (1) Page breaks will appear at the beginning of each Major Element within O/D sections.
  (2) Page numbers will re-cycle at each Major Element.
- Computations: (1) Count, by Subsystem ID, the M/S IDs having a Master Events Controller value and enter the total under the appropriate heading.
  (2) Count, by Subsystem ID, the M/S IDs having a System Management Use value and enter the total under the appropriate heading.
  (3) Count, by Subsystem ID, the M/S IDs having a Caution and Warning value and enter the total under the appropriate heading.
  (4) Count, by Subsystem ID, the M/S IDs having a CRT applicability value

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and enter the total under the appropriate heading.

(5) Count, by Subsystem ID, the M/S IDs having the Dedicated Display value or Tape Recorder ID value indicated in the heading and enter the subtotal under the appropriate heading.

(6) Sum of all Dedicated Display subtotals per Subsystem ID.

(7) Sum of all Tape Recorder IDs subtotals per Subsystem ID.

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-2 | S/S | Subsystem ID |
| 4 | MEC | Master Events Controller |
| 6 | S/M | System Management Use |
| 8 | C+W | Caution and Warning Display |
| 10 | CRT | CRT Applicability |
| 12-15 | A AURL | Dedicated Display (Aural) |
| 17-20 | M METR | Dedicated Display (Meter) |
| 22-25 | S SMTR | Dedicated Display (Shared Meter) |
| 27-30 | T TALK | Dedicated Display (Talkback) |
| 32-35 | L LGHT | Dedicated Display (Light) |
| 37-40 | W TWHL | Dedicated Display (Thumbwheel) |
| 42-45 | G GAGE | Dedicated Display (Gage) |
| 47-50 | F FLAG | Dedicated Display (Flag) |
| 52-55 | X UNDF | Dedicated Display (Undefined but required) |
| 57-61 | TOTAL | Sum of all Dedicated Displays |
| 64-67 | B BSTR | Tape Rcdr. ID (Booster) |
| 69-72 | D DFI | Tape Rcdr. ID (PCM rcdr. for DFI) |
| 74-77 | M MNTC | Tape Rcdr. ID (Loop & Maintenance) |

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 79-82 | U WB28 | Tape Rcdr. ID (Wideband 128) |
| 84-87 | W WB14 | Tape Rcdr. ID (Wide Band) |
| 89-92 | P P/L | Tape Rcdr. ID (Payload) |
| 94-97 | T TA/C | Tape Rcdr. ID (Trainer Aircraft) |
| 99-102 | A SCA | Tape Rcdr. ID (Shuttle Carrier Aircraft) |
| 104-107 | X UNDF | Tape Rcdr. ID (Undefined but required) |
| 109-113 | TOTAL | Sum of all Tape Recorder ID(s) |

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| S/S | M E C | A / M | S + W | C R T | *-------DISPLAY EFFECTIVITY------* | | | | | | | | | | *---------TAPE RECORDER ID----------* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | A | M | S | T | L | W | G | F | X | | B | D | M | U | W | P | T | A | X | |
| | | | | | AURL | METR | SMTR | TALK | LGHT | TWHL | GAGE | FLAG | UNDF | TOTAL | BSTR | DFI | MNTC | WB28 | WB14 | P/.L | TA/C | SCA | UNDF | TOTAL |

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Figure 3-47 Display and Recorder Summary

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### 3.2.6 Measurement/Stimulus Signal Routing Summary

This report, Figure 3-48, is required by the POO Integration Division to provide a count of unique M/S IDs having the Signal Types indicated.

**Input Requirements**

- Flight Number/Vehicle Configuration Number.
- Major Element ID (blank for all Major Elements).
- Operational/Development Application (blank for all).
- Report Option:
  - 1 Output measurement data only (Measurement Type ID ≠K).
  - 2 Output stimulus data only (Measurement Type ID = K).
  - blank Output measurement and stimulus data.

**Output Requirements**

- Sort: Subsystem ID.
- Paging: Page break at each Major Element within O/D sections.
- Computations:
  - (1) Count, by Subsystem ID, the M/S IDs having the Signal Type value indicated in the heading and enter the subtotal under the appropriate column.
  - (2) Sum of all Signal Type subtotals per Major Element.
  - (3) Sum of all Signal Type subtotals per O/D value.
- Continuous page numbering.

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| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-2 | S/S | Subsystem ID |
| 4-7 | A ANAL | Signal Type (Analog) |
| 9-12 | E EVNT | Signal Type (Discrete Event) |
| 14-17 | D DIGT | Signal Type (Digital Serial) |
| 19-22 | F FREQ | Signal Type (Frequency Modulation) |
| 24-27 | C ANAL | Signal Type (Analog Software) |
| 29-32 | X EVNT | Signal Type (Discrete Event Software) |
| 34-37 | P DIGT | Signal Type (Digital Serial Software) |
| 39-42 | R ANAL | Signal Type (ANALOG RF Uplink) |
| 44-47 | U DISC | Signal Type (Discrete RF Uplink) |
| 49-52 | L DIGT | Signal Type (Digital RF Uplink) |
| 54-57 | G ANAL | Signal Type (Analog GSE) |
| 59-62 | N DISC | Signal Type (Discrete GSE) |
| 64-67 | T DIGT | Signal Type (Digital Serial GSE) |
| 69-72 | H ANAL | Signal Type (Hardwired Analog) |
| 74-77 | W DISC | Signal Type (Hardwired Discrete) |
| 79-82 | V ANAL | Signal Type (SM/Payload Analog) |
| 84-87 | Y EVNT | Signal Type (SM/Payload Event) |
| 89-92 | J DIGT | Signal Type (SM/Payload Digital) |
| 94-97 | M O/D | Signal Type (Ground Test) |
| 99-102 | K F/C | Signal Type (F/C Ground Test) |

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| S | * | S Y S T E M | | | * * | SOFTWARE | | | * * | RF UPLINK | | | * * | GND DECODER* | | | *HRDWIRE* | | | * SM/PAYLOAD | | | * *GR. TEST* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| / | A | E | D | F | C | X | B | R | U | L | G | N | T | H | W | V | Y | J | M | K |
| S | ANAL | EVNT | DIGT | FREQ | ANAL | EVNT | DIGT | ANAL | DISC | DIGT | ANAL | DISC | DIGT | ANAL | DISC | ANAL | EVNT | DIGT | O/D | F/C |

Figure 3-48 Measurement/Stimulus Signal Routing Summary



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### 3.2.7 Measurement Type ID Summary

This report, Figure 3-49, is required by the POO Integration Division to provide a count of unique M/S IDs having the Measurement Type IDs indicated.

**Input Requirements**

- Flight Number/Vehicle Configuration Number.
- Major Element ID (blank for all Major Elements).
- Operational/Development Application (blank for all).

**Output Requirements**

- Sort: Subsystem ID.
- Paging: Page breaks at each Major Element within O/D sections.
- Computations:
  (1) Count, by Subsystem ID, the M/S IDs having a Measurement Type ID value indicated in the heading and enter the subtotal in the appropriate column.
  (2) Sum all Measurement Type ID subtotals per Major Element.
  (3) Sum all Measurement Type ID subtotals per O/D value.
  (5) Count, by Subsystem ID, the M/S IDs having Measurement Type ID = M and a Signal Type = B, D, J, L, or T. Result to be given in Column M.
- Continuous page numbering.

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-2 | S/S | Subsystem ID |
| 4-7 | A ACCL | Meas. Type ID (Acceleration) |

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 9-12 | C CUR | Meas. Type ID (current) |
| 14-17 | D VIB | Meas. Type ID (Vibration) |
| 19-22 | E PWR | Meas. Type ID (Power) |
| 24-27 | G FORC | Meas. Type ID (Force/Stress/Strain) |
| 29-32 | H POS | Meas. Type ID (Position/Attitude) |
| 34-37 | K STIM | Meas. Type ID (Stimulus) and Telemetry Link ID or Tape Recorder ID or Dedicated Display or CRT Applicability exists |
| 39-42 | L VEL | Meas. Type ID (Velocity) |
| 44-47 | M MULT | Meas. Type ID (Multiple) and Signal Type = B, D, J, L, or T |
| 49-52 | P PRES | Meas. Type ID (Pressure) |
| 54-57 | Q QUA | Meas. Type ID (Quantity/Humidity) |
| 59-62 | R RATE | Meas. Type ID (Rate) |
| 64-67 | T TEMP | Meas. Type ID (Temperature) |
| 69-72 | U RAD | Meas. Type ID (Radiation) |
| 74-77 | V VOLT | Meas. Type ID (Voltage) |
| 79-82 | Y ACOU | Meas. Type ID (Acoustics) |
| 84-87 | W TIME | Meas. Type ID (Time) |
| 89-92 | X DISC | Meas. Type ID (Discrete Event) |
| 94-97 | S SWSC | Meas. Type ID (Switch Scan) |
| 99-102 | Z SMON | Meas. Type ID (Stimuli Monitor) |
| 104-108 | TOTAL | Count of all Meas. Type IDs |
| 110-113 | K STIM | Meas. Type ID (Stimulus) |

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| S / S | A ACCL | C CUR | D VIB | E PWR | G FORC | H POS | K STIM | M MULT | I VEL | P PRES | Q QUA | R RATE | T TEMP | U RAD | V VOLT | Y ACOU | W TIME | X DISC | S SWSC | Z SCAN | TOTAL | K STIM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-49 Measurement Type ID Summary

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### 3.2.8 Quantity Count of Components

This report, Figure 3-50, is required by the E&D Control Systems Development Division to confirm that all hardware (flight and spares) has been procured. E&D Tracking and Communication Development Division has a requirement for this report to determine which hardware is available.

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- Sort: (1) First Section in ascending Sensor Part Number order.
  (2) Second Section in ascending Signal Conditioner Part Number order.
- Computations: (1) Count, by Sensor Part Number, the M/S IDs having the indicated Sensor Part Number, Sensor Responsibility, and Sensor S/C Supplier. Result to be given in column QUAN.
  (2) Count, by S/C 1 Part Number, the M/S IDs having the indicated S/C 1 Part Number, S/C 1 Responsibility, and Sensor - S/C Supplier. Result to be given in column QUAN.

(First Section)

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-19 | | (blank) |
| 20-34 | SENSOR PART NO. | Sensor Part Number |
| 36-37 | SEN RSP | Sensor Responsibility |
| 39 | SUP | Sensor-S/C Supplier |
| 41-45 | QUAN. | Quantity of M/S IDs having this sensor part number, responsibility, and supplier |

(Second Section)

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-19 | | (blank) |
| 20-34 | S/C PART NUMBER | Signal Conditioner 1 Part Number |
| 36-37 | S/C RSP | Signal Conditioner 1 Responsibility |
| 39 | SUP | Sensor-S/C Supplier |
| 41-45 | QUAN. | Quantity of M/S IDs having this Signal Conditioner 1 Part Number, responsibility, and supplier. |

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QUANTITY COUNT OF COMPONENTS PAGE

| SENSOR PART NO. | SR ES NP | S U P | QUAN. |
|---|---|---|---|
| . | | | |
| . | | | |
| . | | | |
| S/C PART NUMBER | SR /S CP | S U P | QUAN. |

Figure 3-50 Quantity Count of Components

### 3.2.9 Wideband Channel Loading vs FDM

This report, Figure 3-51, is required by the E&D Tracking and Communication Development Experiments System Division to determine wideband channel routing for FDMs. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Sort Option:

| Code | Processing |
|---|---|
| 1 | Ascending FDM Package and Channel Code. |
| 2 | M/S ID. |

Output Requirements

- Only M/S ID data which have an Operational/Development Application value equal 'D' and an FDM Name will be selected for output.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-12 | FDM REF D | FDM Reference Designator |
| 14-18 | FDM PACK. CH CD | FDM Package and Channel Code |
| 20-29 | M/S ID | Measurement/Stimulus Identifier |
| 31-64 | TITLE | Nomenclature, System |
| 66-75 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 77-84 | DATA RANGE UNITS | Data Range Units |
| 86-88 | RQD ACC | Accuracy, Required System |
| 90-93 | RESP RATE | Required Response Rate |

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| Col. | Heading | Data Element |
|---|---|---|
| 95 | TR1 | Tape Recorder ID 1 |
| 97-98 | TR1 TRK | Tape Recorder Track 1 |
| 100 | TR2 | Tape Recorder ID 2 |
| 102-103 | TR2 TRK | Tape Recorder Track 2 |
| 105-112 | FLT PHAS | Flight Phase, Launch |
| | | Flight Phase, Orbit |
| | | Flight Phase, Entry |
| | | Flight Phase, Aerodynamic Control |
| | | Flight Phase 5 |
| | | Flight Phase 6 |
| | | Flight Phase 7 |
| | | Flight Phase 8 |

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| FDM REF DES | FDM PACK CH CD M/S ID | TITLE | * DATA RANGE LOW | HIGH | UNITS | * RQD RESP ACC | RATE | T B 1 | TT BB 1K | T B 2 | TT RR 2K | FLT | PHAS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-51 Wideband Channel Loading vs FDM



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### 3.2.10 Channel Loading vs MDM

This report, Figure 3-52, is required by the E&D Control Systems Development Division and Tracking and Communication Development Division to determine channel routing for MDMs. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Operational/Development Application (blank for all).

Output Requirements

- Sort: BTU Name, BTU Card Location, BTU Channel Number.
- Paging: (1) Page breaks at each subsystem and Major Element within O/D sections.
  (2) Page numbers re-cycle at each Major Element.

| Col. | Heading | Data Element |
|---|---|---|
| 1-4 | BTU NAME | BTU Name |
| 6-7 | CRD LOC | BTU Card Location |
| 9-10 | CHN NO | BTU Channel Number |
| 12-14 | CRD TYP | BTU Card Type |
| 16-17 | WRD | BTU Word Number |
| 19-20 | ST BIT | BTU Start Bit Number |
| 22-25 | S/S | BTU Transfer Rate |
| 27-50 | BUS NAMES | BTU Data Bus Names |
| 52-53 | MIA ADR | BTU MIA Address |
| 55-65 | INPUT P+P | BTU Plug and Pin/Subsystem |
| 67 | TYP | BTU Signal Type |
| 69-78 | M/S ID | Measurement/Stimulus Identifier |
| 80-113 | TITLE | Nomenclature, System |

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| BTU NAME | CL FO DC | CM HO N | CMD TYP | W R D | SB TI T | S/S | BUS NAMES | MA IC AR | IN | UT | P+P | T Y P | M/S | ID | TITLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-52 Channel Loading vs MDM

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### 3.2.11 DSC Channel Loading

This report, Figure 3-53, is required by the E&D Tracking and Communication Development Division and the E&D Control Systems Development Division to determine whether all signal conditioner cards have been secured and if so, to determine how they are loaded. It provides a means of determining the number of spare cards. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration.
- Operational/Development Application (blank for all).

Output Requirements

- Sort: S/C Package Reference Designator, characters 2, 3, 1, 4, 5, 6 and 7 of S/C Card and Channel.
- Paging: (1) Page breaks will be at each subsystem and Major Element within O/D sections.
  (2) Page numbers re-cycle at each Major Element.

| Col. | Heading | Data Element |
|---|---|---|
| 1-12 | REF. DEG. | Signal Conditioner 1 Package Reference Designator |
| 14-20 | CARD | Signal Conditioner 1 Card and Channel |
| 22-39 | INPUT PLUG AND PIN | Signal Conditioner 1 Input Plug and Pin |
| 41-55 | OUTPUT PLUG + PIN | Signal Conditioner 1 Output Plug and Pin |
| 57-67 | DRAWING NO. | Signal Conditioner 1 Installation Drawing No. |

| Col. | Heading | Data Element |
|---|---|---|
| 69-78 | M/S ID | Measurement/Stimulus Identifier |
| 80-113 | TITLE | Nomenclature, System |
| 114-123 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 125-132 | DATA RANGE UNITS | Data Range Units |

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| * | S I G N A L | C O N D I T I O N E R | | | | * | | | * | DATA RANGE | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REF. DEG. | CARD | INPUT PLUG + PIN | OUTPUT PLUG+PIN | DRAWING NO. | M/S ID | TITLE | | | LOW | HIGH | UNITS |

Figure 3-53 DSC Channel Loading

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### 3.2.12 Tape Recorder Loading by FDM

This report, Figure 3-54, is required by E&D Tracking and Communication Development Division to determine the tape recorder loading.

It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- Only measurements where FDM name exists.
- Sort: Tape Recorder ID, Tape Recorder Track, FDM Package and Channel Code.
- Paging: (1) Page breaks will be at each subsystem and major element.
  (2) Page numbers re-cycle at each Major Element.

| Col. | Heading | Data Element |
|---|---|---|
| 1 | TR1 | Tape Record ID 1 |
| 2-3 | TRK | Tape Tecorder Track 1 |
| 5 | TR2 | Tape Recorder ID 2 |
| 6-7 | TRK | Tape Recorder Track 2 |
| 9 | TR3 | Tape Record ID 3 |
| 10-11 | TRK | Tape Recorder Track 3 |
| 13-17 | FDM PACK. CH CD | FDM Package and Channel Code |
| 19-28 | M/SID | Measurement/Stimulus Identifier |
| 30-63 | TITLE | Nomenclature, System |
| 66-74 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |

| Col. | Heading | Data Element |
|---|---|---|
| 76-83 | DATA RANGE UNITS | Data Range Units |
| 85-87 | RQD ACC | Accuracy, Required System |
| 89-92 | RESP RATE | Required Response Rate |
| 94-101 | FLT PHAS | Flight Phase, Launch |
| | | Flight Phase, Orbit |
| | | Flight Phase, Entry |
| | | Flight Phase, Aerodynamic Control |
| | | Flight Phase 5 |
| | | Flight Phase 6 |
| | | Flight Phase 7 |
| | | Flight Phase 8 |

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| TT RR 1K | TT RR 2K | TT RR 3K | FDM PACK CH CD M/S ID | TITLE | * ICW | DATA RANGE HIGH | UNITS | * RQD ACC | RESP RATE | FLT | PHAS |
|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-54 Tape Recorder Loading by FDM



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### 3.2.13 FTR/DTO-FTO Report

This report, Figure 3-55, is required by the SSPO to provide a means by which the subsystem managers can confirm that all instrumentation is available to satisfy the test.

Input Requirements

- Flight Number
- FTR IDs (maximum 12 or blank for all).
- Sort Option:

| Code | Processing |
|---|---|
| 1 | FTR ID, M/S ID. |
| 2 | M/S ID. |

- If Sort Option 2 is selected, one line will be printed for an M/S ID each time it appears on an FTR. The FTR ID will appear on the right-hand side of the line, instead of in the heading.

Output Requirements

- Paging: Page breaks will occur for each new FTR ID for sort option one.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | MEAS ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-54 | FLT PHAS | Flight Phase, Launch |
| | | Flight Phase, Orbit |
| | | Flight Phase, Entry |
| | | Flight Phase, Aerodynamic Control |
| | | Flight Phase 5 |
| | | Flight Phase 6 |
| | | Flight Phase 7 |

| Col. | Heading | Data Element |
|---|---|---|
| | | Flight Phase 8 |
| 58 | DAT PRI | FTR Data Priority |
| 62-65 | FTR REQ S/S | FTR Required Response Rate |
| 67-76 | LOW HIGH | Data Range Low, Data Range High |
| 78-85 | UNITS | Data Range Units |
| 88-90 | RQD ACC | Accuracy, Required System |

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FTR ID

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| MEAS ID | NOMENCLATURE | FLT PHAS | DAT PRI | FTR REQ S/S | * DATA RANGE * LOW | HIGH | UNITS | RQD ACC |
|---|---|---|---|---|---|---|---|---|

Figure 3-55 FTR/DTO-FTO Report



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### 3.2.14 ODRC Requirements and Assignments

All requirements for the implementation of ODRC have been cancelled per OPR request.

This report, Figure 3-56, is required by DSAD Institutional Data Systems Division to indicate the ODRC requirements and assignments.

Input Requirements

- Flight Number
- DRC Group ID (maximum 5 or blank for all).

Output Requirements

- Sort: DRC Group ID, DRC Line Number.
- Indicate a new group with a line of dashes (-).
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-5 | T/P SCB GROUP | DRC Group ID |
| 8-9 | LINE NO | DRC Line Number |
| 12-21 | MEAS NUMBER | Measurement/Stimulus Identifier |
| 23-56 | MEAS TITLE | Nomenclature, System |
| 59 | TLM SYS | Telemetry Link ID |
| 63-72 | INST RANGE | Data Range Low, Data Range High |
| 74-83 | PLOT RANGE | DRC Plot Range, Low-High |
| 85-87 | B/P LMT | DRC Band/Pass Limits |
| 89-96 | UNIT | Data Range Units |
| 98-101 | S/S | Required Response Rate |

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MASTER MEASUREMENT DATA BASE SYSTEM
OCRC PRODUCT REQUIREMENT AND ASSIGNMENTS

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PAGE

| I/P SCB GROUP | LINE NO | MEAS NUMBER | MEAS TITLE | TLM SYS | INST RANGE | PLOT RANGE | B/P LMT | UNIT | S/S |
|---|---|---|---|---|---|---|---|---|---|

Figure 3-56 OCRC Requirements and Assignments



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### 3.2.15 Operational/Developmental Instrumentation Report

This report, Figure 3-57, is required by the Flight Operation Directorate to provide a means by which a measurement can be tracked from its point of origin to its final destination. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (1 to 5 or blank for all).
- Sort Option:

| Code | Data Selection |
|---|---|
| 1 | M/S ID. |
| 2 | Telemetry Link ID, M/S ID. |

- Print Option:

| Code | Data Selection |
|---|---|
| 1 | Nomenclature, System. |
| 2 | Nomenclature, Operational, flagged by an asterisk. If it does not exist, use Nomenclature, System. |

Output Requirements

- Paging: Page breaks at S/S values for sort option 1; at S/S and T/L ID for sort option 2.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | MEAS NO | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, Operational or System |
| 47-56 | DATA RANGE<br>LOW HIGH | Data Range Low, Data Range High |

| | | |
|---|---|---|
| 58-65 | UNITS | Data Range Units |
| 67-70 | SC 1 NAME | Signal Conditioner 1 Name |
| 72-75 | SC 2 NAME | Signal Conditioner 2 Name |
| 77-80 | MDM | BTU Name |
| 82-96 | DEVICE NAME | Device Name |
| 98-109 | SWITCH & PANEL NUMBER | Device Switch & Panel Number 1 |
| 111 | CRT | CRT Applicability |
| 113 | C/W | Caution and Warning Display |
| 115-119 | SSH | SSH Drawing Number |
| 121-124 | MSK | MCC Display MSK Number 1 |
| 126 | T/L | Telemetry Link ID |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 98-109 | Switch & Panel Number | Device Switch & Panel Number 2 |

Line 3

| Col. | Heading | Data Element |
|---|---|---|
| 98-109 | Switch & Panel Number | Device Switch & Panel Number 3 |

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FLT/VCN
LINK ID

MASTER MEASUREMENT DATA BASE SYSTEM
OPERATIONAL/DEVELOPMENTAL INSTRUMENTATION REPORT

DATE
PAGE

| MEAS NO | NOMENCLATURE | * DATA RANGE LOW | HIGH | UNITS | * SC 1 NAME | SC 2 NAME | MDM NAME | DEVICE NAME | SWITCH & PANEL NUMBER | C R T | C / W | SSH | MSK | T / L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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Figure 3-57 Operational/Developmental Instrumentation Report

### 3.2.16 Systems Management Report

This requirement has not been implemented.

This report, Figure 3-58, is required by the Flight Operations Directorate to provide a means by which a measurement may be related to the various modules of the Systems Management Program.

Input Requirement

- Vehicle Configuration Number. (Enter with Report Options 1,2,3,5,6.)
- Flight Number. (Enter with Report Option 4.)
- Report Option:

| Code | Data Selection |
|---|---|
| 1 | M/S ID. |
| 2 | System Management Use and an SM limit set exist. |
| 3 | System Management Use or CRT Applicability exist. |
| 4 | System Management Use and SCM List ID exist. |
| 5 | System Management Use and SM Constant Initial Value exist. |
| 6 | BTU Name and BTU Type = 2, 3, 4, 5 |

Output Requirements

- Paging: Page breaks at Subsystem ID values for Report Options 1, 3, 4, 5; at BTU Name change for Report Option 6.
- Continuous Page Numbering.
- Special sort criteria is provided with each Report



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Option.

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| Report Option Code | Sort Order |
|---|---|
| 1 | M/S ID. |
| 2 | SM Limit Set Low Value or State and SM Limit Set High Value, M/S ID. |
| 3 | CRT Applicability, M/S ID. |
| 4 | SCM List ID, M/S ID. |
| 5 | SM Constant Initial Value, M/S ID. |
| 6 | BTU Name, BTU Type, M/S ID. |

- This will be a multiple line report.

Constraint:

- The SCM LIST ID column values will not be retrieved when requesting report options 1,2,3,5, and 6.
- The first SM Preconditioning Group ID retrieved for and an M/S ID will be output on this report.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | Meas No | Measurement/Stimulus Identifier |
| 12-45 | Nomenclature | Nomenclature, System |
| 47-56 | Data Range Low High | Data Range Low, Data Range High |
| 58-65 | Eng Unit | Data Range Units |
| 67 | Lim | SM Limit Set Number |
| 69-78 | FDA Limits Low High | SM Limit Set Low Value or State<br>SM Limit Set High Value |
| 80-82 | MAJ ID | SM Major Message ID |
| 84-85 | MIN ID | SM Minor Message ID |
| 87-88 | FIL VAL | SM Noise Filter Value |
| 90 | SMU | System Management Use |

| Col. | Heading | Data Element |
|---|---|---|
| 92 | CRT | CRT Applicability |
| 94-95 | SCM ID | SCM List ID |
| 97-112 | Const Init Value | SM Constant Initial Value |
| 114-115 | ACQ RAT | SM Acquisition Rate |
| 117 | ALR | SM Alarm Class |
| 120 | C&W | C&W Limit Sense |
| 122 | T/L | Telemetry Link ID |
| 124-127 | PTU NAME | PTU Name |
| 129-131 | GRP ID | SM Precondition Group ID |

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MASTER MEASUREMENT DATA BASE SYSTEM
SYSTEMS MANAGEMENT REPORT

PAGE
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| MEAS NO | NOMENCLATURE | DATA LOW | RANGE HIGH | ENG | UNIT | L I M | FDA LOW | LIMITS HIGH | M AI JD | M II ND | FV IA LL | S M U | C R T | S CI MD | CONST | INIT | VALUE | AR CA QT | A L R | C & W | T / L | BTU NAME | G RI PD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-58 Systems Management Report

### 3.2.17 Calibration Report

This report, Figure 3-59, is required by POO Integration Division and DSAD Institutional Data Systems Division to output all calibration data.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Major Element (blank for all Major Elements).
- Operational/Development Application (blank for all).
- Report Option: Any legal Calibration Type.

| Code | Special Data Selection |
|---|---|
| 01 | M/S IDs to be selected for output are those with a Calibration Type =01; and any M/S ID with no Calibration Type, but with a Telemetry Link ID equal to one of those (max. of 5) input by the user at run time. |
| 03 | M/S IDs to be selected for output are those with a Calibration Type =03; and any M/S ID with no Calibration Type, but with a Telemetry Link ID equal to one of those (max. of 5) input by the user at run time. |
| Other | M/S IDs to be selected for output are those with a Calibration Type equal to the input Report Option code (i.e., if Calibration Type=06 and Input Code=06, select the M/S ID). |

Up to 6 Calibration Types may be selected for one run.



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- TLM Link ID (from 1 to 5 values) for Report Option 01.
- TLM Link IDs (from 1 to 5 values) for Report Option 03.

Output Requirements

- Sort: Calibration Type, Operational/Development Application, M/S ID.
- Paging: Page breaks at each Calibration Type, Operational/Development Application, and Major Element.
- Continuous page numbering.
- If more than one curve is assigned to an M/S ID then the M/S ID and related data will be repeated as the new curve data is output.

| Heading | Data Element |
|---|---|
| M/S ID | Measurement/Stimulus Identifier |
| NOMENCLATURE | Nomenclature, System |
| DATA RANGE LOW-HIGH | Data Range Low, Data Range High |
| UNITS | Data Range Units |
| T/L ID | Telemetry Link ID |
| SYS. MAN. USE | System Management Use |
| DED. DISP. | Dedicated Display |
| CAUTION/WARN DISP. | Caution and Warning Display |
| FLIGHT/GROUND | Flight/Ground |
| ACCURACY | Calibration Accuracy |
| PARENT | Parent M/S ID |
| SENS. PART NO. | Sensor Part Number |
| S/C 1 PART NO. | Signal Conditioner 1 Part Number |
| S/C 2 PART NO. | Signal Conditioner 2 Part Number |
| SENS SER NO. | Sensor Serial Number |
| S/C 1 SER NO. | Signal Conditioner 1 Serial Number |
| S/C 2 SER NO. | Signal Conditioner 2 Serial Number |
| NO. MULTICALS | Calibration Number of Sets |
| CRV. TYP | Calibration Curve Type |

| Heading | Data Element |
|---|---|
| CAL DATA FIT | Calibration Data Fit |
| NO. OF DATA PRS. | Calibration Number of Data Pairs |
| DEGREE OF CURVE | Calibration Degree of Curve |
| CAL IND. VAR UNITS | Calibration Independent Variable Units |
| CURVE SERIES/ | Calibration Effectivity, Curve Series |
| REVISION | Calibration Effectivity, Revision Number |
| DATE | Calibration Effectivity, Date |
| DATA TOLERANCE | Calibration Data Tolerance |
| A0= | Calibration Poly. Coeff. A0, Intercept |
| A1= | Calibration Poly. Coeff. A1 Curve Order 1 |
| A2= | Calibration Poly. Coeff. A2 Curve Order 2 |
| A3= | Calibration Poly. Coeff. A3 Curve Order 3 |
| A4= | Calibration Poly. Coeff. A4 Curve Order 4 |
| A5= | Calibration Poly. Coeff. A5 Curve Order 5 |
| CMPD. PTS | |
| 0= | Calibration Low Valid Data Point |
| 1= | Calibration Valid Data Point 10 Pct. |
| 2= | Calibration Valid Data Point 20 Pct. |
| 3= | Calibration Valid Data Point 30 Pct. |
| 4= | Calibration Valid Data Point 40 Pct. |
| 5= | Calibration Valid Data Point 50 Pct. |
| 6= | Calibration Valid Data Point 60 Pct. |
| 7= | Calibration Valid Data Point 70 Pct. |
| 8= | Calibration Valid Data Point 80 Pct. |
| 9= | Calibration Valid Data Point 90 Pct. |
| 10= | Calibration High Valid Data Point |
| DATA PTS | |
| Y1= | Cal. Dep. Composite Data Point 01 |
| X1= | Cal. Ind. Composite Data Point 01 |
| Y2= | Cal. Dep. Composite Data Point 02 |
| X2= | Cal. Ind. Composite Data Point 02 |



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| Heading | Data Element |
|---|---|
| Y3= | Cal. Dep. Composite Data Point 03 |
| X3= | Cal. Ind. Composite Data Point 03 |
| Y4= | Cal. Dep. Composite Data Point 04 |
| X4= | Cal. Ind. Composite Data Point 04 |
| Y5= | Cal. Dep. Composite Data Point 05 |
| X5= | Cal. Ind. Composite Data Point 05 |
| Y6= | Cal. Dep. Composite Data Point 06 |
| X6= | Cal. Ind. Composite Data Point 06 |
| Y7= | Cal. Dep. Composite Data Point 07 |
| X7= | Cal. Ind. Composite Data Point 07 |
| Y8= | Cal. Dep. Composite Data Point 08 |
| X8= | Cal. Ind. Composite Data Point 08 |
| Y9= | Cal. Dep. Composite Data Point 09 |
| X9= | Cal. Ind. Composite Data Point 09 |
| Y10= | Cal. Dep. Composite Data Point 10 |
| X10= | Cal. Ind. Composite Data Point 10 |
| Y11= | Cal. Dep. Composite Data Point 11 |
| X11= | Cal. Ind. Composite Data Point 11 |
| LOW IND. VAR= | Cal. Low Ind. Variable |
| HIGH IND. VAR= | Cal. High Ind. Variable |
| GPC UNITS | GPC Software Units |
| DATA TYPE | Data Type and GPC Software Downlist Data Type (Separated by -) |
| START BIT | Downlink Start Bit (If blank, use GPC Software Start Bit) |
| NO. OF BITS | Downlink Data Length (If blank, use GPC Software Data Length) |
| MSB | Calibration Most Significant Bit Value |
| OFFSET | Calibration GPC OFFSET Value |
| SCALE FACTOR | Calibration Scale Factor |



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MASTER MEASUREMENT DATA BASE SYSTEM
CALIBRATION

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M/S ID NOMENCLATURE DATA RANGE LOW-HIGH UNITS T/L ID
SYS. MAN. USE DED. DISP. CAUTION/WARN DISP. FLIGHT/GROUND ACCURACY PARENT
SENS. PART NO. S/C 1 PART NO. S/C 2 PART NO.
SENS SER NO. S/C 1 SER NO. S/C 2 SER NO.
NO. MULTI CALS CRV. TYP CAL DATA FIT NO. OF DATA PRS. DEGREE OF CURVE CAL IND. VAR UNITS
CURVE SERIES/REVISION DATE DATA TOLERANCE
A0= A1= A2= A3= A4= A5=
CMPU. PTS 0= 1= 2= 3= 4= 5= 6= 7= 8= 9= 10=
DATA PTS Y1= X1= Y2= X2= Y3= X3= Y4= X4=
Y5= X5= Y6= X6= Y7= X7= Y8= X8=
Y9= X9= Y10= X10= Y11= X11=
LOW IND. VAR= HIGH IND. VAR= GPC UNITS
DATA TYPE - START BIT NO. OF BITS MSB OFFSET SCALE FACTOR

M/S ID NOMENCLATURE DATA RANGE LOW-HIGH UNITS T/L ID
SYS. MAN. USE DED. DISP. CAUTION/WARN DISP. FLIGHT/GROUND ACCURACY PARENT
SENS. PART NO. S/C 1 PART NO. S/C 2 PART NO.
SENS SER NO. S/C 1 SER NO. S/C 2 SER NO.
NO. MULTI CALS CRV. TYP CAL DATA FIT NO. OF DATA PRS. DEGREE OF CURVE CAL IND. VAR UNITS
CURVE SERIES/REVISION DATE DATA TOLERANCE
A0= A1= A2= A3= A4= A5=
CMPU. PTS 0= 1= 2= 3= 4= 5= 6= 7= 8= 9= 10=
DATA PTS Y1= X1= Y2= X2= Y3= X3= Y4= X4=
Y5= X5= Y6= X6= Y7= X7= Y8= X8=
Y9= X9= Y10= X10= Y11= X11=
LOW IND. VAR= HIGH IND. VAR= GPC UNITS
DATA TYPE - START BIT NO. OF BITS MSB OFFSET SCALE FACTOR

M/S ID NOMENCLATURE DATA RANGE LOW-HIGH UNITS T/L ID
SYS. MAN. USE DED. DISP. CAUTION/WARN DISP. FLIGHT/GROUND ACCURACY PARENT
SENS. PART NO. S/C 1 PART NO. S/C 2 PART NO.
SENS SER NO. S/C 1 SER NO. S/C 2 SER NO.
NO. MULTI CALS CRV. TYP CAL DATA FIT NO. OF DATA PRS. DEGREE OF CURVE CAL IND. VAR UNITS
CURVE SERIES/REVISION DATE DATA TOLERANCE
A0= A1= A2= A3= A4= A5=
CMPU. PTS 0= 1= 2= 3= 4= 5= 6= 7= 8= 9= 10=
DATA PTS Y1= X1= Y2= X2= Y3= X3= Y4= X4=
Y5= X5= Y6= X6= Y7= X7= Y8= X8=
Y9= X9= Y10= X10= Y11= X11=
LOW IND. VAR= HIGH IND. VAR= GPC UNITS
DATA TYPE - START BIT NO. OF BITS MSB OFFSET SCALE FACTOR

Figure 3-59 Calibration Report



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### 3.2.18 Response Rate Required Report

This requirement has not been implemented.

This report, Figures 3-60 and 3-61, is required by the POO Integration Division to count the number of M/S IDs having the rates indicated.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (1 to 5 or blank for all).
- Flight/Ground.

Output Requirements

- Sort: Telemetry Link ID, Major Element, Required Response Rate, Signal Type.
- Paging: Page breaks will occur for each Signal Type, Telemetry Link ID, and Major Element.
- Computations: (1) Count, by Subsystem ID, of the number of M/S IDs having the Required Response Rate indicated and enter the subtotal in the appropriate column. column.
  (2) Sum of subtotals per Signal Type.
  (3) Sum of subtotals per Telemetry Link ID.
- Continuous page numbering.
- The report is to be output in the following order: Part 1, Part 2, Part 1, Part 2, etc.
- The Subsystem IDs appearing on each page of Part 2 will appear on the corresponding page of Part 1.
- The column headings for Part 1 will reflect the Required Response Rate numerical values in the edit



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table (maximum 21). The column headings for Part 2 will reflect the Required Response Rate alpha values in the edit table (maximum 21).

Part 1

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-2 | S/S | Subsystem ID |
| 7-11 | ???? | Count of M/S IDs (Required Response Rate 1) |
| 13-17 | ???? | Count of M/S IDs (Required Response Rate 2) |
| 19-23 | ???? | Count of M/S IDs (Required Response Rate 3) |
| 25-29 | ???? | Count of M/S IDs (Required Response Rate 4) |
| 31-35 | ???? | Count of M/S IDs (Required Response Rate 5) |
| 37-41 | ???? | Count of M/S IDs (Required Response Rate 6) |
| 43-47 | ???? | Count of M/S IDs (Required Response Rate 7) |
| 49-53 | ???? | Count of M/S IDs (Required Response Rate 8) |
| 55-59 | ???? | Count of M/S IDs (Required Response Rate 9) |
| 61-65 | ???? | Count of M/S IDs (Required Response Rate 10) |
| 67-71 | ???? | Count of M/S IDs (Required Response Rate 11) |
| 73-77 | ???? | Count of M/S IDs (Required Response Rate 12) |



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| Col. | Heading | Data Element or Computation |
|---|---|---|
| 79-83 | ???? | Count of M/S IDs (Required Response Rate 13) |
| 85-89 | ???? | Count of M/S IDs (Required Response Rate 14) |
| 91-95 | ???? | Count of M/S IDs (Required Response Rate 15) |
| 97-101 | ???? | Count of M/S IDs (Required Response Rate 16) |
| 103-107 | ???? | Count of M/S IDs (Required Response Rate 17) |
| 109-113 | ???? | Count of M/S IDs (Required Response Rate 18) |
| 115-119 | ???? | Count of M/S IDs (Required Response Rate 19) |
| 121-125 | ???? | Count of M/S IDs (Required Response Rate 20) |
| 127-131 | ???? | Count of M/S IDs (Required Response Rate 21) |

Part 2

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 1-2 | S/S | Subsystem ID |
| 7-11 | ? | Count of M/S IDs (Required Response Rate 1) |
| 13-17 | ? | Count of M/S IDs (Required Response Rate 2) |
| 19-23 | ? | Count of M/S IDs (Required Response Rate 3) |
| 25-29 | ? | Count of M/S IDs (Required Response Rate 4) |

| Col. | Heading | Data Element or Computation |
|---|---|---|
| 31-35 | ? | Count of M/S IDs (Required Response Rate 5) |
| 37-41 | ? | Count of M/S IDs (Required Response Rate 6) |
| 43-47 | ? | Count of M/S IDs (Required Response Rate 7) |
| 49-53 | ? | Count of M/S IDs (Required Response Rate 8) |
| 55-59 | ? | Count of M/S IDs (Required Response Rate 9) |
| 61-65 | ? | Count of M/S IDs (Required Response Rate 10) |
| 67-71 | ? | Count of M/S IDs (Required Response Rate 11) |
| 73-77 | ? | Count of M/S IDs (Required Response Rate 12) |
| 79-83 | ? | Count of M/S IDs (Required Response Rate 13) |
| 85-89 | ? | Count of M/S IDs (Required Response Rate 14) |
| 91-95 | ? | Count of M/S IDs (Required Response Rate 15) |
| 97-101 | ? | Count of M/S IDs (Required Response Rate 16) |
| 103-107 | ? | Count of M/S IDs (Required Response Rate 17) |
| 109-113 | ? | Count of M/S IDs (Required Response Rate 18) |
| 115-119 | ? | Count of M/S IDs (Required Response Rate 19) |
| 121-125 | ? | Count of M/S IDs (Required |



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| Col. | Heading | Data Element or Computation |
|---|---|---|
| | | Response Rate 20) |
| 127-131 | ? | Count of M/S IDs (Required Response Rate 21) |

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LINK ID F/G
MAJOR ELEMENT
SIGNAL TYPE

MASTER MEASUREMENT DATA BASE SYSTEM
RESPONSE RATE REQUIRED - TLM AND GPC

DATE
PAGE

| S/S | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? | ???? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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Figure 3-60 Response Rate Required Report Part 1

FLT/VCN
LINK ID F/G
MAJOR ELEMENT
SIGNAL TYPE

MASTER MEASUREMENT DATA BASE SYSTEM
RESPONSE RATE REQUIRED - WIDE BAND FM

DATE
PAGE

| S/S | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TOTAL | | | | | | | | | | | | | | | | | | | | | |

Figure 3-61 Response Rate Required Report Part 2



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### 3.2.19 Group ID Status Report

This report, Figure 3-62, is required by the POO Integration Division to provide status information on all change documents.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Report Option:

| Code | Data Selection |
|---|---|
| 1 | All Status Change Documents. |
| 2 | All Open Change Documents. |

Output Requirements

- Sort: Status Group ID, Status Responsible Organization, Status Change Document Number.
- Paging will occur with each status Group and each Responsible Organization within a group.
- Status Text will appear only on the first page of each group.
- All Status Group IDs will be selected.
- The report heading will reflect the Status Group ID and Status Responsible Organization.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 10-80 | TEXT | Status Text |
| 1-7 | CHANGE DOCU NUMBER | Status Change Document Number |
| 8 | REV | Status CDOC Revision Number |
| 14-21 | DATE ENTERED | Status Change Document Entry Date |



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| Col. | Heading | Data Element |
|---|---|---|
| 27-56 | CHANGE REASON | Status Change Reason |
| 62-69 | DATE REQUIRED | Status Required Implementation Date |
| 76-83 | DATE IMPLEMENTED | Status Implementation Date |

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FLT/VCN
GROUP ID
RESP ORG
TEXT:

MASTER MEASUREMENT DATA BASE SYSTEM
GROUP ID STATUS REPORT

PAGE
DATE

| CHANGE DOCU NUMBER | B E V | DATE ENTERED | CHANGE REASON | DATE REQUIRED | DATE IMPLEMENTED |
|---|---|---|---|---|---|

Figure 3-62 Group ID Status Report



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### 3.2.20 Status By Change Document

This report, Figure 3-63, is required by POO Integration Division to provide status information on all change documents.

Input Requirements:

- Flight Number/Vehicle Configuration Number.
- Report Option:

| Code | Data Selection |
|---|---|
| 1 | All Status Change Document Numbers. |
| 2 | All Open Status Change Documents. |

Output Requirements

- Sort: Status Change Document Number, Status Group ID.
- Paging: Page break at each change document.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-7 | CDOC | Status Change Document Number |
| 8 | REV | Status CDOC Revision Number |
| 10-39 | CHNG REASON | Status Change Reason |
| 41-50 | GROUP ID | Status Group ID |
| 52-56 | RSP ORG | Status Responsible Organization |
| 58-65 | DATE REQUIRED | Status Required Implementation Date |
| 67-74 | DATE IMPLEMENTED | Status Implementation Date |

FLT/VCN MASTER MEASUREMENT DATA BASE SYSTEM PAGE
STATUS BY CHANGE DOCUMENT DATE

| CDCC | REV | CHNG REASON | GROUP ID | RSP ORG | DATE REQUIRED | DATE IMPLEMENTED |
|---|---|---|---|---|---|---|

Figure 3-63 Status by Change Document



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### 3.2.21 FTR/DTO-FTO By Format

This report, Figure 3-64 is required by the SSPO to provide a means of informing the subsystem managers of the M/S ID assignments to formats.

Input Requirements

- Flight Number
- TLM Format ID (1-12).
- FTR ID (1-5 or blank for all).

Output Requirements

- Sort: M/S ID.
- Only those M/S ID which have format data and FTR/DTO-FTO data will be selected.
- Format IDs selected will be reflected in the column heading.
- TLM Actual Response Rate will be printed under the format ID in which the M/S ID appears.
- Paging: Page break after each FTR ID.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47 | DAT PRI | FTR Data Priority |
| 50-53 | FRMT | 1st TLM Actual Response Rate |
| 55-58 | FRMT | 2nd TLM Actual Response Rate |
| 60-63 | FRMT | 3rd TLM Actual Response Rate |
| 65-68 | FRMT | 4th TLM Actual Response Rate |
| 70-73 | FRMT | 5th TLM Actual Response Rate |
| 75-78 | FRMT | 6th TLM Actual Response Rate |
| 80-83 | FRMT | 7th TLM Actual Response Rate |

| Col. | Heading | Data Element |
|---|---|---|
| 85-88 | FRMT | 8th TLM Actual Response Rate |
| 90-93 | FRMT | 9th TLM Actual Response Rate |
| 95-98 | FRMT | 10th TLM Actual Response Rate |
| 100-103 | FRMT | 11th TLM Actual Response Rate |
| 105-108 | FRMT | 12th TLM Actual Response Rate |

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FLT
FTR ID

MASTER MEASUREMENT DATA BASE SYSTEM
FTR/DTO-FTO BY FORMAT

DATE
PAGE

| M/S ID | NOMENCLATURE | DP AR TI | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? | FRMT ???? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-64 FTR/DTO-FTO by Format

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### 3.2.22 Parent/Voting Logic Report

This report, Figure 3-65, is required by POO Integration Division to display the measurements on the telemetry link by either Parent M/S ID or Voting Logic M/S ID.

Input Requirements

- Flight Number.
- Telemetry Link ID (maximum of five or blank for all).
- Report Option:

| Code | Processing |
|---|---|
| 1 | Report is by Parent M/S ID. |
| 2 | Report is by Voting Logic M/S ID. |

- An Edit Table will be used to select the proper sibling sort (TLM Actual Start Bit, GPC Software Start Bit) for each Telemetry Link ID.

Output Requirements

- All siblings are to be retrieved and printed. A count of the number of siblings is to be compared with the value of the Parent's Downlink Data Length. If the number of siblings is greater, an informative message is required giving the Parent, its Data Length and the number of siblings.
- The Telemetry Link ID to be used for display and sort is that of the Parent/Voting Logic M/S ID. If a sibling's link is different from the parent, an error message is to be written showing the Parent, sibling, and sibling's T/L ID.
- An informative message is required if the Parent/Voting Logic M/S ID is not valid for the Flight, and no further processing for the qualifier will be

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performed.

- If the option on Telemetry Link ID indicates retrieval for all (blank), all Parents will be retrieved including those whose Telemetry Link ID is blank. If Telemetry link ID is blank, the siblings are to be sorted by BTU Start Bit.
- Parent M/S ID (or Voting Logic M/S ID) will be printed only on the first line if more than 1 line (greater than 8 siblings) is required.
- Sort: (1) Telemetry Link ID, Parent M/S ID, sibling Start Bit values (Report Option 1).
  (2) Telemetry Link ID, Voting Logic M/S ID (Report Option 2).
- Paging: Page breaks will occur at each O/D (Parent/Voting Logic) and Telemetry Link ID (Parent/Voting Logic).
- Continuous page numbering.

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 20 | TELEMETRY LINK ID | Telemetry Link ID |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | PARENT WORD | Parent M/S ID (Report Option = 0 or blank) |
| | VOTING LOG | Voting Logic M/S ID (Report Option = 1) |
| 15-24 | M/S ID | M/S ID (Parent M/S ID = value in |

| | | |
|---|---|---|
| | | col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 27-36 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 39-48 | M/S ID | M/S ID (Parent M/S ID = value in co. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 51-60 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 63-72 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 75-84 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 87-96 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |
| 99-108 | M/S ID | M/S ID (Parent M/S ID = value in col. 1-10, or Voting Logic M/S ID = value in col. 1-10) |

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O/D

MASTER MEASUREMENT DATA BASE SYSTEM
PARENT WORD REPORT

PAGE
DATE

TELEMETRY LINK ID:

| PARENT WORD | M/S ID | M/S ID | M/S ID | M/S ID | M/S ID | M/S ID | M/S ID | M/S ID |
|---|---|---|---|---|---|---|---|---|

TELEMETRY LINK ID:

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Figure 3-65 Parent Word/Voting Logic Report

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### 3.2.23 Pending Report

This report, Figure 3-66, is required by POO Integration Division to list, by Status Change Document Number (e.g., MSCR Number), the pending data and the approved data to be affected, if applicable.

Input Requirements

- Report Option:

| Code | Processing |
|---|---|
| 1 | Status Change Document Number(s) are input. Sort order is by Status Change Document Number and M/S Ids within each Status Change Document Number. |

- Status Change Document Number(s) (no limit).

Output Requirements

- Page numbers will run consecutively, starting with page 2, within a Status Change Document Number and re-cycle at each new Status Change Document Number.
- Within the M/S ID sequence, the report is required to contain pending information ("T" line) for an M/S ID followed by the current data ("F" lines) for each VCN. The VCN(s) will be printed in the order that they appear on the pending record.
- All VCN(s) for the report will come from the pending records.
- The VCN(s) will be printed on the "F" line in column 5. The VCN will be blank when an update is made to Basic data.
- A To-From grouping will not be split between pages.
- Suppress the second report line of the "T" line or

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"F" line if all data are blank.

- Refer to the table at Figure 3-67 for the appropriate print actions for each "F" line on the report.
- For pending data, the elements to be deleted will be indicated by the symbol @.
- The report heading will reflect the Status Change Document Number, the Status Change Revision Number and the Status Change Reason.
- Print an informative message if the Status Change Document Number does not exist in the Status Data Base.
- A/C on CDOC file is to appear on the pending line.
- The program will treat each form 41 M/S ID together with the corresponding M/S ID related form as a separate record to be output.

Measurement

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1 | STA | (Status Column) |
| | | T - Pending data |
| | | F - Current data |
| 3-12 | MEAS. ID | Measurement/Stimulus Identifier |
| 14-47 | TITLE | Nomenclature, System |
| 49-59 | LOW HIGH | Data Range Low, Data Range High |
| (54) | | * (in heading only) |
| 61-68 | UNITS | Data Range Units |
| 70-72 | PQD ACC | Accuracy, Required System |
| 74-77 | RESP RATE | Required Response Rate |
| 79 | O/D | Operational/Development |

| Col. | Heading | Data Element |
|---|---|---|
| | | Application |
| 81-82 | CAT | Measurement Purpose Category |
| 84 | F/G | Flight/Ground |
| 86 | T/L | Telemetry Link ID |
| 88-90 | RCD EFF | Tape Recorder ID 1, 2, 3 |
| 92 | SMU | System Management Use |
| 94 | CRT | CRT Applicability |
| 96-97 | DSP EFF | Dedicated Display |
| 99 | CWD | Caution & Warning Display |
| 101 | RF | RF Uplink |
| 103 | CCD | Crew Control Device |
| 105 | LCC | Launch Commit Criteria |
| 107 | KLO | KSC State Low |
| 109 | KHI | KSC State High |
| 111 | TYP | Switch Signal type |
| 113 | SUP | Sensor - S/C Supplier |
| 115 | SCN | Switch Scan |
| 117-118 | PSW | Parallel Switch Control |
| 120-123 | DATA TYPE | Data Type |
| 131-132 | A/C | Action Code (Pending data only) |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 14-23 | RESP MSID | Response M/S ID |
| 25-34 | PARENT WRD | Parent M/S ID |
| 36-45 | VOTING LOG | Voting Logic M/S ID |
| 47-56 | RELA MSID | Related M/S ID |
| 58-107 | REMARKS | Remarks |

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```
CDOC-XXXXXXX REV-X                    MASTER MEASUREMENT DATA BASE SYSTEM                                    DATE XX/XX/XX
REASON-                                     PENDING REPORT - MB23                                            PAGE

S                                     *    DATA RANGE    *          O C  F T     S C DE C   C L K K T S S P
T                                                          RQD RESP / A  / / RCD M R SF W R C C L H Y U C S  DATA
A M/S ID  TITLE                       LOW *HIGH  UNITS     ACC RATE D T  G L EFF U T PF D F D C O I P P N W  TYPE     AC
        ------------------------------------------------------------------------------------------------------------------------
        RESP MSID  PARENT WRD VOTING LOG RELA MSID  REMARKS

T
F
F
```

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Figure 3-66.- Pending Report.

| A/C IN PENDING FILES | M/S ID IS NOT IN DATA BASE | M/S ID IS IN DATA BASE WITH VCN ATTACHED | M/S ID IS IN DATA BASE WITHOUT VCN FROM THE CDOC ATTACHED |
|---|---|---|---|
| A1 | Blank "F" line | Basic & Configuration data on "F" line | Basic data & *s in Configuration fields of "F" line |
| A2 | *s across "F" line | Basic & Configuration data on "F" line | Basic and Standard Configuration data with 2 *s under action code on "F" line |
| U1 | *s across "F" line | Basic data on "F" line VCN not applicable | Basic data on "F" line, VCN not applicable |
| U2 | *s across "F" line | Basic & Configuration data on "F" line | Basic data & *s in configuration fields on "F" line |
| D2 | *s across "F" line | Basic & Configuration data on "F" line | Basic data & *s in configuration fields on "F" line |

Figure 3-67.- MB23 Actions for "F" Output Lines.

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### 3.2.24 Interface Signal by Channel

This report, Figures 3-68 and 3-69, is required by E&D/ASED for flight software definition.

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- Only those M/S IDs with non-blank BTU Names will be selected for output.
- The report will be in OI (O/D = C or M), Non-OI (O/D = D), and Other (O/D = anything else) sections with these sections reflected in the heading.
- Sort within each section: BTU Name,
  BTU Card Location,
  BTU Channel Number,
  GPC Input/Output/Compute,
  BTU Word Number,
  BTU Start Bit Number,
  BTU Number of Bits.
- If an M/S ID has a Calibration Type equal to 03, the Calibration Most Significant Bit Value, Calibration GPC OFFSET Value, and Calibration Scale Factor data values, if they exist, will be output for Calibration Effectivity Curve Series=0, or 1 if 0 does not exist.
- Continuous page numbering.
- The report is to be output in the following order: Part 1, Part 2, Part 1, Part 2, etc.
- The M/S IDs appearing on each page of Part 2 will appear on the corresponding page of Part 1.

Part 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-61 | DEVICE NAME | Device Name |
| 63-77 | DESTINATION EQUIPMENT | BTU Destination Equipment Name 1 |
| 79-82 | BTU | BTU Name |
| 84 | ICC | GPC Software Input/Output/Compute |
| 86-88 | BTU CRD TYP | BTU Card Type |
| 90-91 | CRD LOC | BTU Card Location |
| 93-94 | CHN NO | BTU Channel Number |
| 96-97 | WRD NO | BTU Word Number |
| 99-100 | ST BIT | BTU Start Bit |
| 102-103 | NO BTS | BTU Number of Bits |
| 105-108 | TRNS RATE | BTU Transfer Rate |
| 110-111 | NO WDS | BTU Number of Words |
| 113-123 | PLUG & PIN | BTU Plug and Pin/Subsystem |
| 125 | O/D | Operational/Development Application |

Part 2

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-15 | BTU NAME | BTU Name |
| 17 | ICC | GPC Software Input/Output/Compute |
| 19-21 | BTU CRD TYP | BTU Card Type |
| 23-24 | CRD LOC | BTU Card Location |
| 26-27 | CHN NO | BTU Channel Number |



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| Col. | Heading | Data Element |
|---|---|---|
| 29-30 | WRD NO | BTU Word Number |
| 32-33 | ST BIT | BTU Start Bit |
| 35-50 | HALF WORD | BTU/MDM Half Word 1 Bit Format |
| 52-67 | HALF WORD | BTU/MDM Half Word 2 Bit Format |
| 69-72 | DATA TYPE | Data Type |
| 74 | SIG | BTU Signal Type |
| 76-85 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 87-94 | UNITS | Data Range Units |
| 96-105 | CAL. MSB | Calibration Most Significant Bit Value |
| 107-116 | Offset | Calibration GPC OFFSET Value |
| 118-127 | SCALE FACTOR | Calibration Scale Factor |
| 129 | F/G | Flight/Ground |
| 131 | CRV | Calibration Effectivity Curve Series |

**Line 2**

| | | |
|---|---|---|
| 35-50 | Half Word | BTU/MDM Half Word 3 Bit Format |
| 52-67 | Half Word | BTU/MDM Half Word 4 Bit Format |

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MASTER MEASUREMENT DATA BASE SYSTEM
INTERFACE UNIT SIGNAL INTERFACE REQUIREMENTS TABLE
INTERFACE SIGNAL BY CHANNEL PART 1

PAGE
DATE

| M/S ID | NOMENCLATURE | DEVICE NAME | DESTINATION EQUIPMENT | BTU NAME | I O C | BTU CRD TYP | CL RO DC | C HN NO | W RN DO | SB TI T | NB OT S | TRNS RATE | NW OD S | PLUG & PIN | O / D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-68 Interface Signal by Channel Part 1



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| M/S | ID | BTU NAME | I O C | BTU CRD TYP | CL RO DC | C HN NO | W RN DO | SB TI T | HALF WORD | HALF WORD | DATA TYPE | S I G | * | DATA RANGE LOW | DATA RANGE HIGH | UNITS | * | CAL. | MSB | OFFSET | SCALE FACTOR | F / G | C R V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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Figure 3-69 Interface Signal by Channel Part 2

### 3.2.25 MDM Word Channelization

This report, Figure 3-70, is required by E&D/ASED for flight software definition. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- Only M/S IDs where BTU Name exists will be output.
- Sort: M/S ID.
- Paging: Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | TITLE | Nomenclature, System |
| 47-48 | DATA LNTH | Downlink Data Length |
| 52 | TYP | BTU Signal Type |
| 54-57 | BTU NAME | BTU Name |
| 59-61 | CRD TYP | BTU Card Type |
| 63-64 | CRD LOC | BTU Card Location |
| 66-67 | CHN NO | BTU Channel Number |
| 69-70 | WRD NO | BTU Word Number |
| 72-75 | BTU TRNS RATE | BTU Transfer Rate |
| 77 | IOC | GPC Software Input/Output/Compute |
| 90 | TYP | BTU Signal Type |
| 92-95 | BTU NAME | BTU Name |
| 97-99 | CRD TYP | BTU Card Type |
| 101-102 | CRD LOC | BTU Card Location |
| 104-105 | CHN NO | BTU Channel Number |
| 107-108 | WRD NO | BTU Word Number |



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```
FLT/VCN                          MASTER MEASUREMENT DATA BASE SYSTEM                                  PAGE
                                      MDM WORD CHANNELIZATICN                                         DATE

                                  *       N O N  O I       *          *       O I       *
                                  T          CI C  W  BTU  I          T          CL C  W
                             DATA Y BTU  CRD RO HN RN TRNS O          Y BTU  CRD RO HN RN
M/S ID     TITLE             LNTH P NAME TYP DC NO DO RATE C          P NAME TYP DC NO DO
```

Figure 3-70 MDM Word Channelization

### 3.2.26 Downlist/Downlink Requirements Table

This report, Figure 3-71, is required by E&D/ASED and FOD for flight software definition.

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Input Requirements

- Flight Number
- TLM Format ID (maximum of nine).

Output Requirements

- Sort: M/S ID.
- Paging: Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | TITLE | Nomenclature, System |
| 47-48 | HOM SET | Homogeneous Data Set Number |
| 50-53 | BTU TRNS RATE | BTU Transfer Rate |
| 55-64 | PARENT | Parent M/S ID |
| 66-69 | RQD RESP RATE | Required Response Rate |
| 71-74 | FRMT ---- RATE | TLM Required Response Rate |
| 76-79 | FRMT ---- RATE | TLM Required Response Rate |
| 81-84 | FRMT ---- RATE | TLM Required Response Rate |
| 86-89 | FRMT ---- RATE | TLM Required Response Rate |
| 91-94 | FRMT ---- RATE | TLM Required Response Rate |
| 96-99 | FRMT ---- | TLM Required Response Rate |

| Col. | Heading | Data Element |
|---|---|---|
| | RATE | |
| 101-104 | FRMT ---- | TLM Required Response Rate |
| | RATE | |
| 106-109 | FRMT ---- | TLM Required Response Rate |
| | RATE | |
| 111-114 | FRMT ---- | TLM Required Response Rate |
| | RATE | |
| 116-119 | FRMT ---- | TLM Required Response Rate |
| | RATE | |
| 121-124 | FRMT ---- | TLM Required Response Rate |
| | RATE | |
| 126-129 | FRMT ---- | TLM Required Response Rate |
| | RATE | |

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MASTER MEASUREMENT DATA BASE SYSTEM
DOWNLIST/DOWNLINK REQUIREMENTS TABLE

DATE
PAGE

| M/S ID | TITLE | HS OE MT | BTU TRNS RATE | PARENT | RQD RESP RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE | FRMT RATE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-71 Downlist/Downlink Requirements Table



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### 3.2.27 Downlist Assignments Table

This report, Figure 3-72, is required by E&D/ASED, FOD, and DSAD/IDSD for flight software definition. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number
- Sort Option:

| Code | Processing |
|---|---|
| 1 | TLM Format ID, M/S ID. |
| 2 | TLM Format ID, TLM First Frame, TLM First Word. |

Output Requirements

- M/S IDs with downlist data (TLM Format Type = 1) will be selected.
- Paging: Page break at TLM Format ID with continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | SYSTEM NOMENCLATURE | Nomenclature, System |
| 47-67 | OPS TITLE | Nomenclature, Operational |
| 69 | IND | TLM Low Bit Rate Indicator |
| 71-72 | HOM SET | Homogeneous Data Set Number |
| 74-77 | REQ RATE | TLM Required Response Rate |
| 79-82 | ACT RATE | TLM Actual Response Rate |
| 84-85 | FST FRM | TLM First Frame |
| 87-89 | FST WRD | TLM First Word |
| 91-92 | ST BIT | GPC Software Start Bit |

| Col. | Heading | Data Element |
|---|---|---|
| 94-95 | NO BTS | GPC Software Data Length |
| 97-101 | TIME DELAY | TLM Time Delay |
| 103-112 | PARENT | Parent M/S ID |
| 114 | TYP | GPC Software Downlist Data Type |
| 116-123 | UNITS | GPC Software Units |

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MASTER MEASUREMENT DATA BASE SYSTEM
DOWNLIST ASSIGNMENTS TABLE

PAGE
DATE

| M/S ID | SYSTEM NOMENCLATURE | OPS TITLE | INCMT | HSOEMT | REQ RATE | ACT RATE | FFSRTM | FSTWRD | SBTIT | NBOTS | TIME DELAY | PARENT | TYP | S/W UNITS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-72 Downlist Assignments Table

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### 3.2.28 Downlink Assignments Table

This report, Figure 3-73, is required by E&D/ASED, FOD, and DSAD/IDSD for flight software definition. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number
- Sort Option:

| Code | Processing |
|---|---|
| 1 | TLM Format ID, M/S ID. |
| 2 | TLM Format ID, TLM First Frame, TLM First Word. |

Output Requirements

- M/S IDs with downlink data (TLM Format Type = 2, 3, or 4) will be selected.
- Paging: Page break at TLM Format ID with continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | SYSTEM NOMENCLATURE | Nomenclature, System |
| 47-67 | OPS TITLE | Nomenclature, Operational |
| 69-72 | FEQ RATE | TLM Required Response Rate |
| 74-77 | ACT RATE | TLM Actual Response Rate |
| 79-80 | FST FRM | TLM Required First Frame |
| 82-84 | FST WRD | TLM Required First Word |
| 86-87 | FST FRM | TLM Actual First Frame |
| 89-91 | FST WRD | TLM Actual First Word |
| 93-94 | ST BIT | Downlink Start Bit |
| 96-97 | NO BTS | Downlink Data Length |

| Col. | Heading | Data Element |
|---|---|---|
| 99-100 | HOM SET | Homogeneous Data Set Number |
| 102 | L/R | TLM Pequired L-R Word Indicator |
| 104 | MSH | TLM Most Significant Half Word |
| 106-110 | TIME DELAY | TLM Time Delay |
| 112-121 | PARENT | Parent M/S ID |
| 123-126 | DATA TYPE | Data Type |

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FRMT ID

MASTER MEASUREMENT DATA BASE SYSTEM
DOWNLINK ASSIGNMENTS TABLE

PAGE
DATE

| M/S ID | SYSTEM NOMENCLATURE | OPS TITLE | REQ RATE | ACT RATE | FF SR TM | FST WRD | FF SR TM | FST WRD | SB TI T | NB OT S | HS OE MT | L / R | M S H | TIME DELAY | PARENT | DATA TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|



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Figure 3-73 Downlink Assignments Table

### 3.2.29 Command List

This report, Figure 3-74, is required by the DSAD/Ground Data Systems Division to list the commands which will build the command data base. The system will contain approximately 500 salvo and single function commands and 20 multi-word commands.

User Input Requirements

- Flight Number/Vehicle Configuration Number.

Report Output Requirements

- Sort: DSM Number.
- Single function commands (DSM Type = F) - List, in the appropriate columns, all data element values which exist for the DSM Number.
- Salvo commands (DSM Type = S) - List, in the appropriate columns, all data element values which exist for the DSM Number followed on the next report lines with the related single function commands or Salvo commands. These single function or salvo command DSM Numbers are to be printed, preceded with an an 'S', and only the M/S ID, Title, and Type data, if they exist, are to be listed for the specified DSM Number.
- Multi-word commands (DSM Type = M) - List the DSM Number, DSM Title and DSM Type followed on the next report lines by the related DSM command information. These command DSM Numbers are to be preceded by an 'M' and all valued data will be listed.
- Command Word 2-1 through 2-4 for a particular DSM Number will be printed under the same column heading on separate printer lines.

- Discrete Mask 1 and 2 will be printed under the same column heading on separate printer lines.
- Continuous page numbering.

| Col. | Heading | Data Element | |
|---|---|---|---|
| 1-4 | DSM# | DSM Number - Preceded by an 'S' or 'M' where applicable | |
| 6-15 | MSID | Measurement/Stimulus Identifier | |
| 17-37 | TITLE | Nomenclature, Operational (DSM Type = F or S); DSM Title (DSM Type = M) | |
| 39 | TYPE | DSM Type | |
| 44-61 | MOD ADD / CHAN ADD / MDM NO. | Command Word 2-1<br>Command Word 2-2<br>Command Word 2-3<br>Command Word 2-4<br>(Characters 4 and 5 and characters 9 and 10 separated by a blank) | |
| 63-78 | DISCRETE MASK | Discrete Mask 1<br>Discrete Mask 2 | |
| 80 | SEQ NO. | DSM M/S ID Sequence Number | |
| 84-89 | OCTAL DATA | Command Word 2-1<br>Command Word 2-2<br>Command Word 2-3<br>Command Word 2-4 | Octal Representation (One character per octal digit) |
| 91-96 | OCTAL | Discrete Mask 1<br>Discrete Mask 2 | Octal Representation (One character per octal digit) |
| 98-101 | HEX | Command Word 2-1<br>Command Word 2-2<br>Command Word 2-3 | Hexidecimal Representation |



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| Col. | Heading | Data Element | |
|---|---|---|---|
| | | Command Word 2-4 | |
| 103-106 | HEX | Discrete Mask 1 | Hexidecimal |
| | | Discrete Mask 2 | Representation |
| 108-119 | PANEL | Device Switch Panel Number 1 | |

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MASTER MEASUREMENT DATA BASE SYSTEM
COMMAND LIST

PAGE
DATE

| DSM# | MSID | TITLE | TYPE | MOD ADD | CHAN ADD | MDM NC | DISCRETE MASK | SEQ NC. | OCTAL/OCTAL DATA | PANEL |
|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-74 Command List



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### 3.2.30 PCM MU Data RAM Address Assignments Table

This report, Figure 3-75, is required by E&D/ASED for flight software definition. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- BTU Type (legal values 2, 4, 14, or 16 only).

Output Requirements

- Sort: M/S ID.
- Paging: Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-56 | PARENT WRD | Parent M/S ID |
| 58-61 | ACT FTCH RATE | BTU Transfer Rate |
| 63-66 | RAM ADDR | PCM MU Actual Data RAM Address |
| 68-76 | BUS NAMES | BTU Data Bus Names (only first 2) |
| 78-79 | MIA ADR | BTU MIA Address |
| 81-84 | BTU NAME | BTU Name |
| 86-87 | CRD LOC | BTU Card Location |
| 89-90 | CHN NO | BTU Channel Number |
| 92-93 | WRD NO | BTU Word Number |
| 95-96 | ST BIT | BTU Start Bit Number |
| 98-99 | NO BTS | BTU Number of Bits |
| 101-116 | HALF WRD 1 FORMT | BTU/MDM Half Word 1 Bit Format |
| 118-119 | ST BIT | Downlink Start Bit |
| 121-122 | DATA LGTH | Downlink Data Length |

| Col. | Heading | Data Element |
| --- | --- | --- |
| 124-131 | DCWNLINK | Downlink Byte Bit Format |

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FLT/VCN
BTU TYPE

MASTER MEASUREMENT DATA BASE SYSTEM
PCM MU DATA RAM ADDRESS ASSIGNMENTS TABLE

DATA
PAGE

| M/S ID | NOMENCLATURE | PARENT | WRD | ACT FTCH RATE | RAM ADDR | BUS | NAMES | MA ID AR | BTU NAME | CL RO DC | C HN NC | W RN CO | SB TI T | NB OT S | HALF | WRD 1 | FORMT | SB TI T | DL AG TT AH | DOWNLINK BYTE | DOWNLINK BIT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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Figure 3-75 PCM MU Data RAM Address Assignments Table

### 3.2.31 Instrumentation Signal Conditioner - MDM Measurement Routing

This report, Figure 3-76, required by FOD/FCD to indicate the instrumentation signal conditioner and MDM measurement routing. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).
- Nomenclature print option code:

| Code | Processing |
|---|---|
| 1 | Print Nomenclature, System. |
| 2 | Print Nomenclature, Operational flagged by an '*'; if it does not exist, print Nomenclature, System. |

- Sort Option Code:

| Code | Processing |
|---|---|
| 1 | M/S ID. |
| 2 | Telemetry Link ID, M/S ID. |

Output Requirements

- Only M/S IDs having a BTU Name or FDM Name will be selected for output.
- Paging: If Sort Option 1 is selected, page breaks will occur at each new Subsystem ID. If Sort Option 2 is selected page breaks will occur at each new Telemetry Link ID and Subsystem ID value.
- Continuous page numbering.

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| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System (Sort Option=1) Nomenclature , Operational (Sort Option=2) |
| 47-56 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 58-65 | UNITS | Data Range Units |
| 67 | X-DUCER TYPE | Sensor Type |
| 75-78 | S/C ID | Signal Conditioner 1 Name |
| 80-83 | BTU/FDM NAME | BTU Name/FDM Name |
| 85 | T/L | Telemetry Link ID |
| 87-91 | SSH DWG NO | SSH Drawing Number |
| 93-107 | D&C DEVICE NAME | Device Name |
| 109-111 | REQ SYS ACC | Accuracy, Required System |
| 113 | SMU | System Management Use |
| 115-116 | DED DISP | Dedicated Display |

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FLT/VCN
T/L ID

MASTER MEASUREMENTS DATA BASE SYSTEM
INSTRUMENTATION SIGNAL CONDITIONER - MDM MEASUREMENT ROUTING

PAGE
DATE

| M/S ID | NOMENCLATURE | * LOW | DATA HIGH | RANGE UNITS | * X-DUCER TYPE | S/C ID | BTU/ FDM NAME | T / L | SSH DWG NO | DEC DEVICE NAME | REQ SYS ACC | S M U | DED DISP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-76 Instrumentation Signal Conditioner - MDM Measurement Routing



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### 3.2.32 Instrumentation Signal Conditioner Report

This report, Figure 3-77, required by FOD/FCD to indicate the signal conditioner instrumentation. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).
- Nomenclature print option code:

| Code | Processing |
|---|---|
| 1 | Print Nomenclature, System. |
| 2 | Print Nomenclature, Operational flagged by an '*'; if it does not exist, print Nomenclature, System. |

- Sort Option Code

| Code | Processing |
|---|---|
| 1 | Signal Conditioner Name. |
| 2 | Signal Conditioner Name, Signal Conditioner Card and Channel. |

Output Requirements

- Page break required at Signal Conditioner Name change.
- Report heading will reflect Flight Number/Vehicle Configuration Number, and Signal Conditioner Name.
- Select all M/S IDs which have the Telemetry Link IDs specified and have a Signal Conditioner Name assigned.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature System (Sort Option=1) Nomenclature, Operational (Sort Option=2) |
| 47-56 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 58-65 | UNITS | Data Range Units |
| 67 | X-DUCER TYPE | Sensor Type |
| 75-81 | S/C CHAN/CD | Signal Conditioner 1 Card and Channel |
| 83-86 | BTU/FDM Name | BTU Name/FDM Name |
| 91 | TLM ID | Telemetry Link ID |
| 95-102 | PANEL NO. | Device Panel Number 1 |
| 105-119 | NAME | Device Name |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 95-102 | PANEL NO. | Device Panel Number 2 |

Line 3

| Col. | Heading | Data Element |
|---|---|---|
| 95-102 | PANEL NO. | Device Panel Number 3 |

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FLT/VCN
T/L ID

MASTER MEASUREMENT DATA BASE SYSTEM
INSTRUMENTATION SIGNAL CONDITIONER REPORT

PAGE
DATE

| M/S ID | NOMENCLATURE | * LOW | DATA RANGE HIGH | UNITS | * X-DUCER TYPE | S/C CHAN/CD | BTU/FDM NAME | TLM IC | PANEL | DEVICE NO. | NAME |
|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-77 Instrumentation Signal Conditioner Report

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### 3.2.33 Instrumentation MDM Report

This report, Figure 3-78, is required by FOD/FCD to provide MDM instrumentation information. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).
- Nomenclature print option code:

| Code | Processing |
|---|---|
| 1 | Print Nomenclature, System. |
| 2 | Print Nomenclature, Operational flagged by an '*'; if it does not exist, print Nomenclature, System. |

Output Requirements

- Sort: BTU Name, BTU Card Location.
- Paging: BTU Name change.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature System (Sort Option=1) Nomenclature, Operational (Sort Option=2) |
| 47-56 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 58-65 | UNITS | Data Range Units |
| 67-70 | S/C NAME | Signal Conditioner 1 Name |
| 72 | X-DUCER TYPE | Sensor Type |

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| Col. | Heading | Data Element |
|---|---|---|
| 80-82 | MDM TYPE | BTU Card Type |
| 85-86 | CARD LOC | BTU Card Location |
| 89 | TLM ID | Telemetry Link ID |
| 93-100 | PANEL NO. | Device Panel Number 1 |
| 103-117 | PANEL | Device Name |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 93-100 | PANEL NO. | Device Panel Number 2 |

Line 3

| Col. | Heading | Data Element |
|---|---|---|
| 93-100 | PANEL NO. | Device Panel Number 3 |

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FLT/VCN
TLM ID

MASTER MEASUREMENT DATA BASE SYSTEM
INSTRUMENTATION MDM REPORT

PAGE
DATE

| M/S ID | NOMENCLATURE | * DATA RANGE LOW | HIGH | UNITS | * S/C NAME | X-DUCER TYPE | MDM CARD TYPE/LOC | TLM IC | DEVICE PANEL NO. | NAME |
|---|---|---|---|---|---|---|---|---|---|---|



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Figure 3-78 Instrumentation MDM Report

### 3.2.34 Instrumentation Critical Limits Report

This report, Figure 3-79, is required by FOD/FCD and provides the critical limits information. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).
- Nomenclature print option code:

| Code | Processing |
|---|---|
| 1 | Print Nomenclature, System. |
| 2 | Print Nomenclature, Operational. |
| 3 | Print Nomenclature, Operational flagged by an '*'; if it does not exist print Nomenclature, System. |

- Sort Option Code

| Code | Processing |
|---|---|
| 1 | M/S ID. |
| 2 | Telemetry Link ID, M/S ID. |

Output Requirements

- Page breaks required at Subsystem ID change.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System (Sort Option=1) Nomenclature, Operational (Sort Option=2) |
| 47-56 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |



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| Col. | Heading | Data Element |
|---|---|---|
| 58-65 | UNITS | Data Range Units |
| 67-76 | CRIT LIMITS LOW HI | C&W Limit Value, EU |
| 78 | TLM ID | Telemetry Link ID |
| 82-89 | PANEL NO. | Device Panel Number 1 |
| 92-107 | NAME | Device Name |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 82-89 | PANEL NO. | Device Panel Number 2 |

Line 3

| Col. | Heading | Data Element |
|---|---|---|
| 82-89 | PANEL NO. | Device Panel Number 3 |

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FLT/VCN
T/L ID

MASTER MEASUREMENT DATA BASE SYSTEM
INSTRUMENTATION CRITICAL LIMITS REPORT

PAGE
DATE

| M/S ID | NOMENCLATURE | * DATA RANGE LOW | HIGH | UNITS | * CRIT LIMITS LOW | HI | * TLM ID | DEVICE PANEL | NO. | NAME |
|---|---|---|---|---|---|---|---|---|---|---|

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Figure 3-79 Instrumentation Critical Limits Report

### 3.2.35 Instrumentation Caution and Warning Report

This report, Figure 3-80, is required by FOD/FCD to provide instrumentation caution and warning. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Sort Option Code:

| Code | Processing |
|---|---|
| 1 | M/S ID. |
| 2 | C&W Channel Number, M/S ID. |
| 3 | C&W Matrix Number, M/S ID. |

Output Requirements

- Only M/S IDs having a C&W Channel Number will be output.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System (Print Option=1) Nomenclature, Operational (Print Option=2) |
| 47-68 | C&W ANNUNCIATOR NOMENCLATURE | C&W Annunciator Nomenclature |
| 70-71 | C&W MAT NO. | C&W Matrix Number |
| 74-76 | C&W CHAN | C&W Channel Number |
| 79-88 | DATA RANGE LOW HIGH | Data Range Low, Data Range High |
| 90-97 | UNITS | Data Range Units |
| 99-108 | C&W EU | C&W Limit Value, EU |



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C-4

| Col. | Heading | Data Element |
|---|---|---|
| | LOW HI | |
| 110-118 | VOLTS | C&W Limit Value, Volts |
| | LOW HI | |
| 120 | C&W | C&W Limit Sense |
| | LIMIT SENSE | |
| 126 | TLM ID | Telemetry Link ID |

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MASTER MEASUREMENT DATA BASE SYSTEM
INSTRUMENTATION CAUTION AND WARNING REPORT

PAGE
DATE

| M/S ID | NOMENCLATURE | C & W ANNUNCIATOR NOMENCLATURE | C&W MAT NO. | C&W CHAN | * LOW | DATA RANGE HIGH | UNITS | * | ------C & W---------- --EU--------- LOW | HI | VOLTS-- LOW | HI | C&W LIMIT SENSE | TLM ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|



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Figure 3-80 Instrumentation Caution and Warning Report

### 3.2.36 Orbiter Systems Nomenclatures

This report, Figure 3-81, is required by FOD/FCD to list the systems nomenclatures associated with an M/S ID. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).

Output Requirements

- Paging: Page breaks at Telemetry Link ID change.
- Sort: M/S ID.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-67 | OPS NOMENCLATURE | Nomenclature, Operational |
| 69-88 | CRT NAME | CRT Nomenclature |
| 90 | T/L | Telemetry Link ID |

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MASTER MEASUREMENT DATA BASE SYSTEM
ORBITER SYSTEMS NOMENCLATURES



| M/S ID | NOMENCLATURE | OPS NOMENCLATURE | CBT NAME | T/L |
|---|---|---|---|---|

Figure 3-81 Orbiter Systems Nomenclatures



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### 3.2.37 Orbiter Systems Instrumentation Limits

This requirement has not been implemented.

This report, Figure 3-82, is required by FOD/FCD to provide the orbiter systems instrumentation limits.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry Link ID (maximum six values or blank for all).
- Sort Option Code:

| Code | Processing |
|---|---|
| 1 | M/S ID Alphanumeric order. |
| 2 | List in M/S ID order all M/S ID data where System Management Use = X; then list in M/S ID order all data where Caution and Warning Display is valued, then list remaining data ordered by M/S ID. |
| 3 | MCC Display MSK Number 1, 2, and 3, M/S ID. |

Output Requirements

- Paging: Subsystem ID change.
- A two line report is to be generated.
- Continuous page numbering.

Line 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID NO. | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-67 | OPS TITLE | Nomenclature, Operational |
| 72 | T/L | Telemetry Link ID |
| 75-84 | DATA RANGE | Data Range Low, Data Range High |



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| Col. | Heading | Data Element |
|---|---|---|
| | LOW HIGH | |
| 86-93 | UNITS | Data Range Units |
| 97 | C&W SENSE | C&W Limit Sense |
| 117-120 | MCC MSK NO. | MCC DISPLAY MSK No. 1 |
| | 1 | |
| 123-126 | 2 | MCC Display MSK No. 2 |
| 129-132 | 3 | MCC Display MSK No. 3 |

Line 2

| Col. | Heading | Data Element |
|---|---|---|
| 12-16 | SET1 | SM Limit Set 1 Low Value or State |
| 18-22 | | SM Limit Set 1 High Value |
| 25-29 | SET2 | SM Limit Set 2 Low Value or State |
| 31-35 | | SM Limit Set 2 High Value |
| 38-42 | SET3 | SM Limit Set 3 Low Value or State |
| 44-48 | | SM Limit Set 3 High Value |
| 51-55 | CRITICAL | SM Limit Set (Critical) Low Value |
| 57-61 | | SM Limit Set (Critical) High Value |
| 64-73 | C&W LIMITS | C&W Limits Value, Engineering |
| | LOW HI | |
| 75-79 | SET1 | Operational Limits 1 Low |
| 81-85 | | Operational Limits 1 High |
| 87-91 | SET2 | Operational Limits 2 Low |
| 93-97 | | Operational Limits 2 High |
| 99-103 | SET3 | Operational Limits 3 Low |
| 105-109 | | Operational Limits 3 High |
| 111-115 | SET4 | Operational Limits 4 Low |
| 117-121 | | Operational Limits 4 High |
| 123-127 | SET5 | Operational Limits 5 Low |
| 129-133 | | Operational Limits 5 High |

FLT/VCN
T/L ID

MASTER MEASUREMENT DATA BASE SYSTEM
ORBITER SYSTEMS INSTRUMENTATION LIMITS

PAGE
DATE

| M/S ID | NOMENCLATURE | OPS TITLE | T/L | * DATA RANGE LOW | HIGH | UNITS | * C&W SENSE | MCC MSK NO. ±1 | 2 | 3 |
|---|---|---|---|---|---|---|---|---|---|---|

----SYSTEM MANAGEMENT LIMITS LOW-HI---------- C&W LIMITS ---------- OPS LIMITS----------

| SET1 | SET2 | SET3 | CRITICAL | LOW | HI | SET1 | SET2 | SET3 | SET4 | SET5 |
|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-82 Orbiter Systems Instrumentation Limits

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### 3.2.38 Simulator Requirements

This report, Figure 3-83, is required by FOD Crew Training and Procedures Division in order to provide a current simulation requirement status. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- Sort: M/S ID.
- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | MEAS ID | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 50 | SIM RQT | Simulator Requirement |
| 53-60 | SIM VAL | Simulator Value, Static |
| 62 | C&W | Caution and Warning Display |
| 64 | CCD | Crew Control Device |
| 66-67 | DSP EFF | Dedicated Display |
| 69 | CRT | CRT Applicability |
| 71 | SMU | System Management Use |
| 73 | T/L | Telemetry Link ID |
| 77-78 | MDM TYPE | BTU Type |
| 81-84 | NAME | BTU Name |
| 86-87 | CHNL | BTU Channel Number |
| 91-94 | S/C NAME | Signal Conditioner 1 Name |

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MASTER MEASUREMENT DATA BASE SYSTEM
SIMULATOR REQUIREMENTS

PAGE
DATE

| MEAS ID | NOMENCLATURE | SIM RQT | SIM VAL | C & W | C C D | DE SP PF | C R T | S M U | T / L | ----MDM------ TYP | NAME | CHNL | S/C NAME |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-83 Simulator Requirements



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### 3.2.39 Additional FOD Instrumentation Report

The following report, Figure 3-84, is required by FOD/FCD to provide a composite of instrumentation data. It will be implemented using the Report Generation Capability (ref. 3.2.48).

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Telemetry link ID (maximum six values or blank for all).
- Nomenclature print option:

| Code | Processing |
|---|---|
| 1 | Print Nomenclature, System. |
| 2 | Print Nomenclature, Operational flagged by "*"; if it does not exist, print Nomenclature, system. |

- Sort Option Code:

| Code | Processing |
|---|---|
| 1 | M/S ID. |
| 2 | Signal Conditioner 1 Name, Signal Conditioner 1 Card and Channel. |
| 3 | BTU Name, BTU Card Location, BTU Channel Number. |

Output Requiremets

- Page break as follows:

| Sort Option Code | Page Break |
|---|---|
| 1 | None. |
| 2 | Signal Conditioner 1 Name change. |
| 3 | BTU Name change. |

- Continuous page numbering.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID No. | Measurement/Stimulus Identifier |
| 12-45 | NOMENCLATURE | Nomenclature, System |
| 47-50 | NAME | Signal Conditioner 1 Name |
| 52-58 | CARD/CH | Signal Conditioner 1 Card and Channel |
| 60-63 | BTU NAME | BTU Name |
| 73-77 | FDM PACK/CH | FDM Package and Channel Code |
| 81-82 | DED DISP | Dedicated Display |
| 87 | C&W | Caution and Warning Display |
| 90-123 | DEVICE PANEL NOMENCLATURE | Device Panel Nomenclature |
| 125 | T/L | Telemetry Link ID |

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ADDITIONAL FOD INSTRUMENTATION REPORT

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DATE

| M/S ID NO. | NOMENCLATURE | SIG COND NAME | CARD/CH | BTU NAME | FDM PACK/CH | DED DISP | C&W | DEVICE PANEL NOMENCLATURE | TELEMETRY LINK | ID |
|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-84 Additional FOD Instrumentation Report



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### 3.2.40 CDOC Print Program

This report is required by the Program Operations Office to display the contents of one or more Status Change Document (CDOC) files.

Input Requirements

- Status Change Document (CDOC) Number(s).

Output Requirements

- Report will list each record in the file in the display (online form) format.
- Two records will be printed on each report page.
- No report heading will be generated.
- There is no restriction on the number of CDOC files requested in the same run.

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### 3.2.41 Edit Table Update

Edit tables are required to validate or convert input values for specific data elements prior to recording these values. An update program will allow the user to add or delete entries in these tables. Changes will be possible by combining the delete and add functions. Reporting the content of the tables will be accomplished by a program which lists the table identification and the value of each entry. Two tables, Passwords and Update Authorization, are associated with System Security, reference Section 4.3. These tables will not be included in the report, unless requested by the Omnipotent Password user. See Figure 3-85.

The following data elements require edit tables:

| | |
|---|---|
| BTU, BTU Data Bus Name | (Associative) |
| BTU Signal Type | |
| BTU Transfer Rate | |
| BTU Type | |
| Calibration Data Fit | |
| Calibration Independent Variable Units | |
| Calibration Type | (Conversion) |
| Caution and Warning Display | |
| Caution and Warning Limit Sense | |
| Crew Control Device | |
| CRT Applicability | |
| CRT Format Type | |
| CRT Update Rate | |
| Data Range Units | |
| Data Type | |
| FDM Channel Frequency Response | |

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| | |
|---|---|
| Flight/Ground | |
| FTR Data Priority | |
| GPC Data Type | (Conversion) |
| GPC Input/Output Compute | |
| GPC Software Units | |
| Major Element Identification | |
| MDM Utilization | |
| Operational/Development Application | |
| Parallel Switch Control | |
| Required Response Rate | |
| Sensor Type | |
| Simulator Value, Static | |
| SM Major Message ID and Text | (Associative) |
| SM Minor Message ID and Text | (Associative) |
| SM Source | |
| Status Group IDs, Flights | |
| Status Group IDs, VCNs | |
| Status Group IDs, Special Flight | |
| Status Group ID by Data Element Number | (Associative) |
| Subsystem Identification | |
| Telemetry Link ID, Sibling Sort Indicator | (Associative) |

Where used above, "Associative" indicates a relational combination of data element values residing in the same table entry. For example, the data element "BTU Name" serves as the search argument and may have up to five (5) related "BTU Data bus Names".

"Conversion" indicates those tables which serve to convert input values as well as validate them.

MASTER MEASUREMENT DATA BASE SYSTEM
EDIT TABLE REPORT

PAGE
DATE

Data Element Name

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Figure 3-85 Edit Table Report

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### 3.2.42 Flight History Program

This batch program is required by POO Integration Division to archive data on tape for a particular flight which, if needed, may later be used in the History-Tape Compare Program for tape compares. It will also be available as a data source for MMDBS users. The tape will be unlabeled, nine track, 1600 BPI, written in ASCII display code and will contain up to eleven files.

Input Requirements

- Flight Number
- One or more file names (max. of 4) or the word ALL.

Output Requirements

File 1 - Tape Header (Always present on tape)

| Length | Data Element |
|---|---|
| 8 | Flight Number |
| 8 | Tape creation date |
| 240 | All VCNs that make up the flight (1-30) |
| 11 | A positional field. A 1 in a character position corresponds to a file (i.e., a 1 in the fifth position indicates that the fifth file is present). |

## File 2 - M/S ID Related

There will be one record per M/S ID on this file. The order of the data is M/S ID, basic, VCN, vehicle dependent, S/C 1, and S/C 2. The records will be sorted in straight M/S ID order (left to right).

## File 3 - Calibration

This file will contain one record per Curve Series Number with data in the order M/S ID, Calibration Type data, Curve Series, Curve Type data. The records will be sorted by straight M/S ID, Type, and Curve Series Number.

## File 4 - Telemetry Formats

This file will contain one record per M/S ID with data in the order Format ID, ID dependent data, M/S ID dependent data. The records will be sorted by Format ID and straight M/S ID.

## File 5 - FTR ID

This file will contain one record per M/S ID with data in the order FTR ID, M/S ID, M/S ID dependent data. The records will be sorted by FTR ID and straight M/S ID.

## File 6 - SCM List

This file will contain one record per M/S ID with data in the order SCM List ID, M/S ID, M/S ID dependent. The records will be sorted by List ID and straight M/S ID.



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## File 7 - CRT Display

This file will contain one record per CRT Sequential Number with data in the order CRT Page ID, M/S ID, M/S ID dependent, CRT Sequential Number, and sequential number dependent. The records will be sorted by Page ID, straight M/S ID, and Sequential Number.

## File 8 - PROM Sequence

This file will contain one record per MDM PROM Sequence ID with data in the order BTU NAME, VCN, MDM PROM Sequence ID, ID dependent, and 32 MDM PROM Sequence Numbers with M/S IDs. The records will be sorted by BTU NAME, VCN, and MDM PROM Sequence ID.

## File 9 - SM/PL Precondition Group

This file will contain one record per VCN with data in the order SM Precondition Group ID, VCN, 5 M/S IDs, and 3 Limit Set Numbers with logical expressions. The records will be sorted by Precondition Group ID and VCN.

## File 10 - Command Uplink

This file will contain one record per VCN with data in the order DSM Number, Title, Type, M/S ID, VCN, Command Words, Discrete Masks, and Related DSM Numbers. The records will be sorted by DSM Number and VCN.

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### 3.2.43 Vehicle Configuration Deletion Program

This program is required by POO Test Division to delete a Vehicle Configuration Number and all of its associated configuration data from the data base.

The program will (1) purge all data which relates directly to a vehicle configuration and (2) delete all references to the configuration in all areas of the MMDBS.

If all vehicle configurations for a key element have been deleted, the key element and its basic data, if any, will be output for review.

The Vehicle Configuration Deletion Program should be used only after the Flight History Program has been successfully executed.

The user is required to enter the Vehicle Configuration Number for data selection.

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### 3.2.44 Change Document Deletion Program

This utility program is required by POO Integration Division in coordination with user organizations to delete Status Change Document Numbers and all of the associated data.

The user is required to indicate whether the program is to delete specific Status Change Document Numbers or to delete Status Change Document Numbers having Status Change Document Entry Dates within a given date range. If the first option is to be executed, the user will input specific document numbers to be deleted; if the second option is to be executed, the user must enter two dates - the beginning date and the final date - indicating the date range. The CDOCs will be deleted that have a Status Change Document Entry Date within the date range.

A list of the specific Status Change Document Numbers deleted will be output.

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### 3.2.45 IS-WAS Listing

This program is required by POO Integration Division to output the approved and corresponding pending changes to MMDBS data. The report, example Figure 3-86, will be by CDOC with each entry on the CDOC file appearing on an output page with its corresponding approved data interspersed, printed directly below the pending data value. The action code (A/C) will indicate the update which will be performed when the pending data is entered into the system as approved data. The second date listed will reflect the date on which the last change was made on the CDOC file for the entry.

The program will treat each form 41 M/S ID together with the corresponding M/S ID related form as a separate record to be output.

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```
          MASTER MEASUREMENTS DATA BASE SYSTEM                DATE
                      IS-WAS LISTING                          PAGE

A/C<  >                  MMDBS - CALIBRATION                  DATE
MSID<          > TYPE<  > CRV SER< > CRV TYP<     > CDOC<        >
     '         '     '  '        ' '        '

FLT/VCN<        > <        > <        > <        > <        >
        '       ' '        ' '        ' '        ' '        '

DATA FIT< > IND VAR UNITS<    > NO MULTI CALS< > EFF:REV< > DATE<        >
        ' '              '    '              ' '        ' '     '        '

ACC<    > TOLERANCE<        > DEG OF CURVE< > CAL UNITS<        >
   '    '          '        '              ' '          '        '

POLYNOMIALS
A0<              > A1<              > A2<              >
  '              '   '              '   '              '

A3<              > A4<              > A5<              >
  '              '   '              '   '              '

LO IND VAR<      > HIGH IND VAR<      >
          '      '              '      '

VALID PTS:LC<        > 10<        > 20<        > 30<        > 40<        >
           '         '   '        '   '        '   '        '   '        '

          50<        > 60<        > 70<        > 80<        > 90<        >
           '         '   '        '   '        '   '        '   '        '

          HI<        >     NO DATA PAIRS<  >
           '         '                  '  '

SER NOS:  SFN<              > S/C 1<              > S/C 2<              >
           '                '      '              '      '              '

COMPOSITE PTS
          X1<        >  Y1<        >  X2<        >  Y2<        >
           '         '   '        '   '        '   '        '

          X3<        >  Y3<        >  X4<        >  Y4<        >
           '         '   '        '   '        '   '        '

          X5<        >  Y5<        >  X6<        >  Y6<        >
           '         '   '        '   '        '   '        '

          X7<        >  Y7<        >  X8<        >  Y8<        >
           '         '   '        '   '        '   '        '

          X9<        >  Y9<        > X10<        > Y10<        >
           '         '   '        '   '        '   '        '

         X11<        > Y11<        > RANGE<     -     > UNITS<        >
           '         '   '        '     '       STOP'     '        '

TITLE<                                  > DATA TYPE<    >
     '                                  '          '    '

12345678901234567890123456789012345678901234567890123456789012345678901234567890
```

Figure 3-86.- IS/WAS Listing

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### 3.2.46 History-Tape Compare Program.

A program is required by EOO Integration Division to compare two tapes generated by the Flight History Program and to print a report of the data records which differed. On an option basis it will compare files of the Flight Histories (identified by a functional area) to a Flight History tape.

The header files for both tapes will be printed but not compared. The "old" tape header will be printed first, then the new.

Each record on the data files of the tapes will be compared character by character, except for VCNs, if they appear. The VCNs will not be compared since all dependent data may be identical and the VCN would cause a change to be detected.

Only those records that are not identical will be printed. The following format will be used to show discrepancies:

File Name

| Data Element Name | Old Tape Value | New Tape Value |
|---|---|---|

The entire record will be printed. If a record has been deleted, only "Old Tape Values" will appear, and, conversely, only "New Tape Values" will appear if a record has been added.

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### 3.2.47 Data Transfer Program

This program is required to: a) transfer data from one VCN to another VCN within the M/S ID related area; b) transfer data from one VCN to another VCN in the Command Uplink (DSM) data area; c) transfer data from one TLM Format ID to another TLM Format ID; and d) transfer FTR data from one flight number to another flight number. Multiple transfers may be effected within each capability.

<u>M/S ID Related Data Transfer</u>

- User Input

  The user will supply two VCNs and two M/S IDs. All M/S ID related data (see Figure 2-1) associated with the first VCN and falling inclusively within the range of the two M/S IDs, (i.e., straight 10 character display sort order), will be transferred to the second VCN. Subject to the following processing rules, the user may further specify: a) transfer all M/S ID related data; or b) transfer all M/S ID related data except calibration; or c) transfer calibration data only.

- Processing Rules

  Data transferred from a VCN will not be deleted from that VCN.

  If the receiving VCN already contains M/S ID related data, this data will be overlayed with the data being transferred.

  If calibration data are not transferred, then all calibration data sets will remain unchanged if they exist.

  If calibration data only are transferred, then the



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remaining M/S ID related data will remain unchanged if it exists. The VCN must exist for all M/S IDs referenced.

- Output

  A list of all M/S IDs transferred will be printed. No other data elements will be printed.

DSM Related Data Transfer

- User Input

  The user will input two VCNs and two DSM numbers. All DSM data associated with the first VCN and falling inclusively within the range of the two DSM Numbers, (i.e., straight 4 character display sort), will be transferred to the second VCN.

- Processing Rules

  Data transferred from a VCN will not be deleted from that VCN.

  M/S ID-VCNs will not be validated in the system.

- Output

  A list of all DSM numbers transferred will be printed. No other data will be listed.

Telemetry Related Data Transfer

- User Input

  The user will input two TLM Format IDs. All associated M/S IDs and TLM data elements will be transferred from the first Format ID to the second Format ID.

- Processing Rules

  Data transferred from the TLM Format ID will not be deleted.

  The new Format ID created will be valid for the same



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flights as the old Format ID.

- Output

  A listing containing all M/S IDs and Flights for the new TLM Format ID will be printed. No other TLM Format data will be printed.

## FTR Related Data Transfer

- User Input

  Option 1

  The user will enter two Flights and an FTR ID. For the FTR ID entered, transfer all FTR data from the first Flight to the second Flight.

  Option 2

  The user will enter two Flights. Transfer all FTR data associated with the first Flight to the second Flight.

- Processing Rules

  1. If the Flight to which the data is being transferred is not valid for the particular FTR, the receiving Flight is to be made valid for that FTR, a message is to be printed, and the transfer is to be made.
  2. As all of the M/S IDs and related FTR data are being transferred to the receiving Flight:
     a. Transfer data only for those M/S IDs which are valid for the receiving Flight (those with M/S ID-related data).
     b. If an M/S ID is valid for the receiving Flight, but does not exist in the FTR/DTO data portion of the data base, establish the M/S ID in the FTR/DTO data area and complete



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the transfer.

c. If an M/S ID is valid for the receiving Flight, and also exists in the FTR/DTO portion of the data base for that Flight, then the transfer will be completed and will replace the data already associated with that M/S ID in the receiving Flight.

- Output

  List the M/S IDs from the sending Flight on a report, and note all those M/S IDs which were not valid for the receiving Flight.

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### 3.2.48 Report Generation Capability

This capability will be used to provide 'ad hoc' query-type report generation and should not be used for frequently requested reports. The RGC will be able to access the M/S ID Related data files or to access any one (1) of the other functional area files (except pending and status group) with key data and retrieve M/S ID dependent data from the M/S ID Related files. Only M/S ID Related and the Telemetry functional area have been implemented.

Output reports will provide for as many lines of header information as is required by the user, but the data fields must fit in one hundred thirty-six (136) characters. No interspersed text, calculations, or header changes from page to page will be permitted.

Sort and data selection "required values" criteria may be included in the report definition parameters but may be overridden at execution time. Reports by Flight or VCN only will be permitted.

User inputs and processing for adding/changing predefined report parameters and selecting them will be described in the MMDBS User's Guide.

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### 3.2.49 M/S ID Deletion Program

This requirement has not been implemented.

This program is required to remove from the system M/S IDs which have been deleted via pending data and for which all MMLs have been processed.

Input to this program will be a date, in MM/DD/YY format, which is the latest date for M/S ID deletion. This date will be compared to the MML Change Date and all M/S IDs which have been deleted prior to and including the date input will be removed from the M/S ID Related File. References to these M/S IDs will not be removed from any other area of the MMDBS by this program.

Output from this program will be a listing, in tabular form, of those M/S IDs deleted. Data still assigned to the M/S IDs, if any, will not be listed.

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### 3.3.11 RI TLM DOWNLINK LOAD PROGRAM

A tape will be supplied by RI to load new TLM downlink formats into the MMDB for flight-to-flight configuration.

Input Requirements

- A 1600 BPI, EBCDIC, 9 track Master File "N" tape; odd parity, maximum characters per record 7400 with 17,500 characters per block. Each block will be variable length. If necessary, the blocks will be blank filled to prevent records from being split between blocks. The record format is given in Table 3-1.
- Flight Number.
- The user will supply the JSC TLM Format ID along with the corresponding RI 20 character Format ID and RI 26 chararacter Format ID for the RI Downlink fields.
- The user has the option to print or suppress printing of the loaded data on the output listing.

Output Requirements

- Print out of all user input parameters to include Flight Number, Format ID's and Print Option.
- Print out of all new MSIDs added to the specified format that do not exist in the database or are not valid for the designated flight, sorted by error type.
- Error listing of any invalid flight numbers or any input JSC ID's which already exists in the database.
- Error listing of TLM data which fails the edit tests or contain a "$" in any of the 20 or 26

character fields.

- An optional listing of the TLM data that was loaded into the MMDB, sorted by the TLM Format ID-MSID (See Figure 3-92a)
- A listing of the rejected TLM data sorted by the TLM Format ID-MSID (see Figure 3-92b).

Processing

- Load all Actual TLM Format data along with the TLM Required Response Rate from the RI tape for each specified JSC Format ID. If a JSC TLM Format ID already exists in the MMDB, that format will not be processed. If a JSC TLM Format ID does not exist, then a format must be created and all corresponding data from the RI tape will be entered.
- All valid data from tape will be loaded regardless of MSID existence in the MMDB or flight assignment.
- An MSID will not be loaded if:
  1) "$" sign is found in any of the 20 or 26 character fields.
  2) Both 20 or 26 character fields are totally blank.
  3) If the RI TLM Format ID is not included in the user input RI TLM Format ID array. An appropriate error message will be output.
- If any of the six elements fail the edit test, it will be considered an invalid data element and will be blank filled.
- For a specific TLM Format ID, any blank element(s) along with their corresponding valid element(s) (there must be at least one valid element) will be loaded into the database.

- Data element breakdown of RI data fields:

| | Character | Element |
|---|---|---|
| 26 Character Field | 13-15 | Required Response Rate |
| 20 Character Field | 2-4 | Actual Response Rate |
| | 7-8 | First Frame |
| | 10-12 | First Word |
| | 20 | Most Significant Half Word |
| | 14-18 | Time Delay |

- Data elements will be validated as defined in Table 3-5. MSIDs will be validated by edit checks defined in Appendix A.
- Data will be off-loaded from tape onto a removable disc to provide the user with the ability to utilize this file for subsequent runs.
- Input tape will be validated to ensure that it is an "N" tape. If not, no further processing will be performed.

LOADED TLM DOWNLINK DATA

| JSC ID | MSID | RI ID | 20 CHAR RI RECORD | 26 CHAR RI RECORD |
|---|---|---|---|---|
| --- | --- | -- | --- | --- |

Figure 3-92a.- TLM Downlink Data Output.

### 3.2.52 FOD I/O Parameter Report

This report is required by FOD to provide information on input/output downlist telemetry data.

Input Requirements

- Flight Number
- TLM Format mapping table (OPS designator)

Output Requirements

- Data for this report will be selected based on the following criteria:
  Select all M/S IDs for the Flight input, where the 9th character of the M/S ID is C,X,B,V,Y,J, or P and where the GPC Software I/O/C data element equals I or O (alpha O). TLM associated data will be retrieved for the Flight input, M/S IDs selected, and for one or all of the TLM Format IDs supplied by the user.
- Sort Criteria
  Primary: BTU Name
  Secondary 1: SSH Drawing No.
  Within each BTU Name section, the report is to be sorted in SSH Drawing Number order, where SSH Drawing Number is a five character field containing alpha-numeric data representing paragraph numbers. If the field is valued, it will always contain a "period" and it will always contain at least one numeric to the left and one numeric to the right of the "period".
  An example of SSH Drawing Number values



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and the order in which they should appear on the report follows:

| Value | Sorted Order |
|---|---|
| 10.13 | 1.2 |
| 1.2 | 1.14 |
| 9.22 | 9.3 |
| 1.14 | 9.22 |
| 9.3 | 10.4 |
| 10.4 | 10.13 |

Non-valued SSH Drawing Numbers (5 blanks) are to be printed at the end of their BTU Name sections.

Secondary 2: GPC Software I/O

Secondary 3: M/S ID (MML Sort Criteria)

- Data Elements Printed

For each M/S ID selected the following data elements will be printed in the format indicated. Certain data calculations are required as outlined below.

| Print Columns | Data Element | Comments |
|---|---|---|
| 1-10 | M/S ID | |
| 11 | Blank | |
| 12-45 | Nomenclature, System | Line 1 |
| 46 | Blank | |
| 47-73 | OPS designator, TLM Actual Resp. Rate, TLM Req. Downlink 64/128 KBS Indicator | There may be three sets of these data printed one per line in the following format XX/YY.YZ, XX/YY.YZ, XX/YY.YZ where:<br><br>XX=OPS designator as |



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| Print Columns | Data Element | Comments |
|---|---|---|
| | | defined by the user, |
| | | YY.Y=TLM Actual Resp. Rate (left justified, blank filled, decimal point, if required) |
| | | Z=TLM Req. Downlink 64/128 KBS Indicator, if data base value=0, print H; if data base value=1, print B. |
| 47-73 | Line 2 same as above | (There will always be two lines, more lines if required, no blank lines.) |
| 47-73 | Line N same as above | |
| 74 | Blank | |
| 75-76 | BTU Card Location | |
| 77-79 | BTU Card Type | |
| 80 | Blank | |
| 81-82 | BTU Channel Number | |
| 83 | Blank | |
| 84-88 | BTU Start Bit Number, BTU end bit location (calculation) | Printed in the following format XX-YY where: XX=BTU Start Bit Number YY=BTU end bit location calculated as follows: |

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| Print Columns | Data Element | Comments |
|---|---|---|
| | | BTU end bit=BTU Start Bit + BTU Number of Bits - 1. (When Start Bit is valued and Number of Bits is blank, the end bit location is to be printed as a double colon "::") |
| 89 | Blank | If GPC software I/O/C data element equals 0, then print GPC Software Source Module. |
| 90-99 | Parent M/S ID | |
| 100 | Blank | |
| 101-102 | SSH Zone Number | |
| 103 | / | |
| 104-105 | SSH Page Number | |

## Report Headings

| Line No. | Print Columns | Heading |
|---|---|---|
| 1 | 1-44 | Blank |
| | 45-76 | Computer Input/Output Parameters |
| | 77-132 | Blank |
| 2 | 1-132 | Blank |
| 3 | 1-52 | Blank |
| | 53-56 | Current BTU Name Value |
| | 57-132 | Blank |
| 4 | 1-59 | Blank |
| | 60-64 | SSH Drawing Number Value |
| | 65-132 | Blank |

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| Line No. | Print Columns | Heading |
|---|---|---|
| 5 | 1-132 | Blank |
| 6 | 1-20 | Blank |
| | 21-26 | Input if GPC Software I/O/C = I<br>Output if GPC Software I/O/C = O |
| | 27-52 | Blank |
| | 53-64 | CPS/TLM Rate |
| | 65-75 | Blank |
| | 76-79 | Type |
| | 80 | Blank |
| | 81-82 | CH |
| | 83 | Blank |
| | 84-88 | BT(S) |
| | 89 | Blank |
| | 90-98 | PT MML NO |
| | 99-101 | Blank |
| | 102-103 | ZN |
| | 104-132 | Blank |
| 7 | 1-132 | Blank |

## Heading Printing and Paging

Lines 1 through 7 will be printed at the top of the first page. A page eject should occur after 136 lines breaking on a new M/S ID and then lines 1 through 7 printed at the top of the new page. Page eject should occur each time a BTU Name changes.

Line 4 through 7 will be printed each time the SSH Drawing No. changes or the same BTU Name. Insert a blank line between the last data line and next heading.

Line 5 through 7 will be printed when GPC Software I/O/C changes from I to O for the same SSH Drawing No. within the same RTU name.

No page numbers will be printed.

Insure that pages do not break between logical entries.

If no data for input or output do not print headings.

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### 3.2.53 Standard Cal Cross Reference

This report, Figures 3-87 and 3-88, is required by POO Integration Division to provide information concerning Standard and Actual curves.

Input Requirements

- Flight Number
- Print Option:

| Code | Selection |
|---|---|
| 1 | Standard Cals - Part 1 |
| 2 | Actual Curves - Part 2 |
| 3 | Both - Part 1 and 2 |

Output Requirements

- Sort:
  (1) Calibration Curve Type, M/S ID for Part 1.
  (2) M/S ID for Part 2.
- Paging:
  (1) Continuous page numbering within parts.
  (2) Page and renumber at beginning of part 2.
- Part 1 will be printed with the Curve Type on the first line and the field blanked until it changes.

Part 1

| Col. | Heading | Data Element |
|---|---|---|
| 1-5 | CRV TYPE | Calibration Curve Type |
| 7-16 | M/S ID | Measurement/Stimulus Identifier |
| 18-51 | SYSTEM NOMENCLATURE | Nomenclature, System |

Part 2

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | SYSTEM NOMENCLATURE | Nomenclature, System |

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FLT:

MASTER MEASUREMENT DATA BASE SYSTEM
STANDARD CAL CROSS REFERENCE - PART 1

DATE
PAGE

| CRV TYPE | M/S ID | SYSTEM NOMENCLATURE |
|---|---|---|

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Figure 3-87.- Standard Cal Cross Reference - Part 1

FLT:

MASTER MEASUREMENT DATA BASE SYSTEM
STANDARD CAL CROSS REFERENCE - PART 2

DATE
PAGE

| M/S ID | SYSTEM NOMENCLATURE |
| --- | --- |

Figure 3-88.- Standard Cal Cross Reference - Part 2



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### 3.2.54 Standard Cal List

This report, Figures 3-89 and 3-90, is required by POO Integration Division to provide a complete list of the Standard Cals in the data base.

**Input Requirements**

Print Option

| Code | Selection |
|---|---|
| 1 | List all Standard Cal numbers - Part 1 |
| 2 | List each Standard Cal and its data - Part 2 |
| 3 | Both |

**Output Requirements**

- Sort: Calibration Curve Type.
- Continuous page numbering.
- Part 1 will contain Standard Cal numbers in columns of 40 each with the same heading as Part 2.
- Part 2 will contain data for 3 Standard Cal numbers to a page.
- Continuous page numbering.

| Heading | Data Element |
|---|---|
| CRV TYP | Calibration Curve Type |
| ACC | Calibration Accuracy |
| DEG OF CURVE | Calibration Degree of Curve |
| TOLERANCE | Calibration Data Tolerance |
| DATA PRS | Calibration Number of Data Pairs |
| MSB | Calibration Most Significant Bit Value |
| SCALE FACT | Calibration Scale Factor |

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| Heading | Data Element |
|---|---|
| OFFSET | Calibration GPC OFFSET Value |
| A0 | Calibration Poly. Coeff. A0, Intercept |
| A1 | Calibration Poly. Coeff. A1 Curve Order 1 |
| A2 | Calibration Poly. Coeff. A2 Curve Order 2 |
| A3 | Calibration Poly. Coeff. A3 Curve Order 3 |
| A4 | Calibration Poly. Coeff. A4 Curve Order 4 |
| A5 | Calibration Poly. Coeff. A5 Curve Order 5 |

COMPUTED DATA POINTS

| | |
|---|---|
| 0 | Cal. Low Valid Data Pt. |
| 10 | Cal. Valid Data Pt. 10 Pct. |
| 20 | Cal. Valid Data Pt. 20 Pct. |
| 30 | Cal. Valid Data Pt. 30 Pct. |
| 40 | Cal. Valid Data Pt. 40 Pct. |
| 50 | Cal. Valid Data Pt. 50 Pct. |
| 60 | Cal. Valid Data Pt. 60 Pct. |
| 70 | Cal. Valid Data Pt. 70 Pct. |
| 80 | Cal. Valid Data Pt. 80 Pct. |
| 90 | Cal. Valid Data Pt. 90 Pct. |
| 100 | Cal. High Valid Date Pt. |

COMPOSITE DATA POINTS

| | |
|---|---|
| X1 | Cal. Ind. Composite Data Pt. 01 |
| X2 | Cal. Ind. Composite Data Pt. 02 |
| X3 | Cal. Ind. Composite Data Pt. 03 |
| X4 | Cal. Ind. Composite Data Pt. 04 |

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| Heading | Data Element |
|---|---|
| X5 | Cal. Ind. Composite Data Pt. 05 |
| X6 | Cal. Ind. Composite Data Pt. 06 |
| X7 | Cal. Ind. Composite Data Pt. 07 |
| X8 | Cal. Ind. Composite Data Pt. 08 |
| X9 | Cal. Ind. Composite Data Pt. 09 |
| X10 | Cal. Ind. Composite Data Pt. 10 |
| X11 | Cal. Ind. Composite Data Pt. 11 |
| Y1 | Cal. Dep. Composite Data Pt. 01 |
| Y2 | Cal. Dep. Composite Data Pt. 02 |
| Y3 | Cal. Dep. Composite Data Pt. 03 |
| Y4 | Cal. Dep. Composite Data Pt. 04 |
| Y5 | Cal. Dep. Composite Data Pt. 05 |
| Y6 | Cal. Dep. Composite Data Pt. 06 |
| Y7 | Cal. Dep. Composite Data Pt. 07 |
| Y8 | Cal. Dep. Composite Data Pt. 08 |
| Y9 | Cal. Dep. Composite Data Pt. 09 |
| Y10 | Cal. Dep. Composite Data Pt. 10 |
| Y11 | Cal. Dep. Composite Data Pt. 11 |

MASTER MEASUREMENT DATA BASE SYSTEM
STANDARD CAL LIST

DATE:
PAGE:

FIGURE 3-89 STANDARD CAL LIST

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MASTER MEASUREMENT DATA BASE SYSTEM
STANDARD CAL LIST

DATE:
PAGE:

CRV TYP< > ACC< > DEG OF CURVE< > TOLERANCE< > DATA PRS< > MSB< > SCALE FACT< > OFFSET< >

| COEFFICIENTS | | VALID DATA POINTS | | COMPOSITE DATA POINTS | | | |
|---|---|---|---|---|---|---|---|
| A0< | > | LOW< | > | X1< | > | Y1< | > |
| A1< | > | 10< | > | X2< | > | Y2< | > |
| A2< | > | 20< | > | X3< | > | Y3< | > |
| A3< | > | 30< | > | X4< | > | Y4< | > |
| A4< | > | 40< | > | X5< | > | Y5< | > |
| A5< | > | 50< | > | X6< | > | Y6< | > |
| | | 60< | > | X7< | > | Y7< | > |
| | | 70< | > | X8< | > | Y8< | > |
| | | 80< | > | X9< | > | Y9< | > |
| | | 90< | > | X10< | > | Y10< | > |
| | | HIGH< | > | X11< | > | Y11< | > |

CRV TYP< > ACC< > DEG OF CURVE< > TOLERANCE< > DATA PRS< > MSB< > SCALE FACT< > OFFSET< >

| COEFFICIENTS | | VALID DATA POINTS | | COMPOSITE DATA POINTS | | | |
|---|---|---|---|---|---|---|---|
| A0< | > | LOW< | > | X1< | > | Y1< | > |
| A1< | > | 10< | > | X2< | > | Y2< | > |
| A2< | > | 20< | > | X3< | > | Y3< | > |
| A3< | > | 30< | > | X4< | > | Y4< | > |
| A4< | > | 40< | > | X5< | > | Y5< | > |
| A5< | > | 50< | > | X6< | > | Y6< | > |
| | | 60< | > | X7< | > | Y7< | > |
| | | 70< | > | X8< | > | Y8< | > |
| | | 80< | > | X9< | > | Y9< | > |
| | | 90< | > | X10< | > | Y10< | > |
| | | HIGH< | > | X11< | > | Y11< | > |

CRV TYP< > ACC< > DEG OF CURVE< > TOLERANCE< > DATA PRS< > MSB< > SCALE FACT< > OFFSET< >

| COEFFICIENTS | | VALID DATA POINTS | | COMPOSITE DATA POINTS | | | |
|---|---|---|---|---|---|---|---|
| A0< | > | LOW< | > | X1< | > | Y1< | > |
| A1< | > | 10< | > | X2< | > | Y2< | > |
| A2< | > | 20< | > | X3< | > | Y3< | > |
| A3< | > | 30< | > | X4< | > | Y4< | > |
| A4< | > | 40< | > | X5< | > | Y5< | > |
| A5< | > | 50< | > | X6< | > | Y6< | > |
| | | 60< | > | X7< | > | Y7< | > |
| | | 70< | > | X8< | > | Y8< | > |
| | | 80< | > | X9< | > | Y9< | > |
| | | 90< | > | X10< | > | Y10< | > |
| | | HIGH< | > | X11< | > | Y11< | > |

FIGURE 3-90 STANDARD CAL LIST

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### 3.2.55 CDOC Tracking Report

This report, Figure 3-91, is required by POO Integration Division for a complete tracking of Status Change Document Numbers within the Master Measurements Data Base System (MMDBS).

**Input Requirements**

- Report Option:
  1 - Output all Status Change document Numbers.
  2 - Output selected Status Change Document Numbers (1-12 CDOC names).
  3 - Output all open change document numbers.

**Output Requirements**

- Sort Order:
  (1) Status Change Document Number
  (2) VCN/FLT
  (3) Status Group ID
- No Page Breaks when components change. Each report page will have a header giving the Report Name, Current Date and Page Number.
- Do not repeat Status Change Document Number, Status CDOC Revision Number, Status Change Reason, or FLT/VCN if value(s) are the same as the previous line on the report. If the Status Change Document Number is different from the previous line of the report, all components will be printed. No components in the first line on each page will be suppressed.

| Col. | Heading | Data Element |
|---|---|---|
| 1-7 | CDOC | Status Change Document Number |

| Col. | Heading | Data Element |
|---|---|---|
| 9 | REV | Status CDOC Revision Number |
| 11-40 | CHANGE REASON | Status Change Reason |
| 42-49 | FLT/VCN | Flight Number/Vehicle Configuration |
| 51-60 | GROUP ID | Status Group ID |
| 62-66 | RSP ORG | Status Responsible Organization |
| 68-75 | DATE REQUIRED | Status Required Implementation Date |
| 77-84 | DATE IMPLEMENTED | Status Implementation Date |

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MASTER MEASUREMENTS DATA BASE SYSTEM
CDOC TRACKING REPORT

PAGE

| CDOC | REV | CHANGE REASON | FLT/VCN | GROUP ID | RSP ORG | DATE REQUIRED | DATE IMPLEMENTED |
|---|---|---|---|---|---|---|---|

Figure 91 - CDOC Tracking Report

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### 3.2.56 Top Key Element List

This report is required by POO Integration Division as a "quick-look" table for data entry.

Input Requirements

- An option will be entered to select which of the following sets of keys will be listed: (1-5 or blank for all)

  TLM Format ID, FTR ID, DSM, BTU (MDM PROM), CRT Page ID, CDOC, Status Group ID, SCM List ID, or SM Precondition Group ID

Output Requirements

- Sort by key element.
- Section by key element.
- The heading will reflect the section bing listed.
- Each section will have sorted top key values reading down the page with each value's list of flights or VCNs on the same line or additional lines as required. A maximum of 10 flights or VCNs will be printed per line. A maximum of 6 lines will be printed per top key value. The top key value will not be repeated on additional lines, if any.
- Page numbers will re-cycle for each section of top key elements.

### 3.2.57 CDOC to CDOC Transfer

This capability is required to create or expand CDOC files, using the contents of existing CDOC files as source input.

Input Requirements

- CDOC Number of receiving (output) file.
- CDOC Number(s) of sending (input) file(s) in the sequence in which they are to be copied.

Output Requirements

- Copy the contents of the file(s) specified as sending to create or expand the receiving file. Copy is to proceed in same order as user input.
- If any of the requested CDOC files do not exist, an error message will be output and the run continue with the next requested file.
- As each record is copied form the sending file, the CDOC Number contained in that record is changed to that of the receiving file prior to output.
- No validation of data is required.
- No updates will be made to the MMDB System Status file (MMDBF16) by this program. Responsibility for this will rest with the user.

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## 3.2.58 MSID TRANSFER PROGRAM

This program is required by POO Integration Division to transfer data related to one MSID to a second MSID.

Input Requirements

- MSID that contains the data to be transferred.
- MSID that receives the data being transferred.
- VCN Option - VCN to be transferred. Blank for all VCNs.
  (The Program will allow multiple input records to be specified - i.e., multiple M/S IDs may be transferred).

Processing Requirements

- The receiving MSID may not exist in the data base.
- MSID will be added to the data base and VCN specified will be established for the receiving MSID.
- Basic data and all MSID/VCN related data will be transferred.

Output Requirements

- Echo of input.
- Error report, if any.

### 3.2.59 Downlist Requirements Report

This report, Figure 3-92, is required by EED/ASED and FOD for flight software definition.

Input Requirements

- Flight Number
- TLM Format ID (maximum of nine).

Output Requirements

- Sort: M/S ID.
- Paging: Continuous page numbering.
- If M/S ID is no longer legal in the system or for the flight, asterisks are to be inserted in M/S ID related data fields.
- Only downlist requirements are to be reported. However software edits are not required on the input.

| Col. | Heading | Data Element |
|---|---|---|
| 1-10 | M/S ID | Measurement/Stimulus Identifier |
| 12-45 | TITLE | Nomenclature, System |
| 47-48 | HCM SET | Homogeneous Data Set Number |
| 50-53 | BTU TRNS RATE | BTU Transfer Rate |
| 55-64 | PARENT | Parent M/S ID |
| 66-69 | FOD RESP RATE | Required Response Rate |
| 71-74 | FRMT ---- RATE | TLM Required Response Rate |
| 76 | LBR | TLM Low Bit Rate Indicator |
| 78-81 | FRMT ---- RATE | TLM Required Response Rate |
| 83 | LBR | TLM Low Bit Rate Indicator |



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| | | |
|---|---|---|
| 85-88 | FRMT ---- RATE | TLM Required Response Rate |
| 90 | LBR | TLM Low Bit Rate Indicator |
| 92-95 | FRMT ---- RATE | TLM Required Response Rate |
| 97 | LBR | TLM Low Bit Rate Indicator |
| 99-102 | FRMT ---- RATE | TLM Required Response Rate |
| 104 | LBR | TLM Low Bit Rate Indicator |
| 106-109 | FRMT ---- RATE | TLM Required Response Rate |
| 111 | LBR | TLM Low Bit Rage Indicator |
| 113-116 | FRMT ---- RATE | TLM Required Response Rate |
| 118 | LBR | TLM Low Bit Rate Indicator |
| 120-123 | FRMT ---- RATE | TLM Required Response Rate |
| 125 | LBR | TLM Low Bit Rate Indicator |
| 127-130 | FRMT ---- RATE | TLM Required Response Rate |
| 132 | LBR | TLM Low Bit Rate Indicator |

FLT
FRMT TYPE

MASTER MEASUREMENT DATA BASE SYSTEM
DOWNLIST REQUIREMENTS TABLE

DATE
PAGE

| M/S ID | TITLE | HS OE MT | DTU TRNS RATE | PARENT | RQD RESP RATE | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R | FRMT RATE | L B R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure 3-92 DOWNLIST REQUIREMENTS TABLE

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## 3.3 SYSTEM INTERFACE

In order to maintain a system which reflects all user organization needs, data tapes are required in order to interface with other systems.

The following sections give the tape formats required to be input/output by the system. Each tape format is described in terms of user input requirements needed for selection, processing required, and file and/or record formats. The tape record formats are described by listing the data elements, in the order they appear in a record, and their corresponding field lengths (the number of characters in the data field). The word 'Blank' is entered in the Data Element column indicating that no data will be placed in the field (it will be blank filled).

All tapes will contain a tape generation date and a tape identification.

Those tapes which require Status Cycle Numbers to be listed, will contain within that field twenty cycle numbers for each vehicle configuration assigned to the flight. Information for a maximum of twelve configurations will be listed. The order - VCN, MML, CAL, MDM, FDM, SENSIG, DISPCCN, GPCSW, PCM, OPCWLT, SIM, FMTLKBEG, FMTLKAC, FMTLTFQ, FMTLTAC, SM, SCM, DRC, CRT, UILNK, FTR - will be followed for each vehicle configuration listed.

The Command Uplink, Downlist Telemetry, Downlink Telemetry, and Calibration data tapes will be required as

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nine track, 800 BPI, ACSII tapes and/or seven track, 800 BPI, BCD tapes.

Any output tape specifying a blocking factor may have a short block at the end of a file. No attempt will be made to fill out a block by writing blank records.

The performance requirements, Section 4.0, lists the tapes and the frequency each is to be read or generated.

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### 3.3.1 Command Uplink Data Tape

This tape is required by GDSD, SSD, and FSD. The tape will consist of the following files (1) header, (2) single function and salvo DSM data, and (3) multi-word DSM data. Each file will be blocked four records per block. Padding must be added to the data records to facilitate processing by the Univac Systems.

Input Requirements

- Flight Number/Vehicle Configuration Number.
- Tape identification.
- Previous tape number (for comparison).

Output Requirements

- Sort: DSM Number.
- One set of DSM data will exist for each DSM Number.
- One data record will exist for each DSM Number.
- The command words and discrete masks will be an octal representation of the values. Command words and discrete masks which are not valued will be zero filled.
- A record change indicator will be given to denote the difference in the record after comparing the record as it existed on the previously generated tape with the record as it is to exist on the current tape. If the record had been deleted on the previous tape, it will not exist on the current tape.

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The record formats follow:

FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number/Vehicle Configuration Number |
| 08 | Tape Generation Date (MM/DD/YY) |
| 30 | Tape Identification (to be provided when job is submitted) |
| 1056 | Status Cycle Numbers |
| 08 | Padding (Blanks) |
| 1110 | Total Record Length |

FILE 2: SINGLE FUNCTION AND SALVO DSM DATA

All DSM Numbers having DSM Type equal 'F' or 'S' will be selected for this file.

| Length | Data Element |
|---|---|
| 04 | DSM Number |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |

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| Length | Data Element | |
|---|---|---|
| 01 | Record Change Indicator: | A - Add |
| | | C - Change |
| | | D - Delete |
| | | Blank - No change |
| 43 | Padding (Blanks) | |
| 150 | Total Record Length | |

FILE 3: MULTI-WORD DSM DATA

All DSM Numbers having DSM Type equal M will be selected for this file.

| Length | Data Element |
|---|---|
| 04 | DSM Number |
| 21 | DSM Title |
| 01 | DSM Type |
| 04 | DSM Number (Related DSM Number 1) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 2) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |

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| Length | Data Element |
|---|---|
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 3) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 4) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 5) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |

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| Length | Data Element |
|---|---|
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 6) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 7) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 8) |

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| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 9) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |
| 06 | Discrete Mask 2 |
| 04 | DSM Number (Related DSM Number 10) |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | DSM Type |
| 06 | Command Word 2-1 |
| 06 | Command Word 2-2 |
| 06 | Command Word 2-3 |
| 06 | Command Word 2-4 |
| 06 | Discrete Mask 1 |

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| Length | Data Element | |
|---|---|---|
| 06 | Discrete Mask 2 | |
| 01 | Record Change Indicator: | A-Add |
| | | C-Change |
| | | D-Delete |
| | | Blank-No change |
| 23 | Padding (Blanks) | |
| 1110 | Total Record Length | |

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### 3.3.2 Downlist Telemetry Data Tape

GDSD, FSD, ASED, MSFC, and IDSD require this tape for input to the telemetry ground processing systems. The tape will consist of two file types (header and downlist) blocked four records per block. Padding must be added to the data records to facilitate processing by the Univac Systems.

Input Requirements

- Flight Number.
- Tape identification.
- Previous tape number (for comparison).

Output Requirements

- Sort: TLM Format ID.
- One header record will precede the data records associated with each TLM Format ID.
- One data file will contain information for one TLM Format ID.
- A sufficient number of data records will be required to define each TLM Format ID (one record per M/S ID).
- All data records will be ordered by M/S ID - Major Element ID, Subsystem ID, Subsystem Location, Measurement Type ID, Signal Type and Characteristic Flag.
- A record change indicator will be given to denote the difference in the record after comparing the record as it existed on the previously generated tape with the record as it is to exist on the current tape. If the record had been deleted on the previous tape, it will not exist on the current tape.

The record formats follow:

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FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 08 | Tape Generation Date (MM/DD/YY) |
| 30 | Tape Identification (to be provided when job is submitted) |
| 1056 | Status Cycle Numbers |
| 08 | Padding (Blanks) |
| 1110 | Total Record Length |

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## FILE 2-N: DOWNLIST FILES

The total number of data files generated will be dependent on the number of downlist TLM Format IDs in the system; one file will be generated for each TLM Format ID. All telemetry data having a TLM Format Type equal '1' will be selected for output to this type of file.

### Header Record (1 per file)

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 01 | TLM Format Type |
| 04 | TLM Format ID |
| 34 | TLM Format Descriptor |
| 193 | Padding (Blanks) |
| 240 | Total Record Length |

### Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | Telemetry Link ID |
| 02 | Homogeneous Data Set Number |
| 04 | Data Type |
| 02 | BTU Start Bit Number |
| 02 | BTU Number of Bits |
| 16 | BTU/MDM Half Word 1 Bit Format |
| 16 | BTU/MDM Half Word 2 Bit Format |
| 16 | BTU/MDM Half Word 3 Bit Format |

| Length | Data Element |
|---|---|
| 16 | BTU/MDM Half Word 4 Bit Format |
| 32 | GPC Software Hal Name |
| 32 | GPC Software Compool Name |
| 01 | GPC Software Downlist Data Type |
| 02 | GPC Software Start Bit |
| 02 | GPC Software Data Length |
| 04 | TLM Actual Response Rate |
| 02 | TLM First Frame |
| 03 | TLM First Word |
| 05 | TLM Time Delay |
| 10 | Parent M/S ID |
| 01 | Record Change Indicator: A-Add<br>C-Change<br>D-Delete<br>Blank-No change |
| 06 | Padding (Blanks) |
| 240 | Total Record Length |

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### 3.3.3 Downlink Telemetry Data Tape

GDSD, FSD, ASED, MSFC, and IDSD require this tape for input to the telemetry ground processing systems. The tape will consist of two file types (header and downlink) blocked four records per block. Padding must be added to the data records to facilitate processing by the Univac Systems. One tape identification file will precede the data files.

Input Requirements

- Flight Number.
- Tape identification.
- Previous tape number (for comparison).

Output Requirements

- Sort: TLM Format ID.
- One header record will precede the data records associated with each TLM Format ID.
- One data file will contain information for one TLM Format ID.
- A sufficient number of data records will be required to define each TLM Format ID (one record per M/S ID).
- All data records will be ordered by M/S ID - Major Element ID, Subsystem ID, Subsystem Location, Measurement Type ID, Signal Type, and Characteristic Flag.
- A record change indicator will be given to denote the difference in the record after comparing the record as it existed on the previously generated tape to the record as it will exist on the current tape. If the record had been deleted on the previous tape, it will not exist on the current tape.

The record formats follow:

FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 08 | Tape Generation Date (MM/DD/YY) |
| 30 | Tape Identification (to be provided when job is submitted) |
| 1056 | Status Cycle Numbers |
| 08 | Padding (Blanks) |
| 1110 | Total Record Length |

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# FILE 2-N: DOWNLINK FILES

The total number of data files generated will be dependent on the number of downlink TLM Format IDs files in the system; one file will be generated for each TLM Format ID. All telemetry data, except those having a TLM Format Type equal '1', will be selected for output to this file.

## Header Record (1 per file)

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 01 | TLM Format Type |
| 04 | TLM Format ID |
| 34 | TLM Format Descriptor |
| 103 | Padding (Blanks) |
| 150 | Total Record Length |

## Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 21 | Nomenclature, Operational |
| 01 | Telemetry Link ID |
| 02 | Homogeneous Data Set Number |
| 04 | Data Type |
| 02 | Downlink Start Bit |
| 02 | Downlink Data Length |
| 08 | Downlink Byte Bit Format |
| 04 | TLM Actual Response Rate |
| 02 | TLM First Frame |

| Length | Data Element |
|---|---|
| 03 | TLM First Word |
| 05 | TLM Time Delay |
| 01 | TLM Most Significant Half Word |
| 04 | PCM MU Actual Fetch Command |
| 02 | BTU Word Number |
| 04 | BTU Transfer Rate |
| 04 | PCM MU Actual Data RAM Address |
| 10 | Parent M/S ID |
| 01 | Record Change Indicator: A-Add<br>C-Change<br>D-Delete<br>Blank-No change |
| 26 | Padding (Blanks) |
| 150 | Total Record Length |

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### 3.3.4 Calibration Tape

This tape is required by GDSD, FSD, MSFC, KSC, ASED, and IDSD. The tape will consist of the following files: (1) header, (2) downlink, (3) meter/display, (4) downlist, (5) wideband analog, and (6) to (N) remaining calibration types in ascending order. Each file will be blocked four records per block. Padding must be added to each data record to facilitate processing by the Univac Systems.

Input Requirements

- Flight Number.
- Major Element ID (max of 6 or blank for all).
- Tape Identification.
- Telemetry Link ID values (from 1 to 5 values; criteria for selection to File 2).
- Telemetry Link ID values (from 1 to 5 values; criteria for selection to File 4).

Output Requirements

- One tape identification file will precede the data files.
- The data records are sorted in M/S ID order - Major Element ID, Subsystem ID, Subsystem Location, Measurement Type ID, Signal Type, and Characteristic Flag.
- Calibration Type is a 2-digit integer value.
- Files 1-5 will always be present. The user is responsible for insuring that there is data in the data base for Calibration Types 01, 02, 03 and 04.
- A summary report will indicate which files have been created during a run.
- Although there are only four possible output formats, each currently valid Calibration Type will be written

to a separate output file (e.g., if the maximum allowable number of Calibration Types (36) are all currently valid, that is, all appeared in the Calibration Type Conversion Table, then a total of 37 output files would be generated (36 for Calibration Type and 1 for the Header).

- A "blank" will be inserted into the 1-character field currently containing the Calibration Type, except in the case where the Calibration Type equals 01, 02, 03, or 04. In this case, the 1-character field and the new 2-character field will both contain the Calibration Type Value (e.g., 1 and 01, 2 and 02, etc.).

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The record formats follow:

FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 08 | Tape Generation Date (MM/DD/YY) |
| 30 | Tape Identification (to be provided when job is submitted) |
| 07 | Major Elements Selected |
| 1056 | Status Cycle Numbers |
| 01 | Padding (Blanks) |
| 1110 | Total Record Length |

## FILE 2: CALIBRATION/DOWNLINK

M/S IDs to be selected for output are: (1) those with a Calibration Type = 01; (2) any M/S ID with no Calibration Type, but with a Telemetry Link ID equal to one of those (max. of 5) input by the user at run time.

One record will be provided for each multi-scale Calibration Set.

### Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 05 | Data Range Low |
| 05 | Data Range High |
| 08 | Data Range Unit |
| 01 | Telemetry Link ID |
| 10 | Parent M/S ID |
| 01 | System Management Use |
| 02 | Dedicated Display |
| 01 | Caution and Warning Display |
| 01 | Operational/Developmental Application |
| 01 | Flight/Ground |
| 01 | Sensor - S/C Supplier |
| 04 | BTU Name or FDM Name |
| 05 | Calibration Curve Type |
| 15 | Sensor Part Number |
| 14 | Sensor Serial Number |
| 15 | Signal Conditioner 1, Part Number |
| 15 | Signal Conditioner 2, Part Number |



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| Length | Data Element |
|---|---|
| 14 | Signal Conditioner 1, Serial Number |
| 14 | Signal Conditioner 2, Serial Number |
| 12 | Signal Conditioner 1, Package Reference Designator |
| 12 | Signal Conditioner 2, Package Reference Designator |
| 11 | BTU Plug & Pin/Subsystem |
| 04 | Calibration Accuracy |
| 01 | Calibration Number of Sets |
| 01 | Calibration Type |
| 01 | Calibration Data Fit |
| 02 | Calibration Number of Data Pairs |
| 01 | Calibration Degree of Curve |
| 14 | Calibration Poly. Coeff. A0 Intercept |
| 14 | Calibration Poly. Coeff. A1 Curve Order 1 |
| 14 | Calibration Poly. Coeff. A2 Curve Order 2 |
| 14 | Calibration Poly. Coeff. A3 Curve Order 3 |
| 14 | Calibration Poly. Coeff. A4 Curve Order 4 |
| 14 | Calibration Poly. Coeff. A5 Curve Order 5 |
| 08 | Calibration Low Valid Data Point |
| 08 | Calibration Valid Data Point 10 Pct |
| 08 | Calibration Valid Data Point 20 Pct |
| 08 | Calibration Valid Data Point |

| Length | Data Element |
|---|---|
| | 30 Pct |
| 08 | Calibration Valid Data Point |
| | 40 Pct |
| 08 | Calibration Valid Data Point |
| | 50 Pct |
| 08 | Calibration Valid Data Point |
| | 60 Pct |
| 08 | Calibration Valid Data Point |
| | 70 Pct |
| 08 | Calibration Valid Data Point |
| | 80 Pct |
| 08 | Calibration Valid Data Point |
| | 90 Pct |
| 08 | Calibration High Valid Data Point |
| 08 | Calibration Data Tolerance |
| 01 | Calibration Effectivity, Curve Series |
| 01 | Calibration Effectivity, Revision Number |
| 08 | Calibration Effectivity, Date |
| 04 | Calibration Independent Variable Units |
| 08 | Calibration Dependent Composite Data Point 01 |
| 08 | Calibration Independent Composite Data Point 01 |
| 08 | Calibration Dependent Composite Data Point 02 |
| 08 | Calibration Independent Composite Data Point 02 |
| 08 | Calibration Dependent Composite |



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| Length | Data Element |
|---|---|
| | Data Point 03 |
| 08 | Calibration Independent Composite |
| | Data Point 03 |
| 08 | Calibration Dependent Composite |
| | Data Point 04 |
| 08 | Calibration Independent Composite |
| | Data Point 04 |
| 08 | Calibration Dependent Composite |
| | Data Point 05 |
| 08 | Calibration Independent Composite |
| | Data Point 05 |
| 08 | Calibration Dependent Composite |
| | Data Point 06 |
| 08 | Calibration Independent Composite |
| | Data Point 06 |
| 08 | Calibration Dependent Composite |
| | Data Point 07 |
| 08 | Calibration Independent Composite |
| | Data Point 07 |
| 08 | Calibration Dependent Composite |
| | Data Point 08 |
| 08 | Calibration Independent Composite |
| | Data Point 08 |
| 08 | Calibration Dependent Composite |
| | Data Point 09 |
| 08 | Calibration Independent Composite |
| | Data Point 09 |
| 08 | Calibration Dependent Composite |
| | Data Point 10 |
| 08 | Calibration Independent Composite |
| | Data Point 10 |



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| Length | Data Element |
|---|---|
| 08 | Calibration Dependent Composite Data Point 11 |
| 08 | Calibration Independent Composite Data Point 11 |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 1) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 1) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 2) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 2) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 3) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 3) |
| 05 | SM Limit Set Low Value (SM Limit Set ID = C) |
| 05 | SM Limit Set High Value (SM Limit Set ID = C) |
| 04 | Data Type |
| 02 | TLM Actual Start Bit |
| 02 | Data Length |
| 03 | C&W Channel Number |
| 02 | BIU Start Bit Number |
| 02 | Calibration Type |
| 14 | Padding (Blanks) |
| 660 | Total Record Length |



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## FILE 3: CALIBRATION METER/DISPLAY

Two types of M/S IDs will be selected for output to this file: (1) M/S IDs having a Calibration Type = 02 (Meter/Display) and (2) M/S IDs having a value (other than blank) for Dedicated Display. Since the latter type pertains to discrete M/S IDs, the corresponding calibration data fields will be blank.

### Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 05 | Data Range Low |
| 05 | Data Range High |
| 08 | Data Range Unit |
| 01 | Telemetry Link ID |
| 01 | System Management Use |
| 02 | Dedicated Display |
| 01 | Caution and Warning Display |
| 01 | Flight/Ground |
| 05 | Calibration Curve Type |
| 15 | Sensor Part Number |
| 04 | Calibration Accuracy |
| 01 | Calibration Number of Sets |
| 01 | Calibration Type |
| 01 | Calibration Data Fit |
| 02 | Calibration Number of Data Pairs |
| 01 | Calibration Degree of Curve |
| 14 | Calibration Poly. Coeff. A0 Intercept |



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| Length | Data Element |
|---|---|
| 14 | Calibration Poly. Coeff. A1 Curve Order 1 |
| 14 | Calibration Poly. Coeff. A2 Curve Order 2 |
| 14 | Calibration Poly. Coeff. A3 Curve Order 3 |
| 14 | Calibration Poly. Coeff. A4 Curve Order 4 |
| 14 | Calibration Poly. Coeff. A5 Curve Order 5 |
| 08 | Calibration Low Valid Data Point |
| 08 | Calibration Valid Data Point 10 Pct |
| 08 | Calibration Valid Data Point 20 Pct |
| 08 | Calibration Valid Data Point 30 Pct |
| 08 | Calibration Valid Data Point 40 Pct |
| 08 | Calibration Valid Data Point 50 Pct |
| 08 | Calibration Valid Data Point 60 Pct |
| 08 | Calibration Valid Data Point 70 Pct |
| 08 | Calibration Valid Data Point 80 Pct |
| 08 | Calibration Valid Data Point 90 Pct |
| 08 | Calibration High Valid Data Point |
| 08 | Calibration Data Tolerance |



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| Length | Data Element |
|---|---|
| 01 | Calibration Effectivity, Curve Series Number |
| 01 | Calibration Effectivity, Revision Number |
| 08 | Calibration Effectivity, Date |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 1) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 1) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 2) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 2) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 3) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 3) |
| 05 | SM Limit Set Low Value (SM Limit Set ID = C) |
| 05 | SM Limit Set High Value (SM Limit Set ID = C) |
| 08 | Calibration Dependent Composite Data Point 01 |
| 08 | Calibration Independent Composite Data Point 01 |
| 08 | Calibration Dependent Composite Data Point 02 |
| 08 | Calibration Independent Composite Data Point 02 |
| 08 | Calibration Dependent Composite Data Point 03 |

| Length | Data Element |
|---|---|
| 08 | Calibration Independent Composite Data Point 03 |
| 08 | Calibration Dependent Composite Data Point 04 |
| 08 | Calibration Independent Composite Data Point 04 |
| 08 | Calibration Dependent Composite Data Point 05 |
| 08 | Calibration Independent Composite Data Point 05 |
| 08 | Calibration Dependent Composite Data Point 06 |
| 08 | Calibration Independent Composite Data Point 06 |
| 08 | Calibration Dependent Composite Data Point 07 |
| 08 | Calibration Independent Composite Data Point 07 |
| 08 | Calibration Dependent Composite Data Point 08 |
| 08 | Calibration Independent Composite Data Point 08 |
| 08 | Calibration Dependent Composite Data Point 09 |
| 08 | Calibration Independent Composite Data Point 09 |
| 08 | Calibration Dependent Composite Data Point 10 |
| 08 | Calibration Independent Composite Data Point 10 |
| 08 | Calibration Dependent Composite |



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| Length | Data Element |
|---|---|
| | Data Point 11 |
| 08 | Calibration Independent Composite |
| | Data Point 11 |
| 03 | C&W Channel Number |
| 02 | Calibration Type |
| 31 | Padding (Blanks) |
| 540 | Total Record Length |

## FILE 4: CALIBRATION/DOWNLIST

M/S IDs to be selected for output are: (1) those with a Calibration Type = 03; (2) any M/S ID with no Calibration Type, but with a Telemetry Link ID equal to one of those (max. of 5) input by the user at run time.

### Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 05 | Data Range Low |
| 05 | Data Range High |
| 08 | Data Range Units |
| 08 | GPC Software Units |
| 01 | Telemetry Link ID |
| 10 | Parent M/S ID |
| 01 | System Management Use |
| 02 | Dedicated Display |
| 01 | Caution and Warning Display |
| 01 | Flight/Ground |
| 02 | BTU Card Location |
| 05 | Calibration Curve Type |
| 15 | Sensor Part Number |
| 14 | Sensor Serial Number |
| 15 | Signal Conditioner 1, Part Number |
| 15 | Signal Conditioner 2, Part Number |
| 14 | Signal Conditioner 1, Serial Number |
| 14 | Signal Conditioner 2, Serial Number |
| 12 | Signal Conditioner 1, Package Reference Designator |



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| Length | Data Element |
|---|---|
| 12 | Signal Conditioner 2, Package Reference Designator |
| 11 | BTU Plug & Pin/Subsystem |
| 04 | Calibration Accuracy |
| 01 | Calibration Number of Sets |
| 01 | Calibration Type |
| 01 | Calibration Data Fit |
| 02 | Calibration Number of Data Pairs |
| 01 | Calibration Degree of Curve |
| 14 | Calibration Poly. Coeff. A0 Intercept |
| 14 | Calibration Poly. Coeff. A1 Curve Order 1 |
| 14 | Calibration Poly. Coeff. A2 Curve Order 2 |
| 14 | Calibration Poly. Coeff. A3 Curve Order 3 |
| 14 | Calibration Poly. Coeff. A4 Curve Order 4 |
| 14 | Calibration Poly Coeff. A5 Curve Order 5 |
| 08 | Calibration Low Valid Data Point |
| 08 | Calibration Valid Data Point 10 Pct |
| 08 | Calibration Valid Data Point 20 Pct |
| 08 | Calibration Valid Data Point 30 Pct |
| 08 | Calibration Valid Data Point 40 Pct |
| 08 | Calibration Valid Data Point |



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| Length | Data Element |
|---|---|
| | 50 Pct |
| 08 | Calibration Valid Data Point |
| | 60 Pct |
| 08 | Calibration Valid Data Point |
| | 70 Pct |
| 08 | Calibration Valid Data Point |
| | 80 Pct |
| 08 | Calibration Valid Data Point |
| | 90 Pct |
| 08 | Calibration High Valid Data Point |
| 08 | Calibration Data Tolerance |
| 01 | Calibration Effectivity, Curve Series |
| 01 | Calibration Effectivity, Revision Number |
| 08 | Calibration Effectivity, Date |
| 04 | Calibration Independent Variable Units |
| 08 | Calibration Dependent Composite Data Point 01 |
| 08 | Calibration Independent Composite Data Point 01 |
| 08 | Calibration Dependent Composite Data Point 02 |
| 08 | Calibration Independent Composite Data Point 02 |
| 08 | Calibration Dependent Composite Data Point 03 |
| 08 | Calibration Independent Composite Data Point 03 |
| 08 | Calibration Dependent Composite |



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| Length | Data Element |
|---|---|
| | Data Point 04 |
| 08 | Calibration Independent Composite |
| | Data Point 04 |
| 08 | Calibration Dependent Composite |
| | Data Point 05 |
| 08 | Calibration Independent Composite |
| | Data Point 05 |
| 08 | Calibration Dependent Composite |
| | Data Point 06 |
| 08 | Calibration Independent Composite |
| | Data Point 06 |
| 08 | Calibration Dependent Composite |
| | Data Point 07 |
| 08 | Calibration Independent Composite |
| | Data Point 07 |
| 08 | Calibration Dependent Composite |
| | Data Point 08 |
| 08 | Calibration Independent Composite |
| | Data Point 08 |
| 08 | Calibration Dependent Composite |
| | Data Point 09 |
| 08 | Calibration Independent Composite |
| | Data Point 09 |
| 08 | Calibration Dependent Composite |
| | Data Point 10 |
| 08 | Calibration Independent Composite |
| | Data Point 10 |
| 08 | Calibration Dependent Composite |
| | Data Point 11 |
| 08 | Calibration Independent Composite |
| | Data Point 11 |



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| Length | Data Element |
|---|---|
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 1) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 1) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 2) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 2) |
| 05 | SM Limit Set Low Value or State (SM Limit Set ID = 3) |
| 05 | SM Limit Set High Value (SM Limit Set ID = 3) |
| 05 | SM Limit Set Low Value (SM Limit Set ID = C) |
| 05 | SM Limit Set High Value (SM Limit Set ID = C) |
| 02 | Blank |
| 02 | Calibration Type |
| 02 | GPC Software Start Bit |
| 02 | GPC Software Data Length |
| 08 | GPC Software Units |
| 01 | GPC Software Downlist Data Type |
| 02 | BTU Start Bit Number |
| 02 | BTU Number of Bits |
| 10 | Calibration Most Significant Bit Value |
| 04 | Data Type |
| 10 | Calibration GPC Offset Value |
| 10 | Calibration Scale Factor |
| 690 | Total Record Length |



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# FILE 5: CALIBRATION/WIDE BAND

Two types of M/S IDs will be selected for output to this file: (1) M/S IDs having a Calibration Type = 04 (Wide Band) and (2) M/S IDs having an alpha value for their corresponding Required Response Rate. Since the latter type pertains to discrete M/S IDs, the corresponding calibration data fields will be blank.

## Data Record

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 05 | Data Range Low |
| 05 | Data Range High |
| 08 | Data Range Unit |
| 01 | Telemetry Link ID |
| 04 | Required Response Rate |
| 01 | Sensor-S/C Supplier |
| 04 | FDM Name |
| 05 | Calibration Curve Type |
| 15 | Sensor Part Number |
| 14 | Sensor Serial Number |
| 15 | Signal Conditioner 1, Part Number |
| 15 | Signal Conditioner 2, Part Number |
| 14 | Signal Conditioner 1, Serial Number |
| 14 | Signal Conditioner 2, Serial Number |
| 12 | Signal Conditioner 1, Package Reference Designator |
| 12 | Signal Conditioner 2, Package Reference Designator |

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| Length | Data Element |
|---|---|
| 04 | Calibration Accuracy |
| 01 | Tape Recorder 1 ID |
| 02 | Tape Recorder 1 Track |
| 01 | Tape Recorder 2 ID |
| 02 | Tape Recorder 2 Track |
| 03 | FDM Channel Center Frequency |
| 01 | FDM Channel Frequency Response |
| 10 | FDM Input Plug and Pin |
| 05 | FDM Package and Channel Code |
| 12 | FDM Reference Designator |
| 01 | Calibration Number of Sets |
| 01 | Calibration Type |
| 01 | Calibration Data Fit |
| 02 | Calibration Number of Data Pairs |
| 01 | Calibration Degree of Curve |
| 14 | Calibration Poly. Coeff. A0 Intercept |
| 14 | Calibration Poly. Coeff. A1 Curve Order 1 |
| 14 | Calibration Poly. Coeff. A2 Curve Order 2 |
| 14 | Calibration Poly. Coeff. A3 Curve Order 3 |
| 14 | Calibration Poly. Coeff. A4 Curve Order 4 |
| 14 | Calibration Poly. Coeff A5 Curve Order 5 |
| 08 | Calibration Low Valid Data Point |
| 08 | Calibration Valid Data Point 10 Pct. |
| 08 | Calibration Valid Data Point 20 Pct. |
| 08 | Calibration Valid Data Point 30 Pct. |
| 08 | Calibration Valid Data Point 40 Pct. |

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| Length | Data Element |
|---|---|
| 08 | Calibration Valid Data Point 50 Pct. |
| 08 | Calibration Valid Data Point 60 Pct. |
| 08 | Calibration Valid Data Point 70 Pct. |
| 08 | Calibration Valid Data Point 80 Pct. |
| 08 | Calibration Valid Data Point 90 Pct. |
| 08 | Calibration High Valid Data Point |
| 08 | Calibration Data Tolerance |
| 01 | Calibration Effectivity, Curve Series |
| 01 | Calibration Effectivity, Revision Number |
| 08 | Calibration Effectivity, Date |
| 04 | Calibration Independent Variable Units |
| 08 | Calibration Dependent Composite Data Point 01 |
| 08 | Calibration Independent Composite Data Point 01 |
| 08 | Calibration Dependent Composite Data Point 02 |
| 08 | Calibration Independent Composite Data Point 02 |
| 08 | Calibration Dependent Composite Data Point 03 |
| 08 | Calibration Independent Composite Data Point 03 |
| 08 | Calibration Dependent Composite Data Point 04 |
| 08 | Calibration Independent Composite Data Point 04 |
| 08 | Calibration Dependent Composite Data Point 05 |
| 08 | Calibration Independent Composite Data |

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| Length | Data Element |
|---|---|
| | Point 05 |
| 08 | Calibration Dependent Composite Data Point 06 |
| 08 | Calibration Independent Composite Data Point 06 |
| 08 | Calibration Dependent Composite Data Point 07 |
| 08 | Calibration Independent Composite Data Point 07 |
| 08 | Calibration Dependent Composite Data Point 08 |
| 08 | Calibration Independent Composite Data Point 08 |
| 08 | Calibration Dependent Composite Data Point 09 |
| 08 | Calibration Independent Composite Data Point 09 |
| 08 | Calibration Dependent Composite Data Point 10 |
| 08 | Calibration Independent Composite Data Point 10 |
| 08 | Calibration Dependent Composite Data Point 11 |
| 08 | Calibration Independent Composite Data Point 11 |
| 02 | Calibration Type |
| 23 | Padding (Blanks) |
| 630 | Total Record Length |

## FILES 6 to N: CALIBRATION/OTHER

All M/SIDs having a Calibration Type other than 01, 02, 03, or 04 and that do not otherwise qualify as specified for Files 2 through 5 will be output in Calibration Type ascending order. The record format will be determined from a format indicator contained in the Calibration Type Conversion Table (a format indicator of 1 indicates file 2 format, an indicator of 2 means file 3 format, 3 means file 4 format and 4 means file 5 format).

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### 3.3.5 Downlist Requirements Tape

A nine track, unlabeled, 800 BPI, data tape written in EBCDIC, seven records per block, is required by ASED and SSD as input to the downlist compiler.

Input Requirements

- Flight Number
- 396 characters of header information.

Output Requirements

- One file per downlist format.
- Files will be in TLM Format ID order.
- Data records 9-n within each format file are in M/S ID order.

The record formats follow:

FILE 1-N: DOWNLIST FORMAT

Header Record 1-3 (1 set per file)

Each record is required to be 132 characters in length and will contain information entered from input cards.

Header Record 4-8 (1 set per file)

Each record is required to be 132 characters in length and will contain 'Blank' data.

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C-5

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Data Record

| Length | Data Element or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 01 | Blank |
| 01 | TIM Low Bit Rate Indicator |
| 01 | Blank |
| 04 | TIM Required Response Rate |
| 01 | Blank |
| 02 | TIM Format ID (2nd and 3rd chars.) |
| 01 | Blank |
| 02 | Homogeneous Data Set Number |
| 01 | Blank |
| 34 | Nomenclature, System |
| 11 | Blank |
| 01 | L |
| 01 | D=delete, A=add, C=change, blank=no action |
| 61 | Blank |

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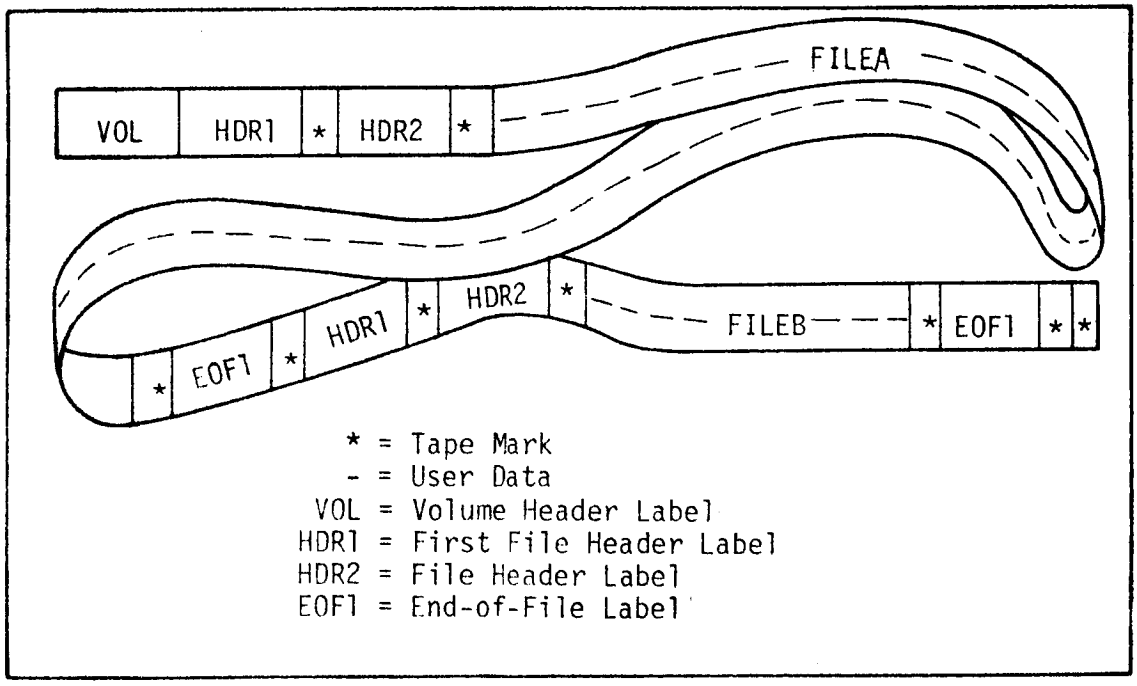
### 3.3.6 Downlist Format/GPC Calibration Update Tape

A nine track, ANSI labeled, 800 BPI, data tape written in EBCDIC, 170 characters per record, ten records per block, will be supplied by ASED and SSD to update MMDB downlist format data and GPC Calibration data. The first N files on the tape will contain downlist data and the last file will contain GPC Calibration data. There will be one downlist format and associated data per file. The first four records on each downlist file will contain header information and will be ignored. The last file on the tape will contain GPC Calibration data. This file will contain only one header record.

The tape configuration is illustrated below:



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Input Requirements

- Flight Number
- Set Identifier for the data sets on the input tape
- The number (N) indicating the total number of data files on the tape
- The user will supply a specification of each TLM Format ID to be selected from the tape and the corresponding MMDBS TLM Format ID to be updated.
- Load option - 0 = load from specified downlist format files and calibration file, 1 = load only from specified downlist format files, 2 = load from calibration file.
- The user will supply a table, in the format of the example below, to specify the conversion of the two character tape value of GPC Software Downlist Data Type (col. 67-68) to one character for storage. Legal tape values are 1-99.

EXAMPLE:

| Tape GPC Software Downlist Data Type | Data Base GPC Software Downlist Data Type | GPC Software Data Length | Data Type |
|---|---|---|---|
| 1 | 1 | 16 | HPL |
| 1 | 1 | 32 | SPL |
| 1 | 1 | 48 | EPL |
| 1 | 1 | X | |
| 2 | 2 | 64 | DPL |
| 2 | 2 | X | |
| 3 | 3 | 16 | HMD |
| 3 | 3 | 32 | FMD |
| 3 | 3 | 48 | EMD |
| 3 | 3 | 64 | DMD |

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| Tape GPC Software Downlist Data Type | Data Base GPC Software Downlist Data Type | GPC Software Data Length | Data Type |
|---|---|---|---|
| 3 | 3 | X | |
| 4 | 4 | Y | HXS |
| 5 | 5 | Y | FXS |
| 6 | 6 | Y | BD |
| 7 | 7 | Y | BSS |
| 8 | 8 | Y | BSU |
| 10 | A | Y | VAR |

Data Base Update Requirements/Tape Format

- Downlist Format Data
  - TLM Format IDs must exist in the system for the specified flight, otherwise an error message will be printed.
  - M/S IDs must exist for TLM Format ID, otherwise an error message will be printed.
  - Existing actual data will be overlayed by the tape data.
  - Neither TLM Format IDs nor M/S IDs will be added or deleted when updating from this tape.
  - All data will be for TLM Format Type = 1.
- GPC Calibration Data
  - All data on this tape will be for Calibration Type 03.
  - M/S ID and Flight must exist in MMDB data base, otherwise an error message will be printed.
  - Existing data will be overlayed by tape data. If existing data references a Standard Curve Type (First Character = N) then an error message and curve data will be printed.

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- If Calibration Type 03 does not exist for an M/S ID, or if the Calibration Effectivity, Curve Series does not exist for the Calibration Type, the new data will be added. New data added will always be treated as actual; however, since Cal. Curve Type is not available on the input tape, this data element will be left blank.
- All data pertaining to Calibration Effectivity, Curve Series will be deleted from the data base for the input Calibration Type, and replaced with the new data.
- Neither Calibration Effectivity, Curve Series, Calibration Type, nor M/S ID may be deleted when using this tape to update the MMDB data base.
- All M/S IDs with Calibration Type 03 data contained in the data base which were not updated will be listed. Note: This requirement has been temporarily disabled.
- Referencing the user supplied input table, if the values for GPC Software Downlist Data Type and GPC Software Data Length equal one of the combinations in the table, load the corresponding value for Data Type (column 4) into the data base. (The program must still load GPC Software Data Length and GPC Software Downlist Data Type.) An "X" under GPC Software Data Length indicates that for any other value than those preceding it, no value is to be loaded into Data Type. A "Y" under GPC Software Data Length indicates that if the field is valued, load the corresponding value into Data Type.
- If the GPC Software Downlist Data Type (from the tape) equals the value in the following table, and Calibra-

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tion Poly. Coeff. A1 Curve equals the corresponding table value, set Calibration Data Fit equal to the corresponding table value. However, if the GPC Software Units equal SPECIAL, set Calibration Data Fit equal to 6 and disregard the table. Of course, GPC Software Downlist Data Type and Calibration Poly. Coeff. A1 Curve will still be loaded into the data base.

| Data Type | A1 | Data Fit |
|---|---|---|
| 1 | blank | 4 |
| 1 | valued | 2 |
| 2 | blank | 4 |
| 2 | valued | 2 |
| 4 | blank | 4 |
| 4 | valued | 2 |
| 5 | blank | 4 |
| 5 | valued | 2 |
| 7 | blank | 4 |
| 7 | valued | 2 |
| 8 | blank | 4 |
| 8 | valued | 2 |

- For all V90 through V99 measurements, store (a) TLM Actual Response Rate into BTU Transfer Rate, and (b) "GPC" into BTU Name; as well as storing them into the GPC fields.
- When performing any of the preceding steps, if a data base value is different from the value being loaded, load the new value and print the M/S ID, old value, and new value. Data elements for which values will be listed are GPC Software Start Bit, BTU Start Bit Numer, GPC Software Data Length, BTU Number of Bits, Data Type, Calibration Data Fit, GPC Software

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Downlist Data Type, and Calibration Poly. Coeff.

A1 Curve.

Note: above requirement has been temporarily disabled.

Record Formats

- Downlist Files (1 file per TLM Format ID)
  - Header Records 1-4 (1 set per file); each record will be 170 characters. Ignore all data.
  - Data Records (170 characters, one record per M/S ID).

| Char Loc | Length | Data Element and/or Action |
|---|---|---|
| 1-10 | 10 | M/S ID |
| 47 | 1 | TLM Low Bit Rate Indicator (must be 0 or 1) |
| 52-55 | 4 | TLM Actual Response Rate |
| 58-59 | 2 | TLM Format ID. TLM Format Type must = 1, Convert the tape TLM Format ID to the corresponding MMDBS TLM Format ID which was input. |
| 67-68 | 2 | GPC Software Downlist Data Type (must be 1 through 99). Convert using Edit table. |
| 71-72 | 2 | GPC Software Data Length (must be 01 through 64); also load into BTU Number of Bits. |
| 76-77 | 2 | GPC Software Start Bit; also load into BTU Start Bit Number. Must be 00 through 64 |
| 80-81 | 2 | TLM First Frame. Must be 00 through 99 |
| 85-87 | 3 | TLM First Word. Must be 000 through 999 |
| 89-120 | 32 | GPC Software COMPOOL Name |
| 123-154 | 32 | GPC Software HAL Name |
| 155-170 | | Not Used |

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- GPC Calibration File (last file on tape)
  - Header Record (One 170 character header record will precede data records. Ignore all data.)
  - Data Record (170 characters; one record per Calibration Effectivity, Curve Series.)

| Char Loc | Length | Data Element and/or Action |
|---|---|---|
| 1-10 | 10 | M/S ID |
| 47-54 | 8 | GPC Software Units |
| 57 | 1 | Calibration Effectivity, Curve Series |
| 60 | 1 | Calibration Degree of Curve - May be blank or 2-4. If 2-4, subtract 1 and store results. |
| 77-90 | 14 | Calibration Poly Coeff. A0, Intercept |
| 92-105 | 14 | Calibration Poly Coeff. A1 Curve Order 1 |
| 107-120 | 14 | Calibration Poly Coeff. A2 Curve Order 2 |
| 122-135 | 14 | Calibration Poly Coeff. A3 Curve Order 3 |
| 137-141 | 5 | Data Range Low (Bi-Level 0) |
| 143-147 | 5 | Data Range High (Bi-Level 1) |
| 148-170 | | Not Used |

Output Requirements

Downlist

- Processed Data
  - For each TLM Format ID updated, the M/S ID and associated input data will be printed. Previous data values will not be printed.

    Note: above requirement has been temporarily disabled.
- Error Processing

  If a TLM Format ID does not exist, then the TLM Format ID and all associated M/S IDs will be listed.

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No data will be loaded. If the M/S ID does not exist in the system (i.e., it could exist for the TLM Format ID but be invalid in the system), no data associated with the M/S ID will be loaded. The TLM Format ID and M/S ID will be printed. If the M/S ID does not exist for the TLM Format ID, but exists in the system, the same action will be taken.

All M/S IDs for the input TLM Formats which were not updated will be listed.

Data base TLM Format Type will be checked before updating. If the type is = 1, the updates will be applied; if not, an error message will be printed instead.

If the TLM Required Downlink 64/128 KBS Indicator, GPC Software Downlist Data Type or GPC Software Data Length do not pass edits indicated above, then data element value will not be loaded and an error message will be printed.

GPC Calibration Data

- Processed Data
  For each M/S ID updated the input data will be printed. Previous data values will not be printed.
  Note: above requirement has been temporarily disabled.
- Error Processing
  If the M/S ID is not valid in the system for the flight indicated then the M/S ID and Calibration Effectivity, Curve Series will be printed. No data will be loaded.

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### 3.3.7 Configuration Management Tape/Report

This output is required by POO Integration Division to indicate by M/S ID, the functional group modified by a Status Change Document (CDOC) for a specified Flight Number or Vehicle Configuration Number within a range of Status Implementation Dates.

Input Requirements

- Flight Number (FLT) or Vehicle Configuration Number (VCN)
- Status Implementation Dates, Inclusive Beginning and Ending Dates
- Output Media Option Specification
- Output Tape Header Data, up to five (5) lines

Output Requirements

- Report and tape sequence is M/S ID.
- Flight No. *STS-0 will always be included.
- Selection is based on content of System Status file (MMDBF16). Qualified candidates are those CDOC(s) and functional groups which have been implemented within the specified (input) data range on the specified FLT/VCN. These candidates will be used to access the CDOC file and extract the M/S IDs from those transactions which were applied to data within the functional group on the qualified FLT/VCN. If FLT is specified on input, all VCNs assigned to that FLT will also be considered.
- If a CDOC has been qualified and the CDOC transaction file is empty or does not exist, this fact will be reported, including reason, FLT/VCN, implementation

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date, and CDOC Number.

- If no transactions are found for a qualified candidate, this fact will be reported, including reason, FLT/VCN, implementation date, Status Group ID, and CDOC Number.
- Columnar sequence of and headings for the functional groups will be dependent on the content of a user maintained edit table which has restricted access. This table contains Status Group IDs, a three (3) character heading field, and a two (2) digit sequence (left to right) field. If the sequence field is zero, the functional group will not be reported. The maximum permissible sequence number is 32.
- Output Media Options:

| Code | Output |
|---|---|
| 1 | Report, print tape of report and tape |
| 2 | Report and print tape of report |

Output Tape Specifications

- Physical - Nine (9) Track, 1600 BPI, ASCII encoded, unlabeled, 1 file, fixed 1100 character length physical records.
- First record is a header record, format:

| Field No. | Start | Length | Comment |
|---|---|---|---|
| 1 | 1 | 63 | User input line 1 |
| 2 | 64 | 72 | User input line 2 |
| 3 | 136 | 72 | User input line 3 |
| 4 | 208 | 72 | User input line 4 |
| 5 | 280 | 72 | User input line 5 |
| 6 | 352 | 749 | Blanks, unused |

Of fields 1 through 5, any or all may be blank.

- Second through n physical records are data, con-

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sisting of 22 logical records of fifty (50) characters each, in the following format:

| Start | Length | Content |
|---|---|---|
| 1 | 10 | M/S ID |
| 11 | 7 | Status Change Document Number |
| 18 | 1 | Status Change Document Revision Number |
| 19 | 32 | Character "X" in appropriate column(s) tc indicate which group(s) modified. Column is as indicated in table. |

Output Report Specifications

- Report Title (2 lines) is "Master Measurements Data Base System", "Configuration Management Report".
- Report Heading includes report title, identification of selection critieria, FLT/VCN and Status Implementation Date range, plus report date and page number.
- Page numbering is consecutive, starting with page 1.
- Page 1 contains the Report Heading and a repeat of the five (5) lines of input which were used in the tape header record.

### 3.3.8 Software Development Lab Data Tape

A nine track, labeled, 800 BPI, data tape written in EBCDIC, seven records per block, is required by SSD as input to the SDL.

Input Requirements

- Flight Number/Vehicle Configuration Number.

Output Requirements

- All M/S IDs where BTU Type is valued.
- Calibration data will be output for the first set of curve data retrieved where Calibration Type = 03.
- One file, in M/S ID order, with the following format:

Header Records 1-6

Each record will be 132 characters in length and contain 'Blank' information.

Data Records 7, 11, 15, etc.

| Length | Data Element |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 07 | Blank |
| 34 | Nomenclature, System |
| 01 | Blank |
| 04 | Data Type |
| 01 | Blank |
| 04 | BTU Number of Words |
| 01 | Blank |
| 02 | BTU MIA Address (if BTU Type ≠ 2 or 4) |
| 01 | Blank |



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| Length | Data Element |
|---|---|
| 23 | BTU Data Bus Names (if BTU Type ≠ 2 or 4) |
| 15 | Blank |
| 16 | BTU/MDM Half Word 2 Bit Format (if BTU Type ≠ 2 or 4) |
| 13 | Blank |

Data Records 8, 12, 16, etc.

| Length | Data Element |
|---|---|
| 07 | Blank |
| 12 | Sensor Package Reference Designator |
| 01 | Blank |
| 15 | Device Name |
| 12 | BTU Reference Designator |
| 02 | Blank |
| 15 | BTU Destination Equipment Name 1 (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 11 | BTU Plug and Pin/Subsystem (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 04 | BTU Name (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 03 | BTU Card Type (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 01 | GPC Software Input/Output/Compute |
| 01 | Blank |
| 02 | BTU Card Location (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 02 | BTU Channel Number (if BTU Type ≠ 2 or 4) |
| 01 | Blank |

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| Length | Data Element |
|---|---|
| 02 | BTU Word Number (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 02 | BTU Start Bit Number (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 02 | BTU Number of Bits (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 16 | BTU/MDM Half Word 1 Bit Format (if BTU Type ≠ 2 or 4) |
| 02 | Blank |
| 04 | GPC Software Required Update Rate |
| 07 | Blank |

Data Records 9, 13, 17, etc.

| Length | Data Element |
|---|---|
| 07 | Blank |
| 10 | Parent M/S ID |
| 18 | Blank |
| 04 | PCM MU Actual Data RAM Address |
| 10 | Blank |
| 15 | BTU Destination Equipment Name 1 (if BTU Type = 2 or 4) |
| 01 | Blank |
| 11 | BTU Plug and Pin/Subsystem (if BTU Type = 2 or 4) |
| 01 | Blank |
| 04 | BTU Name (if BTU Type = 2 or 4) |
| 01 | Blank |
| 03 | BTU Card Type (if BTU Type = 2 or 4) |
| 03 | Blank |
| 02 | BTU Card Location (if BTU Type = 2 or 4) |

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| Length | Data Element |
|---|---|
| 01 | Blank |
| 02 | BTU Channel Number (if BTU Type = 2 or 4) |
| 01 | Blank |
| 02 | BTU Word Number (if BTU Type = 2 or 4) |
| 01 | Blank |
| 02 | BTU Start Bit Number (if TU Type = 2 or 4) |
| 01 | Blank |
| 02 | BTU Number of Bits (if BTU Type = 2 or 4) |
| 01 | Blank |
| 16 | BTU/MDM Half Word 1 Bit Format (if BTU Type = 2 or 4) |
| 03 | Blank |
| 03 | BTU Transfer Rate |
| 07 | Blank |

Data Records 10, 14, 18, etc.

| Length | Data Element |
|---|---|
| 07 | Blank |
| 10 | Data Range Low-High |
| 03 | Blank |
| 08 | Data Range Units |
| 01 | Blank |
| 10 | Calibration Most Significant Bit Value (where Calibration Type = 03) |
| 01 | Blank |
| 10 | Calibration GPC OFFSET Value |
| 01 | Blank |
| 10 | Calibration Scale Factor |
| 01 | Blank |
| 01 | BTU Signal Type (if BTU Type = 2 or 4) |

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| Length | Data Element |
|---|---|
| 01 | BTU Signal Type (if BTU Type ≠ 2 or 4) |
| 01 | Blank |
| 08 | Flight Number/Vehicle Configuration Number |
| 59 | Blank |

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### 3.3.9 SM/PL Detailed Processing Tape

This requirement has not been implemented.

A nine track, labeled, 800 BPI card image data tape written in EBCDIC is required by SSD to be used in the generation of the SM Level C requirements. An additional tape with the same format is required for generation of PL Level C requirements.

Input Requirements

- Vehicle Configuration Number and Flight Number.
- Tape Option:

| Code | Processing |
|---|---|
| 1 | SM tape |
| 2 | PL tape |

Output Requirements

- The files will always appear in the order shown. If no data exists for a particular card type or tape option, that file will not exist on the tape.
- All data values are left justified unless otherwise specified by the letters RJ.

FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number |
| 08 | Tape generation date (MM/DD/YY) |
| 1056 | Status Cycle Numbers |

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## FILE 2: CARD TYPE A

M/S IDs selected for this file must have a value in SM Acquisition Rate and an "X" in System Management Use (Tape Option 1) or SM Payload Use (Tape Option 2).

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 03 | Blank |
| 01 | SM Parameter Type |
| 01 | Blank |
| 02 | SM Acquisition Rate (RJ) |
| 01 | Blank |
| 04 | PCM MU Actual Data RAM Address (if blank, use SM Source |
| 01 | Blank |
| 04 | BTU Name |
| 01 | Blank |
| 02 | BTU MIA Address |
| 01 | Blank |
| 02 | BTU Card Location |
| 01 | Blank |
| 02 | BTU Channel Number (If this field and BTU Card Location are not valued, but BTU Name and BTU MIA Address are, then put an M here) |
| 07 | Blank |
| 02 | BTU Start Bit Number |
| 01 | Blank |
| 02 | BTU Number of Bits (RJ) |
| 03 | Blank |
| 02 | BTU Word Number (RJ) |
| 01 | Blank |

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| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Parent M/S ID |
| 02 | Blank |
| 03 | Total No. of words in serial I/O channel (RJ) (TBD) |
| 01 | "A" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

FILE 3: CARD TYPE B

M/S IDs selected for this file must have an "X" in System Management Use (Tape Option 1) or in SM Payload Use (Tape Option 2) and one of the following conditions: 1) SM Parameter Type = "A," "F", or "G" or 2) SM Parameter Type = blank and Signal Type ID = "A", "C", "F", "G", or "V". Calibration data will be output for the first curve retrieved for Calibration Type = 01.

Card 1

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 21 | Blank |
| 08 | Data Range Units |
| 09 | Blank |
| 01 | Calibration Degree of Curve (blank if = 0) |
| 09 | Blank |
| 01 | Calibration Independent Variable Units (Conversion: CNTS=0, VOIT=2, PCNT=P, SCPT=S) |
| 10 | Blank |
| 01 | "B" |

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| Length | Data Element, Process, or Constant |
|---|---|
| 01 | Blank or "D" for Delete |
| 01 | "1" |
| 08 | Blank |

Card 2

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 10 | Blank |
| 14 | Cal. Poly Coeff. A0, Intercept (RJ) (if blank, Data Range Low (LJ) |
| 02 | Blank |
| 14 | Cal. Poly Coeff. A1, Curve Order 1 (RJ) (if blank, Data Range High (LJ) |
| 02 | Blank |
| 14 | Cal. Poly Coeff A2, Curve Order 2 (RJ) |
| 03 | Blank |
| 01 | "B" |
| 01 | Blank |
| 01 | "2" |
| 08 | Blank |

Card 3

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 10 | Blank |
| 14 | Cal. Poly Coeff. A3, Curve Order 3 (RJ) |
| 35 | Blank |
| 01 | "E" |
| 01 | Blank |

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| Length | Data Element, Process, or Constant |
|---|---|
| 01 | "3" |
| 08 | Blank |

FILE 4: CARD TYPE C

M/S IDs selected for this file must have an "X" in System Management Use (Tape Option 1) and a value in SM Limit Set ID. There will be a new card for each Precondition Group ID assigned to the VCN. This file will not exist for Tape Option 2.

Card 1

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 01 | C identifies the C&W limit set only in case of concurrent limit checking. |
| 02 | Blank |
| 03 | SM Precondition Group ID (Blank if C&W limit set) |
| 02 | Blank |
| 01 | SM Number of Alert Limit Sets ("1" if C&W) |
| 01 | Blank |
| 02 | SM Noise Filter Value |
| 02 | Blank |
| 03 | SM Major Message ID |
| 02 | SM Minor Message ID |
| 01 | Blank |
| 01 | SM Alarm Class |
| 01 | Blank |
| 02 | SM Alarm Indicator |
| 35 | Blank |

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| Length | Data Element, Process, or Constant |
|---|---|
| 01 | "C" |
| 01 | Blank or "D" for delete |
| 01 | "1" |
| 08 | Blank |

## Cards 2-4

If the group is C&W alarm, there will only be cards 1 and 2, but if there is an Alert group, there will be a card 2 for Alert set 1, a card 3 for Alert set 2 (if it exists), and a card 4 for Alert set 3 (if it exists).

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 01 | C identifies the C&W limit set, only if concurrent limit checking |
| 02 | Blank |
| 01 | SM Limit Set Number ("1" if C&W) |
| 07 | Blank |
| 05 | SM Limit Set Low Value or State |
| 07 | Blank |
| 05 | SM Limit Set High Value |
| 31 | Blank |
| 01 | "C" |
| 01 | Blank |
| 01 | "2", "3", or "4" (depending on number of limit sets). |
| 08 | Blank |

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FILE 5: CARD TYPE D

Data for this file is selected if SM Precondition Group ID exists. Only SM Limit Set Number = 1, 2, or 3 will be selected. This file will not exist for Tape Option 2.

One set of cards will be provided for each limit set selected. A set of cards can have up to 2 cards depending on the precondition logical equation.

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Card 1

| Length | Data Element, Process, or Constant |
|---|---|
| 03 | SM Precondition Group ID |
| 02 | Blank |
| 03 | SM Warmup Time Delay |
| 05 | Blank |
| 01 | SM Number of Alert Limit Sets |
| 01 | Blank |
| 01 | SM Limit Set selected (corresponding to precondition expression) |
| 01 | Blank |
| 12 | SM Precondition Logical Expression (char. 1-12) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 13-14) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 17-18) |
| 01 | Blank |
| 12 | SM Precondition Logical Expression (char. 19-30) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 31-32) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 35-36) |
| 15 | Blank |
| 01 | "C" |
| 01 | Blank or "D" if delete |
| 01 | "1" |
| 08 | Blank |

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Card 2

| Length | Data Element, Process, or Constant |
|---|---|
| 03 | SM Precondition Group ID |
| 10 | Blank |
| 01 | Number of Alert Limit Sets |
| 01 | Blank |
| 01 | SM Limit Set Selected (Corresponding to Precondition Expression) |
| 01 | Blank |
| 12 | SM Precondition Logical Expression (char. 37-48) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 49-50) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 53-54) |
| 01 | Blank |
| 12 | SM Precondition Logical Expression (char. 55-66) |
| 01 | Blank |
| 02 | SM Precondition Logical Expression (char. 67-68) |
| 18 | Blank |
| 01 | "D" |
| 01 | Blank |
| 01 | "2" |
| 08 | Blank |

FILE 6: CARD TYPE E

M/S IDs selected for this file must have an "X" in System Management Use (Tape Option 1) or in SM Payload Use (Tape Option 2) and SM Constant Initial Value must be valued.

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| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 03 | Blank |
| 16 | SM Constant Initial Value |
| 01 | Blank |
| 08 | Data Range Units |
| 31 | Blank |
| 01 | "E" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

FILE 7: CARD TYPE G

ALL SM Major Message IDS (100 to 999) will be selected for this file (Tape Options 1 and 2).

| Length | Data Element, Process, or Constant |
|---|---|
| 03 | SM Major Message ID |
| 01 | Blank |
| 20 | SM Message Text (for the ID) |
| 45 | Blank |
| 01 | "G" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

FILE 8: CARD TYPE H

All SM Minor Message IDs (01 to 99) will be selected for this file (Tape Options 1 and 2).

| Length | Data Element, Process, or Constant |
|---|---|
| 01 | SM Minor Message ID |
| 01 | Blank |

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| Length | Data Element, Process, or Constant |
|---|---|
| 04 | SM Message Text (for the ID) |
| 62 | Blank |
| 01 | "H" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

FILE 9: CARD TYPE J

M/S IDs selected for this file must have a value for SM Parameter Source. This file will not exist if Tape Option 2 is selected.

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 05 | Blank |
| 03 | SM Major Message ID |
| 02 | SM Minor Message ID |
| 02 | Blank |
| 01 | SM Alarm Class |
| 01 | Blank |
| 02 | SM Alarm Indicator |
| 02 | Blank |
| 03 | SM Parameter Source |
| 38 | Blank |
| 01 | "J" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

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## FILE 10: CARD TYPE K

M/S IDs selected for this file must have an "X" in System Management Use or a value for SM Parameter Source for Tape Option 1. For Tape Option 2, the M/S IDs must have an "X" in SM Payload Use.

| Length | Data Element, Process, or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 03 | Blank |
| 34 | Nomenclature, System |
| 01 | Blank |
| 02 | SM Subsystem ID |
| 19 | Blanks |
| 01 | "K" |
| 10 | Blank |

## FILE 11: CARD TYPE L

One card per M/S ID in an SCM list (Tape Options 1 and 2).

| Length | Data Element or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 03 | Blank |
| 02 | SCM List ID |
| 01 | Blank |
| 11 | SCM Low Limit Value or State |
| 01 | Blank |
| 11 | SCM High Limit Value |
| 30 | Blank |
| 01 | "L" |
| 01 | Blank or "D" for delete |

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## FILE 12: CARD TYPE M

One card per M/S ID that appears in an SCM list (Tape Options 1 and 2).

| Length | Data Element or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 03 | Blank |
| 04 | SCM Binary 0 Text |
| 01 | Blank |
| 04 | SCM Binary 1 Text |
| 06 | Blank |
| 07 | SCM Discrepancy Message Text |
| 34 | Blank |
| 01 | "M" |
| 01 | Blank or "D" for delete |
| 09 | Blank |

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### 3.3.10 Onboard CRT Display Requirements Tape

This requirement has not been implemented.

A nine track, labeled, 800 BPI, card image data tape written in EBCDIC is required by SSD as input to the Preprocessor Data Base.

Input Requirements

- Flight Number
- CRT Page ID (1-6 or blank for all).

Output Requirements

- Sort: M/S ID.
- A complete card image will be written for each set of repeating fields for an M/S ID.
- One file per CRT Page ID (in ID order) with the following file format.

FILE 1-N

Header Record

| Length | Data Element or Constant |
|---|---|
| 05 | /VARI |
| 75 | Blank |

Data Records 2 thru N

| Length | Data Element or Constant |
|---|---|
| 10 | Measurement/Stimulus Identifier |
| 01 | Blank |
| 01 | CRT Sequential Number |
| 04 | CRT X-Coordinate (RJ) |

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| Length | Data Element or Constant |
|---|---|
| 04 | CRT Y-Coordinate (RJ) |
| 02 | Blank |
| 04 | CRT Parameter Characteristic (RJ) |
| 04 | CRT Bilevel 1 (RJ) |
| 04 | CRT Bilevel 0 (RJ) |
| 04 | CRT Format Type |
| 05 | Blank |
| 01 | CRT Status |
| 01 | CRT Blanking |
| 01 | CRT Character Size |
| 01 | CRT Intensity |
| 01 | CRT Flash |
| 01 | CRT Update Rate |
| 01 | CRT Sign |
| 01 | CRT Leading zeros |
| 01 | CRT Branching |
| 01 | Blank |
| 04 | CRT Special Processing |
| 06 | Blank |
| 04 | CRT Page ID |
| 02 | CRT Revision Number |
| 10 | Blank |

## Trailer Record

| Length | Data Element or Constant |
|---|---|
| 04 | /END |
| 76 | Blank |

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### 3.3.11 ODRC Requirements and Assignments Tape

All requirements for the implementation of ODRC have been cancelled per OPR request.

A nine track, labeled, 800 BPI, data tape written in ASCII display code, four records per block, is required by IDSD for input to the ODRC processor.

Input Requirements

- Flight Number
- DRC Group ID (maximum of 5 or blank for all).

Output Requirements

- Sort: DRC Group ID, DRC Line Number.
- A tape header file, containing one record, will precede the data file.

The record format follows:

FILE 1: HEADER

| Length | Data Element |
|---|---|
| 08 | Flight Number/Vehicle Configuration Number |
| 08 | Tape generation date (MM/DD/YY) |
| 29 | DRC Group IDs (blank for all) |
| 1056 | Status Cycle Numbers |
| 09 | Padding (Blanks) |

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FILE 2: DATA

| Length | Data Element |
|---|---|
| 05 | DRC Group ID |
| 02 | DRC Line Number |
| 10 | Measurement/Stimulus Identifier |
| 34 | Nomenclature, System |
| 01 | Telemetry Link ID |
| 10 | Data Range Low-High |
| 12 | DRC Plot Range, Low-High |
| 03 | DRC Band/Pass Limits |
| 08 | Data Range Units |
| 04 | Required Response Rate |

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### 3.3.12 RI Actual Transaction Update Tape

An RI transaction update tape will be supplied by RI to update approved M/S IDs in the MMDBS.

Input Requirements

- A 1600 BPI, EBCDIC, 9 track Master File tape; odd parity, maximum characters per record - 7400 with 17,500 characters per block. Each block will be fixed length and a record will not be split between blocks. If necessary the blocks will be blank filled. The record format is given in Table 3-1.
- RI Vehicle Effectivity value which is to be selected for updating the JSC data base. Corresponding to the RI Vehicle Effectivity selected, the user will supply up to sixty (60) Vehicle Configuration Numbers (VCNs) and up to six (6) Flight Numbers. The Major Element within the M/S ID will be matched to the corresponding VCN(s) to determine applicability.
- The user will indicate by input flag whether or not Calibration Type 03 data will be updated. The user will also indicate by input flag whether or not TIM Actual Response Rate data and GPC Software data is to be updated.
- The user will maintain data validation tables as outlined in Tables 3-2 and 3-5.
- Edits for MML fields are indicated in the Data Element Dictionary.
- User input table file SLECTE must be verified. If the file is not ordered as required by the program, the file must be re-ordered thus allowing the program to execute properly.

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Output Requirements

- Each record on the RI update tape will be a complete record; i.e., all fields will contain the current data whether the data changes or not.
- Only records containing an "N", "D", "W", or "R" in the Z5 field will be processed.
- Calibration Type will be represented as a 2-digit integer value.

| Code | Action |
|---|---|
| N | This is a new record. If the qualifiers do not currently exist in the MMDB data base, add them and all associated data. If the qualifiers do exist in the MMDB data base, completely replace the MMDB data base record with that from the tape. If the M/S ID exists in the MMDB Data Base, compare the MML data fields on the tape to the data base. If all MML data are the same, then add the non MML data, listed in Table 3-2, to the approved data base. If all MML data are not the same, print the M/S ID and the MML fields which are different, (data element names and values), and load non MML data listed in Table 3-2 to the approved data base. |
| D | M/S ID-VCN or Flight must not exist in MMDB Data Base. If M/S ID exists, the M/S ID and appropriate error message will be printed; otherwise, no further action is taken. |
| W&R | The M/S ID-VCN or Flight must exist in the MMDB Data Base. The W (Was) and R (Revised) records will be processed in pairs. Each W record must have one and only one R record. The W record must immediately |

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preceed the associated R record on the tape; otherwise, neither record will be processed. Non MML fields will be compared to determine which fields have changed and a composite update record built which contains only changes. A data element field containing data on the W record and blanks in the R record indicates a data deletion for the element. The MML fields in the R record will be compared to the MMDB data base MML fields. Processing rules are the same as for an N record. If the Flight/Ground data element has a value of "C" in the W record and value of "F", "G" or "S" in the R record, then the R record will be processed as an N record.

Those RI elements which translate into more than one JSC element will be processed as follows. Each RI element sub-field will be compared between the "W" and "R" records. If the sub-field contains non-blank characters in the "W" record and the "R" record is blank, then the "R" record data will be deleted from the MMDBS data base.

The telemetry data will be processed as sub-fields except the "W" and "R" records will not be compared. If the "R" record contains all blanks for the RI element, and if the M/S ID is assigned to the telemetry format, then the data in the MMDBS data base will be deleted. The M/S ID will remain assigned to the telemetry format. If the "R" record contains all blanks for the RI element and the M/S ID is not assigned to the telemetry format, then no update will

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be performed. The M/S IF will not be assigned to the telemetry format.

- After validating RI Vehicle Effectivity, record type N, D, W, & R, Flight Ground note equal "C", except as stated above, validate the M/S ID-VCN in the data base. If the M/S ID-VCN exists, continue processing. If the M/S ID-VCN does not exist in the data base, build a file in RI format of all rejected M/S IDs. This file will be used for later processing. Each successive update process should operate in the same manner. An output listing will be generated on each run, specifying M/S ID, Vehicle Effectivity, Action Code, and Error.

- On an option basis, (1) update all M/S IDs having a tape value for Flight/Ground equal C to a specified MMDBS Vehicle Configuration Number for the M/S IDs, or (2) do not update all M/S IDs having a Flight/Ground value equal C, or (3) treat M/S IDs having a Flight/Ground equal C as no special case and update with the same processing required for other M/S IDs.

- Update the JSC MMDBS data elements: KSC State Low and KSC State High. Characters 1 - 5 of the RI 1M field will be checked. If they contain ON in the characters 4 - 5 convert to an alpha O; if they contain OFF in the characters 3 - 5 convert to F. If they contain WET in the characters 3-5, convert to W; if they contain DRY in the characters 3-5, convert to D. The resulting value is stored in KSC State Low. Characters 6 - 10 of the RI 1M field are processed as for updating

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the KSC State Low; the results are stored in KSC State High.

- If an update is requested for a TLM FORMAT ID which does not exist in the MMDBS data base, an error, listing the TLM Format ID, will be output to a report and processing for the particular TLM Format ID will terminate. The program will, however, continue processing up-date for the remaining TLM Format IDs.

| Field ID | Data Elements | Columns | Description | Comments |
|---|---|---|---|---|
| Control Characters | -- | 1-6 | -- | Ignore |
| M/S ID | AA | 7-16 | M/S ID | Standard |
| ZPP | Z1 | 17-19 | Vehicle ZIASN(S) | |
| P4D | Z3 | 20 | J=JSC Initiated Pending<br>K=KSC Initiated Pending<br>M=MMC Initiated Pending<br>N=MSFC Initiated Pending<br>R=RI Initiated Pending | Indicates Pending Record |
| | | 21,22 | 01-99 (Numeric only) | |
| Unused | -- | 23 | -- | -- |
| Act Code | Z5 | 24 | N=Add<br>D=Delete<br>W=Record before last revision<br>R=Revised | Action Type |
| Segment Indicators | A-Z, 1-9 | 25-88 | Binary 1 indicates Segments Present | 81, 82 unused |
| Previous M/S ID | Z6 | 89-98 | M/S ID | Last M/S ID Before Modification |
| DBFY | -- | 99-104 | Latest Modified DBFN | As of Date |
| Date | -- | 105,106 | MM | Month Last Modified |
| | | 107 | / | |
| | | 108,109 | DD | Day Last Modified |
| | | 110 | / | |
| | | 111,112 | YY | Year Last Modified |
| Unused | -- | 113-119 | -- | -- |
| Data | -- | 120-EOR | Data Segments | Variable Length |

Table 3-1 RI MMDB Actual Transaction Tape Format

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| RI/ID | Data Element | JSC Length | RI Length | Edits | Actions |
|---|---|---|---|---|---|
| AA | M/S ID | 10 | 10 | Char 1: MEIE Table<br>Char 2&3: SSID Table<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,P,T-Y<br>Char 10: None | |
| AF | Accuracy, Req. System | 3 | 3 | Decimal | |
| AW | Associated Subsystem | 2 | 2 | SSID Table | |
| DG,DS | ETU Card Location | 2 | 2 | 0-15 | Check DB against ETUNAME table and if valid store in ETUNAME. If not in ETUNAME table store in FDM name. If DB is in ETUNAME table store associated data bus names contained in ETUNAME table (up to 5). Also store associated ETU type from ETUNAME table. Corresponding elements in right column are to be updated. |
| DA,DD | ETU Card Type | 3 | 3 | None | |
| DH,DT | ETU Channel Number | 2 | 2 | 0-31 | |
| GT,GU | ETU Dest. Equip. Name 1 | 15 | 15 | None | |
| N/I,GV | ETU Dest. Equip. Name 2 | 15 | 15 | None | Check DF against ETUNAME table and if valid store in ETU name. Process data bus names and ETU type as described above for DB. Corresponding elements in left column are to be updated. If DF is not in table ETUNAME reject update. |
| N/I,GW | ETU Dest. Equip. Name 3 | 15 | 15 | None | |
| DP,DZ | ETU MIA Address | 2 | 2 | 0-99 | |
| DF,DB | ETU or FDM Name | 4 | 4 | ETUNAME Table | If BI ID, with exception of DB, listed in the left column, i.e., DG,DA..., are updated then the ETU type for the M/SID-VCN must be 4. If BI ID listed in the right column, i.e., DS,DD,..., are updated then the ETU type for the M/SID-VCN must be ≠ 4. Data elements GP and SN may be used for any valid ETU type. |
| DL,DW | ETU Number of Bits | 2 | 2 | 01-64 | |
| FZ,EN | ETU Plug & Pin Subsystem | 11 | 11 | None | |
| GP,GP | ETU Reference Desig. | 12 | 9 | None | |
| GS,GN | ETU Signal Type | 1 | 1 | ETUSIGL Table | |
| DK,DV | ETU Start Bit | 2 | 2 | 0-64 | |
| SW,SN | ETU Transfer Rate | 4 | 3 | ETURATE Table | |

Table 3-2 RI Update Data Validation and Conversion



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| BI/ID | Data Element | DSC Length | BI Length | Edits | Actions |
|---|---|---|---|---|---|
| DJ,DO | BTU Word Number | 2 | 2 | 01-45 | |
| SW,SY | BTU/BIE H/W 1 Bit Format | 16 | 16 | None | |
| SX,N/L | BTU/MDM H/W 2 Bit Format | 16 | 16 | None | |
| AM | Caution and Warning Display | 1 | 1 | C,E,W,Y | |
| CK | Crew Control Device | 1 | 2 | B,C,K,P,R,S,V,W | |
| BW | CBT Applicability | 1 | 1 | E,U,X | |
| TD | Downlink Data Length | 2 | 2 | 0-99 | Process 1st 5 chars. |
| AC | Data Range Low | 5 | 10 | | Process 1st 5 chars. |
| AC | Data Range High | 5 | 10 | | Process chars. 6-10. |
| TE | Data Type | 4 | 4 | DATATYP Table | |
| AL | Dedicated Display | 2 | 5 | Combination of A,F,G,L, M,T,W,X, or S | First two non-blank codes will be processed |
| GG | Device Accuracy | 4 | 4 | Decimal Number | |
| GE | Device Plug & Pin #1 | 12 | 12 | None | |
| CE | Device Name | 15 | 15 | None | |
| GH | Device Panel Number 1 | 8 | 8 | None | |
| GF | Device Ref. Desig. #1 | 12 | 9 | None | |
| CG | Device Switch Panel Nomen. | 34 | 34 | None | |
| CI | Device Switch & Panel No. 1 | 12 | 12 | None | |
| FV | Device Switch Ref. Desig. #1 | 12 | 12 | None | |

Table 3-2 BI Update Data Validation and Conversion (Continued)



ORIGINAL PAGE IS
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| BI/ID | Data Element | DSC Length | BI Length | Edits | Actions |
|---|---|---|---|---|---|
| FW | Device Switch Ref. Desig. #2 | 12 | 12 | None | |
| TA | Downlink Byte Bit Format | 8 | 8 | None | |
| BF | Failure Mode Effects Analysis | 1 | 1 | C | |
| FS | FDM Channel Center Freq. | 3 | 3 | Decimal Number | |
| EU | FDM Channel Freq. Response | 1 | 1 | A,B,C,D,E,F,G | |
| GL | FDM Input Plug & Pin | 10 | 10 | None | |
| EZ | FDM Package & Channel Code | 5 | 5 | None | If characters 1 & 2 = blank, set all characters to blank. If characters 1 & 2 are not blank, store values. |
| GM | FDM Ref. Designator | 12 | 9 | None | |
| BP | Flight Phase, Aerc. Control | 1 | 1 | A | |
| BN | Flight Phase, Entry | 1 | 1 | E | |
| BL | Flight Phase, Launch | 1 | 1 | I | |
| BM | Flight Phase, Orbit | 1 | 1 | O (alpha) | |
| AP | Flight Ground | 1 | 1 | F,G,C,E,S | |
| SG | GPC Software Compool Name | 32 | 32 | None | (User Option Only) |
| SD | GPC Software Data Length | 2 | 2 | 01-64 | (User Option Only) |

Table 3-2 BI Update Data Validation and Conversion (Continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI/ID | Data Element | JSC Length | RI Length | Edits | Actions |
|---|---|---|---|---|---|
| SE | GPC Soft. Downlist Data Type | 1 | 2 | None | Convert using Edit table. |
| SH | GPC Soft. HAI Name | 32 | 32 | None | (User Option Only) |
| TY | GEC Soft. I/C/C | 1 | 1 | C,I,O (Alpha) | |
| TX | GPC Soft. Signal Mnemonic | 10 | 6 | * | *Store RI 6 character field left justified blank filled. First character must be Alpha, characters 2 through 6 must be integer. |
| SC | GPC Soft. Start Bit | 2 | 2 | 00-64 | (User Option Only) |
| SE | GEC Soft. Units | 8 | 8 | GECUNIT Table | (User Option Only) |
| DB | Master Events Controller | 1 | 1 | X | |
| PA | Measurement Interface control | 1 | 1 | X | Convert value to X. |
| CM | Meas. Purpose Category | 2 | 3 | 0-99 | Check 2 right most characters. |
| EE | Nomenclature, OPERATIONAL | 21 | 21 | None | |
| AB | NOMENCLATURE, System | 34 | 34 | None | |
| AN | Operational/ Development App. | 1 | 1 | M,D,G,C | Convert T to G. |
| CH | Parallel Switch Control | 2 | 2 | G,F,GA | |
| A2 | PARENT M/S ID | 10 | 10 | Char 1: MEID Table<br>Char 2&3: SSID Table<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,P,T-Y<br>Char 10: None | |

Table 3-2 RI Update Data Validation and Conversion (Continued)



ORIGINAL PAGE IS OF POOR QUALITY

| BI/ID | Data Element | JSC Length | BI Length | Edits | Actions |
|---|---|---|---|---|---|
| SE | ECE MU Act. Data Ram Add. | 4 | 4 | 0-9999 | |
| TE | ECE MU Act. Fetch Command | 4 | 4 | 0-9999 | |
| SF | ECE MU Predefined Data RAM Address | 4 | 4 | 0-9999 | |
| TV | PCM MC Predefined Fetch Command | 4 | 4 | 0-9999 | |
| BB,T1 | Related M/S ID | 10 | 10 | Char 1: MEIC Table<br>Char 2&3: SSIC Table<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,P,T-Y<br>Char 10: None | |
| GB | Remarks | 50 | 50 | None | |
| AG | Required Response Rate | 4 | 4 | RECRATE Table | |
| AY | Response M/S ID | 10 | 10 | Char 1: MEIC Table<br>Char 2&3: SSID Table<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,P,T-Y<br>Char 10: None | |
| CB | SF Uplink | 1 | 2 | X | Check 1st char. |
| EB | Sensor Instal. Drawing No. | 1 | 1 | None | |
| CT | Sensor Loc. Coordinates | 27 | 27 | None | |
| GD | Sensor Package Ref. Desig. | 12 | 12 | None | |
| FC | Sensor Part Number | 15 | 15 | None | |
| EA | Sensor Responsibility | 2 | 2 | Table SSID | |
| ZF | Sensor Serial Number | 14 | 18 | None | Store first 14 char. |

Table 3-2 BI Update Data Validation and Conversion (Continued)



ORIGINAL PAGE IS OF POOR QUALITY

| FI/ID | Data Element | JSC Length | FI Length | Edits | Actions |
|---|---|---|---|---|---|
| DC | Sensor-S/C Supplier | 1 | 1 | None | |
| GK | Signal Cond. 1 Card & Ch. | 7 | 7 | None | |
| E5 | Signal Cond. 2 Card & Ch. | 7 | 7 | None | |
| EK | Signal Cond. 1 Input Plug & Pin | 18 | 18 | None | |
| E2 | Signal Cond. 2 Input Plug & Pin | 18 | 18 | None | |
| EF | Signal Cond. 1 Insta. Drg. # | 18 | 11 | None | |
| EJ | Signal Cond. 2 Insta. Drg. # | 18 | 11 | None | |
| EE | Signal Cond. 1 Output Plug & Pin | 15 | 15 | None | |
| E4 | Signal Cond. 2 Output Plug & Pin | 15 | 15 | None | |
| EL | Signal Cond. 1 Back. Ref. Design | 12 | 9 | None | |
| E3 | Signal Cond. 2 Back. Ref. Design. | 12 | 9 | None | |
| ED | Signal Cond. 1 Part Number | 15 | 15 | None | |
| EG | Signal Cond. 2 Part Number | 15 | 15 | None | |
| EE | Signal Cond. 1 Responsibility | 2 | 2 | Table SSIC | |
| EH | Signal Cond. 2 Responsibility | 2 | 2 | Table SSIC | |
| ZG | Signal Cond. 1 | 14 | 14 | | |

Table 3-2 FI Update Data Validation and Conversion (Continued)



ORIGINAL PAGE IS OF POOR QUALITY

| BI/ID | Data Element | JSC Length | BI Length | Edits | Actions |
|---|---|---|---|---|---|
| | Serial No. | | | | |
| W9 | Signal Cond. 2 | 14 | 14 | | |
| BT | Site, Edwards | 1 | 1 | E | Convert X to E and check. |
| BY | Site, Maint. and Refurb. | 1 | 1 | M | Convert X to M and check. |
| BX | Site, Pad | 1 | 1 | P | Convert X to P and check. |
| BS | Site, Palmdale | 1 | 1 | A | Convert X to A and check. |
| BU | Site, Post Landing & Safing | 1 | 1 | S | Convert X to S and check. |
| BV | Site, Vert. Assembly Build. | 1 | 1 | V | Convert X to V and check. |
| BJ | Status Change Document No. | 7 | 8 | None | Store 1st 7 chars. Only load when entering pending data. |
| CJ | Switch Scan | 1 | 2 | None | |
| CB | Switch Signal Type | 1 | 1 | C,M | |
| AJ | System Management Use | 1 | 1 | X | |
| AH | Tape Recorder ID 1 | 1 | 4 | A,B,D,I,M,P,T,U,W,X | Check 1st non-blank char. |
| AH | Tape Recorder ID 2 | 1 | 4 | A,B,D,I,M,P,T,U,W,X | Check 2nd non-blank char. |
| BV | Tape Recorder 1 Track | 2 | 2 | 0-99 | Tape recorder 1 must exist |
| BE | Tape Recorder 2 Track | 2 | 2 | 0-99 | Tape recorder 2 must exist |
| BA | Voting Logic E/S ID | 10 | 10 | Char 1: MEID Table<br>Char 2&3: SSID Table<br>Char 4: A-H,J-M,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-M,P,T-Y<br>Char 10: None | |
| 1M | KSC State Low | 1 | 20 | O,F,W,D | If char. 4 & 5 = ON, convert to O. If char. 3-5 = OFF, convert to F; if = WET, convert to W; if = DRY, convert to D. |
| 1M | KSC State High | 1 | 20 | O,F,W,D | If char. 9 & 10 = ON, convert to O. If char. 8-10 = OFF, convert to F; if = WET, convert to W; if = DRY, convert to D. |

Table 3-2 BI Update Data Validation and Conversion (Concluded)



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The RI tape will be used to update all valid calibration types (those provided by the user and contained in the edit table "CALTYPE"). Calibration type 03, however, will be updated from the RI tape by user option only.

The RI HA, HX and T3 fields provide the qualifiers used by the MMDBS. The second and third characters of the HA field provide the Calibration type. Convert RI type to JSC type as follows: 01 to 01, 02 to 02, 03 to 01 and 02 (update both JSC types with same RI data), and 05 to 04. RI type 04 converts to JSC type 03 when updated. If RI field HA contains a "$" in character one of an "R" record then the Calibration type and its associated curve series contained in the "W" record will be deleted from the data base. If the Calibration Type (characters 2, 3 of the HA field) changes between the "W" and "R" records, then the "R" record will be processed as an add. Print message if either the first character of the HA field is greater than 1, or the Calibration Type is different between the "W" and "R" records; but continue to process.

If Calibration Effectivity Curve Series (HX field, character 1) is blank, and Calibration Type (HA field, characters 2,3) is valid, process the record using Calibration Effectivity Curve Series equal to 0.

If the Calibration Type on an "R" record is valid within the MMDB, and the qualifiers for the record exist in the data base, then all non-blank data fields on the "R" record will replace those corresponding data elements on the data base record. If any field on the "R" record contains a "$" in the 1st character of that field, the corresponding data element in the data base record is to be deleted.

The HX field will be processed in the same manner for deleting and/or changing Calibration Effectivity, Curve series.

If RI data element T3 is changed between "W" and "R" records from Standard to Actual, then all Calibration data in the "R" record will be processed. If T3 in the "R" record is NXXXX, data will be loaded unless that curve type already exists, in which case only the Curve Type will be changed. Field T3 may not be deleted, i.e., may not contain a "$". If a $ exists in T3 print error message. If T3 is blank when adding a curve series, the curve data will be considered Actual.

Processing of the Calibration Polynomial Coefficient Data:

If the fourth character of the RI HA field, Calibration Data Fit, equals 7 or 9, update only from the RI H8 field into the corresponding MMDBS calibration polynomial coefficient data element; not from tape fields HC, HD, HE, HF, HG, and HH. If it equals 8, update from RI fields, HC, HD, HE, HF, H6, H7. If the Calibration Data Fit equals any other value, update from fields HC, HD, HE, HF, HG, and HH.

"N" type records will be processed as a complete change. If the qualifiers do not currently exist in the data base, add them and all associated data. If the qualifiers do exist in the data base, completely replace the data base record with that from the tape.

The remaining Calibration data elements will be processed as outlined in the following Table.

Table 3-3 Calibration Data



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Dat Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| F2,F3,EX | CAL. ACCURACY | 4 | 4 | | Decimal number | If after conversion of RI's HA field, Cal. Type = 04 load F2, if = 02 load F3, if = 01 load EX, if = 03, do not load Cal. Accuracy. |
| HJ | CAL. LOW VALID DATA PT. | 8 | 8 | | None | |
| HK | CAL. VALID DATA PT. 10% | 8 | 8 | | None | |
| HL | CAL. VALID DATA PT. 20% | 8 | 8 | | None | |
| HM | CAL. VALID DATA PT. 30% | 8 | 8 | | None | |
| HN | CAL. VALID DATA PT. 40% | 8 | 8 | | None | |
| HP | CAL. VALID DATA PT. 50% | 8 | 8 | | None | |
| HR | CAL. VALID DATA PT. 60% | 8 | 8 | | None | |
| HS | CAL. VALID DATA PT. 70% | 8 | 8 | | None | |
| HT | CAL. VALID DATA PT. 80% | 8 | 8 | | None | |
| HU | CAL. VALID DATA PT. 90% | 8 | 8 | | None | |
| HV | CAL. HIGH VALID DATA PT. | 8 | 8 | | None | |
| T3 | CAL. CURVE TYPE | 5 | 6 | LJ | NXXXX = Standard, XXXXX, DXXXX (or blank) = Actual | |
| HA | CAL. DATA FIT | 1 | 6 | | 1-9,A,B,C,D,E,F,G,T | Store 4th char. |
| HW | CAL. DATA TOLERANCE | 8 | 6 | | None | |
| HB | CAL. DEGREE OF CURVE | 1 | 1 | | 0-5 | |
| NA | CAL. DEP. COMP. DATA PT. 01 | 8 | 8 | | Decimal number | |
| NB | CAL. IND. COMP. DATA PT. 01 | 8 | 8 | | Decimal number | |
| NC | CAL. DEP. COMP. DATA PT. 02 | 8 | 8 | | Decimal number | |
| ND | CAL. IND. COMP. DATA PT. 02 | 8 | 8 | | Decimal number | |
| NE | CAL. DEP. COMP. DATA PT. 03 | 8 | 8 | | Decimal number | |
| NF | CAL. IND. COMP. DATA PT. 03 | 8 | 8 | | Decimal number | |
| NG | CAL. DEP. COMP. DATA PT. 04 | 8 | 8 | | Decimal number | |
| NH | CAL. IND. COMP. DATA PT. 04 | 8 | 8 | | Decimal number | |
| NJ | CAL. DEP. COMP. DATA PT. 05 | 8 | 8 | | Decimal number | |
| NK | CAL. IND. COMP. DATA PT. 05 | 8 | 8 | | Decimal number | |
| NL | CAL. DEP. COMP. DATA PT. 06 | 8 | 8 | | Decimal number | |
| NM | CAL. IND. COMP. DATA PT. 06 | 8 | 8 | | Decimal number | |
| NN | CAL. DEP. COMP. DATA PT. 07 | 8 | 8 | | Decimal number | |
| NP | CAL. IND. COMP. DATA PT. 07 | 8 | 8 | | Decimal number | |
| NR | CAL. DEP. COMP. DATA PT. 08 | 8 | 8 | | Decimal number | |
| NS | CAL. IND. COMP. DATA PT. 08 | 8 | 8 | | Decimal number | |
| NT | CAL. DEP. COMP. DATA PT. 09 | 8 | 8 | | Decimal number | |
| NU | CAL. IND. COMP. DATA PT. 09 | 8 | 8 | | Decimal number | |
| NV | CAL. DEP. COMP. DATA PT. 10 | 8 | 8 | | Decimal number | |
| NW | CAL. IND. COMP. DATA PT. 10 | 8 | 8 | | Decimal number | |
| NX | CAL. DEP. COMP. DATA PT. 11 | 8 | 8 | | Decimal number | |
| NY | CAL. IND. COMP. DATA PT. 11 | 8 | 8 | | Decimal number | |
| HX | CAL. EFF., CURVE SERIES | 1 | 11 | | 0-9,A-Z,blank | Store 1st char. |
| HX | CAL. EFF., DATE | 8 | 11 | | Date in format YY/MM/DD | Store 4th-11th chars. (Not required for update) |

Table 3-3 Calibration Data (Continued)

ORIGINAL PAGE IS OF POOR QUALITY

| | Dat Elem. | ASC Lngth | BI Lngth | BI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| HX | CAL. FEF., REV. NO. | 1 | 11 | | 0-9 | Store 2nd char. (Not required for update) |
| H4 | CAL. HIGH IND. VAR. | 6 | 6 | | None | |
| H2 | CAL. LOW IND. VAR. | 6 | 6 | | None | |
| HZ | CAL. IND. VAR. UNITS | 4 | 4 | | CNTS,VOLT,PCNT,SCPT | |
| TE | CAL. MOST SIGN. BIT VALUE | 10 | 10 | | Decimal number | |
| HA | CAL. NO. OF DATA PAIRS | 2 | 6 | | 0-11 | Store 5th & 6th chars. (may be blank) |
| HA | CAL. NO. OF SETS | 1 | 6 | | 0-9,A-Z,blank | Store 1st char. give message if 1st char. changes - print value. (May be blank) |
| HC | CAL. POLY. COEFF. A0, INT. | 14 | 14 | | None | |
| HD | CAL. POLY. COEFF. A1, CRV. ORDER 1 | 14 | 14 | | None | |
| HE | CAL. POLY. COEFF. A2, CRV. ORDER 2 | 14 | 14 | | None | |
| HF | CAL. POLY. COEFF. A3, CRV. ORDER 3 | 14 | 14 | | None | |
| HG | CAL. POLY. COEFF. A4, CRV. ORDER 4 | 14 | 14 | | None | |
| HH | CAL. POLY. COEFF. A5, CRV. ORDER 5 | 14 | 14 | | None | |
| TS | CAL. SCALE FACT. | 10 | 6 | | Decimal number | |
| HA | CAL. TYPE | 2 | 6 | | Conversion Table (chars. 2-3) | |
| AD | DATA RANGE UNITS | 8 | 8 | LJ | Table ENGUNIT | |

Table 3-3 Calibration Data (Concluded)

ORIGINAL PAGE IS OF POOR QUALITY

## SM Data

If any of the SM data elements change, then all SM data elements will be updated. Delete characters ($) will be set to blank and all data reprocessed.

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | SM ACQUISITION RATE | 2 | 2 | | Decimal number | Compare P1,P2,P4,P6,P7; store largest value |
| PK | SM ALARM CLASS, ALERT | 1 | 1 | | 0-9 | Store PK if PA,PB, or PC valued. |
| PL | SM ALARM CLASS C&W | 1 | 1 | | 0-9 | Store PL if PD valued. |
| PM | SM ALARM INDICATOR ALERT | 2 | 2 | RJ | 0-99 | |
| PM | SM ALARM INDICATOR C&W | 2 | 2 | RJ | 0-99 | |
| RZ | SM CONSTANT INITIAL VALUE | 16 | 16 | | Decimal number | |
| PA | SM LIMIT SET 1 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| PB | SM LIMIT SET 2 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| PC | SM LIMIT SET 3 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| PD | SM LIMIT SET C HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| | SM LIMIT SET 1 ID | 1 | | | 1 | Store 1 if PA is valued |
| | SM LIMIT SET 2 ID | 1 | | | 2 | Store 2 if PB is valued |
| | SM LIMIT SET 3 ID | 1 | | | 3 | Store 3 if PC is valued |
| | SM LIMIT SET C ID | 1 | | | C | Store C if PD is valued |
| PA | SM LIMIT SET 1 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PB | SM LIMIT SET 2 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PC | SM LIMIT SET 3 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PD | SM LIMIT SET C LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PN | SM MAJOR MESSAGE ID ALERT | 3 | 5 | | 0-999 | Store 1st 3 chars. |
| PP | SM MESSAGE TEXT,MAJ. | 20 | 28 | | None | If not previously loaded, store chars. 1-20 in table MAJMSG corres. to the Maj. Message ID. If previously loaded, verify that the text is the same. If it is not, print error. |
| PP | SM MESSAGE TEXT, MINOR | 4 | 28 | | None | If not previously loaded, store chars. 22-25 in table MINMSG corres. to the Min. Message ID. If previously loaded, verify that the text is the same. If it is not, print error. |
| PN | SM MINOR MESSAGE ID ALERT | 2 | 5 | | 0-999 | Store 4th & 5th chars. |
| PN | SM MINOR MESSAGE ID C&W | 2 | 5 | | 0-999 | Store 4th & 5th chars. |
| PJ | SM NOISE FILTER VALUE ALERT | 2 | 2 | RJ | 0-15 | |
| PJ | SM NOISE FILTER VALUE C&W | 2 | 2 | RJ | 0-15 | |

Table 3-4 SM Data

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| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | SM NO. OF OPERATIONAL LIMIT SETS | 1 | | | 0-9 | To be determined based on number of alert limit sets entered for the M/S ID |
| P9 | SM SUBSYSTEM ID | 2 | 2 | | 0-99 | |

Table 3-4 SM Data (Concluded)



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## Telemetry Data

Telemetry data updates may only be processed against TLM Format IDs existing in the MMDB data base. Hence the user must enter the TLM Format ID, flight assignment, at least one M/S ID, TLM Format Type and TLM Format Description via the online form, prior to processing updates for new format IDs. In addition, the user must update the following table.

### Downlink Format IDs

| RI ID | RI Lng | TLM Format ID | RI ID | RI Lng | TLM Format ID |
|---|---|---|---|---|---|
| 1B | 26 | 129 | 1Z | 26 | 163 |
| 1C | 20 | 129 | 2A | 20 | 163 |
| 1E | 26 | 161 | 2C | 26 | 160 |
| 1F | 20 | 161 | 2D | 20 | 160 |
| 1H | 26 | 164 | 2F | 26 | Spare |
| 1J | 20 | 164 | 2G | 20 | Spare |
| 1L | 26 | 165 | 2J | 26 | 167 |
| 1M | 20 | 165 | 2K | 20 | 167 |
| 1P | 26 | 166 | 2M | 26 | 169 |
| 1R | 20 | 166 | 2N | 20 | 169 |
| 1T | 26 | 171 | 2R | 26 | 172 |
| 1U | 20 | 171 | 2S | 20 | 172 |
| 1W | 26 | 162 | 2U | 26 | 002 |
| 1X | 20 | 162 | 2V | 20 | 002 |
| 2X | 26 | 003 | 4P | 26 | 013 |
| 2Y | 20 | 003 | 4R | 20 | 013 |
| 3A | 26 | 004 | 4T | 26 | 014 |

Table 3-5 TLM Validation Tables

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| RI ID | RI Lng | TLM Format ID |
|---|---|---|
| 3B | 20 | 004 |
| 3D | 26 | 005 |
| 3F | 20 | 005 |
| 3G | 26 | 006 |
| 3H | 20 | 006 |
| 3K | 26 | 007 |
| 3L | 20 | 007 |
| 3N | 26 | 008 |
| 3P | 20 | 008 |
| 3S | 26 | 009 |
| 3T | 20 | 009 |
| 3V | 26 | 010 |
| 3W | 20 | 010 |
| 3Y | 26 | 011 |
| 3Z | 20 | 011 |
| 4B | 26 | 140 |
| 4C | 20 | 140 |
| 4F | 26 | 199 |
| 4F | 20 | 199 |
| 4H | 26 | Spare |
| 4J | 20 | Spare |
| 4L | 26 | 012 |
| 4M | 20 | 012 |

| RI ID | RI Lng | TLM Format ID |
|---|---|---|
| 4U | 20 | 014 |
| 4W | 26 | 015 |
| 4X | 20 | 015 |
| 4Z | 26 | 016 |
| 5A | 20 | 016 |
| 5C | 26 | Spare |
| 5D | 20 | Spare |
| 5F | 26 | 173 |
| 5G | 20 | 173 |
| 5J | 26 | 174 |
| 5K | 20 | 174 |
| 5M | 26 | 175 |
| 5N | 20 | 175 |
| 5R | 26 | 176 |
| 5S | 20 | 176 |
| 5U | 26 | 085 |
| 5V | 20 | 085 |
| 5X | 26 | 170 |
| 5Y | 20 | 170 |
| 6A | 26 | Spare |
| 6B | 20 | Spare |

Table 3-5 TLM Validation Tables (Continued)

## Processing for Downlink TLM Data

Processing of RI records which are 26 characters in length, i.e., records 1B, 1E, 1H,..., will be as listed below. If the 1A, 1D, 1G, ---, etc. fields are requested to be processed, the four (4) character value contained in this field will update the TLM Required Response Rate data element corresponding to the implied TLM Format ID. When the 1A field is processed, the 1B, 1E, ---, etc. fields will not be processed.

| RI Char. | MMDB Data Element | Edits |
|---|---|---|
| 6 & 7 | TLM Required First Frame | 0-99 |
| 1 | TLM Req. L-R Word Ind. | L or R |
| 13-15 | TLM Req. Resp. Rate | Decimal Number, RJ* |

Processing of RI records which are 20 characters in length, i.e., records 1C, 1F, 1J,..., will be as listed below. Data processed will be applied to the TLM Format ID specified above.

| RI Char. | MMDB Data Element | Edits |
|---|---|---|
| 2-4 | TLM Act. Resp. Rate | Decimal Number, RJ* |
| 7-8 | TLM First Frame | 00-99 (RJ, zero filled) |
| 10-12 | TLM First Word | 000-999 (RJ, zero filled) |
| 20 | TLM Most Sig. H/W | If RI field contains an L or R, store value. If RI field contains "0" (zero) convert to L; if RI field contains "1" (one), convert to R. |
| 14-18 | TLM Time Delay | Char 14-16 = 0-999<br>Char 17 = .<br>Char 18 = 0-9 |

*The Response Rate for Downlink TLM Data is a whole number.

Table 3-5 TLM Validation Tables (Continued)

Load RI fields listed below:

| RI Field ID | JSC Data Element Name | Special Processing |
|---|---|---|
| FF | TLM Low Bit Rate Indicator | Load for MSID/Format 032 |
| FK | TLM Low Bit Rate Indicator | Load for MSID/Format 020 |
| FC | TLM Low Bit Rate Indicator | Load for MSID/Format 012 BFS |
| FD | TLM Low Bit Rate Indicator | Load for MSID/Format 013 BFS |
| 9X | TLM Low Bit Rate Indicator | Load for MSID/Format 022 |
| 9Y | TLM Low Bit Rate Indicator | Load for MSID/Format 024 |

Downlist Format IDs

| RI ID | RI Lng | TLM Format ID | 64/128 Ind | RI ID | RI Lng | TLM Format ID | 64/128 Ind |
|---|---|---|---|---|---|---|---|
| 6D | 4 | Spare | | 7E | 4 | 022 | |
| 6E | 18 | Spare | | 7F | 18 | 022 | |
| 6F | 4 | 034 | | 7G | 4 | 023 | |
| 6G | 18 | 034 | | 7H | 18 | 023 | |
| 6H | 4 | Spare | | 7J | 4 | 024 | |
| 6J | 18 | Spare | | 7K | 18 | 024 | |
| 6K | 4 | Spare | | 7L | 4 | 025 | |
| 6L | 18 | Spare | | 7M | 18 | 025 | |
| 6M | 4 | 039 | | 7N | 4 | 030 | |
| 6N | 18 | 039 | | 7P | 18 | 030 | |
| 6P | 4 | Spare | | 7R | 4 | 031 | |
| 6R | 18 | Spare | | 7S | 18 | 031 | |
| 6S | 4 | Spare | | 7T | 4 | 032 | |
| 6T | 18 | Spare | | 7U | 18 | 032 | |

Table 3-5 TLM Validation Tables (Continued)

| RI ID | RI Lng | TLM Format ID | 64/128 Ind |
|---|---|---|---|
| 6U | 4 | Spare | |
| 6V | 18 | Spare | |
| 6W | 4 | Spare | |
| 6X | 18 | Spare | |
| 6Y | 4 | Spare | |
| 6Z | 18 | Spare | |
| 7A | 4 | Spare | |
| 7B | 18 | Spare | |
| 7C | 4 | 021 | |
| 7D | 18 | 021 | |
| 8F | 4 | Spare | |
| 8G | 18 | Spare | |
| 8K | 4 | Spare | |
| 8L | 18 | Spare | |
| 8M | 4 | Spare | |
| 8N | 18 | Spare | |
| 8P | 4 | Spare | |
| 8R | 18 | Spare | |
| 8S | 4 | Spare | |
| 8T | 18 | Spare | |
| 8U | 4 | 051 | |

| RI ID | RI Lng | TLM Format ID | 64/128 Ind |
|---|---|---|---|
| 7V | 4 | 033 | |
| 7W | 18 | 033 | |
| 7X | 4 | 040 | |
| 7Y | 18 | 040 | |
| 7Z | 4 | 041 | |
| 8A | 18 | 041 | |
| 8B | 4 | 043 | |
| 8C | 18 | 043 | |
| 8D | 4 | 012A | |
| 8E | 18 | 012A | |
| 8H | 4 | Spare | |
| 8J | 18 | Spare | |
| 8V | 18 | 051 | |
| 8W | 4 | 050 | |
| 8X | 18 | 050 | |
| 8Y | 4 | 049 | |
| 8Z | 18 | 049 | |
| 9W | 1 | 021, | |
| 9X | 1 | 022,024,025,032 | |
| 9Z | 1 | 023, | |
| 9V | 1 | (TLM Format IDs not identified - used for entry checkout) | |

Table 3-5 TLM Validation Tables (Continued)

Downlist Format Processing

- Processing of RI data records which are four characters in length i.e., 6D, 6F, 6H,..., is as follows:

| RI Char. | MMDB Element Name | Edits |
|---|---|---|
| 1-4 | TLM Req. Resp. Rate | Decimal Number, RJ* |

- Processing of RI data records which are eighteen characters in length, i.e., 6E, 6G, 6J,..., is as follows:

| RI Char. | MMDB Element Name | Edits |
|---|---|---|
| 1-4 | TLM Actual Resp. Rate | Decimal Number (User Option Only), RJ* |
| 7-8 | TLM First Frame | 00-99 (User Option Only) (RJ, zero filled) |
| 10-12 | TLM First Word | 000-999 (User Option Only) (RJ, zero filled) |
| 14-18 | TLM Time Delay | Char. 14-16: 000-999<br>Char. 17: .<br>Char. 18: 0-9 |

- Processing of RI data elements 9W, 9V, 9X and 9Z are as follows:

| RI Char. | MMDB Element Name | Edits |
|---|---|---|
| 1 | TLM Low Bit Rate Indicator | 0, 1 |

*If a decimal is present it will be in the second or third character.

Table 3-5 TLM Validation Tables (Concluded)

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### 3.3.13 OMRSD Support Tape

This tape is required by IDSD to provide all approved M/S IDs in the MMDBS.

Tape Specifications

- 9 track, 800 BPI
- Unlabeled
- Display Code
- Internal Binary
- Blocking: 400 records per block for data file
- 2 files (1 header file and 1 data file)

Input Specifications

- Flight Number or VCN
- Tape Identification

Output Specifications

- Header file (one record)

| Length | Data Element |
|---|---|
| 08 | Flight/VCN |
| 08 | Tape Generation Date (MM/DD/YY) |
| 30 | Tape Identification (to be provided when job is submitted) |
| 1056 | Status Cycle Numbers |
| 1102 | Total Record Length |

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- Data file (one record per M/S ID)
  - All approved M/S IDs
  - Sort order - Straight A/N
  - Record format

| Length | Data Element |
|---|---|
| 10 | M/S ID |

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### 3.3.14 MSFC Update Tape

Tapes are to be supplied by MSFC to update approved SRB, SSME, and ET measurements in the MMDBS. Each tape will have the same specifications but some data fields will be handled differently, by Major Element.

Tape Specifications

- Density: 800 BPI
- Tracks: 9
- Label Format: Unlabeled
- Parity: Odd
- Record Length: 1152 characters
- Data Records/Block: 4
- Number Files: 2
- Data Code: 8 bit ASCII (0 parity) - Figure 3-93
- Tape Format: Table 3-6

User Inputs:

- TLM Format ID
- TLM Format Type
- Flight Number
- MMDBS data fields to be updated

Data Base Update Requirements:

- Duplicate M/S ID records may appear on the tape, consecutively, with one record per Cal. Curve Series per Cal. Type. When this occurs, only the Calibration data is to be applied to the data base for the 2nd thru n records.
- Appendix A in the MMDBS DRD will be used for all data edits.

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- TLM Format Data -

  The TLM Format ID specified on the tape is to be ignored and the one input at run time is to be considered as a new format. This ID will be checked against the data base. If the ID is already in the data base, the TLM data fields indicated in the input will be updated. If the ID is not in the data base, the ID and all data on the tape for the format, is to be added.

  The Flight Number specified at run time will be checked against the MMDBS to insure that it is an approved flight within the system. If the flight exists, the TLM Format ID will be added to the data base with the flight attached to it. If the Flight Number does not exist in the system, the run will be aborted with an appropriate error message.

  Each M/S ID on the tape will be checked against the MMDBS to insure that it is valid in the system for the Flight Number specified. If the M/S ID is valid, the TLM First Frame on the tape is checked for data. If it is valued, the M/S ID is added to the format. If it is not valued, the M/S ID is not added, but no error message is printed. If the M/S ID is not valid in the system, an error message is printed but the run continues.

- Calibration Data -

  Calibration Type values must be verified using the Calibration Type Conversion Table.

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If a Calibration Type data set (including all Curve Series data) does not exist in the MMDBS, it will be added to the MMDBS MSID/VCN combination.

Any Calibration Type existing in the MMDBS for the MSID/VCN and not appearing on the tape is to be printed on a report (only the M/S ID and Calibration Type value will be printed.)

Calibration data elements specified as input will be updated if the key elements are present on both the tape and MMDBS for the MSID/VCN. If the Calibration Type exists but the Cal. Effectivity Curve Series does not exist in the MMDBS and data elements dependent on Cal. Effectivity Curve Series are to be updated, then the Cal. Effectivity Curve Series and all of its associated data will be added to the MMDBS.

If the Calibration Curve Type on the tape is a standard curve, the value is to be checked against the Standard Curve Table in the MMDBS. If the value is in the table, the M/S ID is to be updated with the curve value but the curve data contained on the tape record is to be ignored. If the value is not in the table, the value is to be added to the table with all curve data as it appears on the tape record and the M/S ID is to be updated with the curve value.

If Calibration Data Fit equals 7 or 9, load tape field 77 only; not tape fields 50 thru 55. If it equals 8, load fields 50 thru 53 and 75 thru 76. If Calibration Data Fit equals any other value, load

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tape fields 50 thru 55.

- All Other Fields -
  Tape data for all other elements listed in Table 3-6, and specified at run time to be updated, will replace existing data in the MMDBS.

  For all data fields selected for update, a blank field on the tape will indicate a delete (except on qualifier adds), i.e., JSC must put an "@" in the first character of the field (this applies whether or not the MMDBS has data for that field). If a qualifier is to be added, any of its data fields that are blank will be added as blank.

  If BTU data exist for an M/S ID in the MMDBS, then the BTU data fields will be loaded. If no BTU data exist, but FDM data exists in the MMDBS for the M/S ID, then load the FDM data from tape. If neither BTU nor FDM data exist in the MMDBS for the M/S ID, then load BTU data if it exists; if not, load FDM data.

**FEDERAL STANDARD CODE FOR**

**INFORMATION INTERCHANGE**

**FIPS-1**

**SHOWING 64-CHARACTER GRAPHIC SUBSET**

| Bits $b_4$ | $b_3$ | $b_2$ | $b_1$ | Row ↓ / Column → | 0 (000) | 1 (001) | 2 (010) | 3 (011) | 4 (100) | 5 (101) | 6 (110) | 7 (111) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | NUL | DLE | SP | 0 | @ | P | ` | p |
| 0 | 0 | 0 | 1 | 1 | SOH | DCI | ! | 1 | A | Q | a | q |
| 0 | 0 | 1 | 0 | 2 | STX | DC2 | " | 2 | B | R | b | r |
| 0 | 0 | 1 | 1 | 3 | ETX | DC3 | # | 3 | C | S | c | s |
| 0 | 1 | 0 | 0 | 4 | EOT | DC4 | $ | 4 | D | T | d | t |
| 0 | 1 | 0 | 1 | 5 | ENQ | NAK | % | 5 | E | U | e | u |
| 0 | 1 | 1 | 0 | 6 | ACK | SYN | & | 6 | F | V | f | v |
| 0 | 1 | 1 | 1 | 7 | BEL | ETB | ' | 7 | G | W | g | w |
| 1 | 0 | 0 | 0 | 8 | BS | CAN | ( | 8 | H | X | h | x |
| 1 | 0 | 0 | 1 | 9 | HT | EM | ) | 9 | I | Y | i | y |
| 1 | 0 | 1 | 0 | 10 | LF | SUB | * | : | J | Z | j | z |
| 1 | 0 | 1 | 1 | 11 | VT | ESC | + | ; | K | [ | k | { |
| 1 | 1 | 0 | 0 | 12 | FF | FS | , | < | L | \ | l | ¦ |
| 1 | 1 | 0 | 1 | 13 | CR | GS | — | = | M | ] | m | } |
| 1 | 1 | 1 | 0 | 14 | SO | RS | . | > | N | ^ | n | ~ |
| 1 | 1 | 1 | 1 | 15 | SI | US | / | ? | O | — | o | DEL |

Figure 3-93 - ASCII character set.

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File 1 - Header Record

This file will be skipped by JSC.

Table 3-6 MSFC Update Tape Format



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File 2 - Data Record

| Tape Field No. | MMDBS Element Name | MMDBS Length | Tape Length | RI Code | Remarks |
|---|---|---|---|---|---|
| 1 | M/S ID | 10 | 10 | AA | |
| 2 | Nomenclature, System | 34 | 34 | AB | |
| 3 | Data Range Low | 05 | 10 | AC | Chars. 1-5 of field 3 |
| | Data Range High | 05 | | AC | Chars. 6-10 field 3 |
| 4 | Data Range Units | 08 | 08 | AD | |
| 5 | Telemetry Link ID | 01 | 01 | AE | |
| 6 | Required Response Rate | 04 | 04 | AG | |
| 7 | Tape Recorder ID 1 | 01 | 04 | AH | 1st non-blank char. in field 7 |
| | Tape Recorder ID 2 | 01 | | AH | 2nd non-blank char. in field 7 |
| | Tape Recorder ID 3 | 01 | | AH | 3rd non-blank char. in field 7 |
| 8 | Status Change Document No. | 07 | 07 | BJ | Ignore |
| 9 | BTU Name | 04 | 04 | DP | If tape field 9 is valued, ignore tape field |
| 10 | FDM Name or BTU Name | 04 | 04 | DR | 10 and check tape field 9 against the BTUNAME |
| 11 | Sensor Responsibility | 02 | 02 | EA | table. If a match is found, load into BTU |
| 12 | Sensor Installation Drawing No. | 11 | 11 | EB | Name. If a match is not found, print an |
| 13 | Sensor Part Number | 15 | 15 | EC | explanatory error message. |
| 14 | S/C No. 1 Part Number | 15 | 15 | ED | |
| 15 | S/C No. 1 Responsibility | 02 | 02 | EE | If tape field 9 is blank and tape field 10 |
| 16 | S/C No. 1 Inst. Drawing No. | 11 | 11 | EF | is valued, check tape field 10 against the |
| 17 | S/C No. 2 Part Number | 15 | 15 | EG | BTUNAME table. If a match is found, load |
| 18 | S/C No. 2 Responsibility | 02 | 02 | EH | into BTU Name. If a match is not found, |
| 19 | S/C No. 2 Inst. Drawing No. | 11 | 11 | EJ | load into FDM Name. |
| 20 | S/C No. 1 Input Plug & Pin | 18 | 18 | EK | |
| 21 | S/C No. 1 Pkg. Ref. Designator | 12 | 12 | EL | |
| 22 | S/C No. 1 Output Plug & Pin | 15 | 15 | EM | |
| 23 | FDM Channel Frequency Response | 01 | 01 | EU | |
| 24 | Tape Recorder 1 Track | 02 | 02 | EV | |
| 25 | | | 06 | EW | Ignore |
| 26 | Calibration Accuracy | 04 | 04 | EX | |
| 27 | FDM Package and Channel Code | 05 | 05 | EZ | |
| 28 | S/C No. 2 Input Plug & Pin | 18 | 18 | E2 | |
| 29 | S/C No. 2 Pkg. Ref. Designator | 12 | 12 | E3 | |

Table 3-6 MSFC Update Tape Format (continued)

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| Tape Field No. | MMDBS Element Name | MMDBS Length | Tape Length | BI Code | Remarks |
|---|---|---|---|---|---|
| 30 | S/C No. 2 Output Plug & Pin | 15 | 15 | E4 | |
| 31 | S/C No. 2 Card and Channel | 07 | 07 | E5 | |
| 32 | Tape Recorder 2 Track | 02 | 02 | E6 | |
| 33 | FDM Channel Center Frequency | 03 | 03 | FS | |
| 34 | | | 04 | FY | Ignore |
| 35 | | | 04 | F1 | Ignore |
| 36 | | | 04 | F2 | Ignore |
| 37 | | | 04 | F4 | Ignore |
| 38 | Sensor Package Ref. Designator | 12 | 12 | GD | |
| 39 | S/C No. 1 Card and Channel | 07 | 07 | GK | |
| 40 | FDM Input Plug and Pin | 10 | 10 | GL | |
| 41 | FDM Reference Designator | 12 | 12 | GM | |
| 42 | | | 01 | GN | Ignore |
| 43 | BTU Reference Designator | 12 | 12 | GP | |
| 44 | Remarks | 50 | 50 | GR | |
| 45 | Calibration Number of Sets | 01 | 01 | HA | |
| 46 | Cal. Type | 01 | 02 | HA | Mapped by input table |
| 47 | Cal. Data Fit | 01 | 01 | HA | |
| 48 | Cal. No. of Data Pairs | 02 | 02 | HA | |
| 49 | Cal. Degree of Curve | 01 | 01 | HB | |
| 50 | Cal. Poly. Coeff. A0, Intercept | 14 | 14 | HC | |
| 51 | Cal. Poly. Coeff. A1, Crv. Ord. 1 | 14 | 14 | HD | |
| 52 | Cal. Poly. Coeff. A2, Crv. Ord. 2 | 14 | 14 | HE | |
| 53 | Cal. Poly. Coeff. A3, Crv. Ord. 3 | 14 | 14 | HF | |
| 54 | Cal. Poly. Coeff. A4, Crv. Ord. 4 | 14 | 14 | HG | |
| 55 | Cal. Poly. Coeff. A5, Crv. Ord. 5 | 14 | 14 | HH | |
| 56 | Cal. Low Valid Data Pt. | 08 | 08 | HJ | |
| 57 | Cal. Low Valid Data Pt. 10 Pct. | 08 | 08 | HK | |
| 58 | Cal. Low Valid Data Pt. 20 Pct. | 08 | 08 | HL | |
| 59 | Cal. Low Valid Data Pt. 30 Pct. | 08 | 08 | HM | |
| 60 | Cal. Low Valid Data Pt. 40 Pct. | 08 | 08 | HN | |
| 61 | Cal. Low Valid Data Pt. 50 Pct. | 08 | 08 | HP | |

Table 3-6 MSFC Update Tape Format (continued)



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| Tape Field No. | MMDBS Element Name | MMDBS Length | Tape Length | BI Code | Remarks |
|---|---|---|---|---|---|
| 62 | Cal. Valid Data Pt. 60 Pct. | 08 | 08 | HR | |
| 63 | Cal. Valid Data Pt. 70 Pct. | 08 | 08 | HS | |
| 64 | Cal. Valid Data Pt. 80 Pct. | 08 | 08 | HT | |
| 65 | Cal. Valid Data Pt. 90 Pct. | 08 | 09 | HU | |
| 66 | Cal. High Valid Data Pt. | 08 | 08 | HV | |
| 67 | Cal. Data Tolerance | 08 | 08 | HW | |
| 68 | Cal. Eff. Curve Series | 01 | 01 | HX | |
| 69 | Cal. Eff., Rev. Number | 01 | 01 | HX | |
| 70 | Cal. Eff., Date | 08 | 09 | HX | Store char. 2-9 (YY/MM/DD) |
| 71 | | | 08 | HY | Ignore |
| 72 | Cal. Ind. Variable Units | 04 | 04 | HZ | |
| 73 | Cal. High Independent Variable | 06 | 06 | H4 | |
| 74 | | | 08 | H5 | Ignore |
| 75 | Cal. Poly. Coeff. A4, Crv. Ord. 4 | 14 | 09 | H6 | If valued, left justify in MMDBS field |
| 76 | Cal. Poly. Coeff. A5, Crv. Ord. 5 | 14 | 06 | H7 | If valued, left justify in MMDBS field |
| 77 | Cal. Poly. Coeff. A1, Crv. Ord. 1 | 14 | 06 | H8 | If valued, left justify in MMDBS field |
| 78 | Cal. Dep. Comp. Data Pt. 01 | 08 | 08 | NA | |
| 79 | Cal. Ind. Comp. Data Pt. 01 | 08 | 08 | NB | |
| 80 | Cal. Dep. Comp. Data Pt. 02 | 08 | 08 | NC | |
| 81 | Cal. Ind. Comp. Data Pt. 02 | 08 | 08 | ND | |
| 82 | Cal. Dep. Comp. Data Pt. 03 | 08 | 08 | NE | |
| 83 | Cal. Ind. Comp. Data Pt. 03 | 08 | 08 | NF | |
| 84 | Cal. Dep. Comp. Data Pt. 04 | 08 | 08 | NG | |
| 85 | Cal. Ind. Comp. Data Pt. 04 | 08 | 08 | NH | |
| 86 | Cal. Dep. Comp. Data Pt. 05 | 08 | 08 | NJ | |
| 87 | Cal. Ind. Comp. Data Pt. 05 | 08 | 08 | NK | |
| 88 | Cal. Dep. Comp. Data Pt. 06 | 08 | 08 | NL | |
| 89 | Cal. Ind. Comp. Data Pt. 06 | 08 | 08 | NM | |
| 90 | Cal. Dep. Comp. Data Pt. 07 | 08 | 08 | NN | |
| 91 | Cal. Ind. Comp. Data Pt. 07 | 08 | 08 | NP | |
| 92 | Cal. Dep. Comp. Data Pt. 08 | 08 | 08 | NR | |
| 93 | Cal. Ind. Comp. Data Pt. 08 | 08 | 08 | NS | |

Table 3-6 MSFC Update Tape Format (continued)

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| Tape Field No. | MMDBS Element Name | MMDBS Length | Tape Length | RI Code | Remarks |
|---|---|---|---|---|---|
| 94 | Cal. Dep. Comp. Data Pt. 09 | 08 | 08 | NT | |
| 95 | Cal. Ind. Comp. Data Pt. 09 | 08 | 08 | NU | |
| 96 | Cal. Dep. Comp. Data Pt. 10 | 08 | 08 | NV | |
| 97 | Cal. Ind. Comp. Data Pt. 10 | 08 | 08 | NW | |
| 98 | Cal. Dep. Comp. Data Pt. 11 | 08 | 08 | NX | |
| 99 | Cal. Ind. Comp. Data Pt. 11 | 08 | 08 | NY | |
| 100 | Data Type | 04 | 04 | TB | |
| 101 | | | 02 | TC | Ignore |
| 102 | Cal. Curve Type | 05 | 06 | T3 | Check 1st char. - if blank, load chars. 2-6. If not blank, load chars. 1-5. |
| 103 | Sensor Serial Number | 14 | 14 | ZF | |
| 104 | S/C No. 1 Serial Number | 14 | 14 | ZG | |
| 105 | S/C No. 2 Serial Number | 14 | 14 | W9 | |
| 106 | TLM Actual Response Rate | 04 | 05 | | For E & T, load char. 2-4 into JSC char. 2-4. For B, store chars. 1-3 into char. 1-3 of BTU Name and char. 5 into Required Response Rate (using edit table). NOTE: This field will be updated even if Tape Fields 6 and 10 are not entered at runtime to be updated. |
| 107 | TLM First Frame | 02 | 03 | | For B, E & T, load char. 2-3 into JSC field. |
| 108 | TLM First Word | 03 | 04 | | For E & T, load char. 2-4 into JSC field. For B, store char. 2-3 into JSC char. 2-3. |
| 109 | TLM Time Delay | 05 | 06 | | For B, E & T, load char. 2-6 into JSC field. |
| 110 | Downlink Start Bit | 02 | 02 | | This is not a TLM Format field. |
| 111 | | | 08 | Z1 | Ignore |
| 112 | | | 07 | Z2 | Ignore |
| 113 | | | 03 | Z3 | Ignore |
| 114 | | | 01 | Z4 | Ignore |
| 115 | Cal. Low Independent Variable | 06 | 06 | H2 | |
| 116 | (Spare) | | 222 | | |
| | TOTAL | | 1152 | | |

Table 3-6 MSFC Update Tape Format (concluded)



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### 3.3.15 Shuttle Data Tape (SDT)

KSC requires this tape as a means of establishing JSC/KSC interface mechanisms.

Input Requirements

- Flight Number
- Header Record information for output tape
- Table of BTU Name values and an indication of whether the BTU is OI or NON-OI.
- Table of BTU DATA BUS Names and corresponding RI DATA BUS Numbers.
- Table of Format IDs, corresponding RI IDs, and an indicator flagging the format as having EIU measurements.

Output Requirements

- The tape is required as a nine track, 1600 BPI, ASCII, unlabeled tape. Record length equal 2700 characters and block size equal 8100 characters.
- One header record will precede the data records.
- All data records will be ordered by M/S ID - Major Element, Subsystem ID, Subsystem Location, Signal Type, Characteristic Flag, and Measurement Type ID.
- The previously generated tape will be compared with the current tape. If the M/S ID record exists on both tapes, the TLM format fields must be checked. If an M/S ID has been deleted from a format (the format fields are blank) on the current tape, then the format fields will be filled with "$".

  If the M/S ID has been deleted from the system since

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the previously generated tape, write the entire record from the old tape onto the current tape but with a 'D' in character 12 of the RI 1M field, record character 1010. If the M/S ID record on the previously generated tape contained a 'D' in the 1M field, then the M/S ID delete record will not appear on the current or subsequent tapes.

- Processing Calibration Data

  Calibration Type values must be verified using the Calibration Type Conversion Table. A maximum of four Calibration Types are allowed per M/S ID.

  If an M/S ID has more than one Calibration Type associated with it, the following criteria should be followed:

  (1) If the Calibration Types = 01 and 02 then load data from Calibration Type = 01.

  (2) If the Calibration Type = 04 and any other type or types, only load the Calibration Type 04 data and list in an output report the M/S IDs and corresponding Calibration Types.

  (3) If Calibration Types = 03 and 01, load Calibration Type 03 data into fields corresponding to that type only, and Calibration Type 01 data into remaining fields if the following conditions exist:

  a. If both calibration type 03 and 01 have Calibration Curve Series 0 data sets and not Calibration Curve Series 1 data.

  b. If both Calibration Type 03 and 01 have Calibration Curve Series 1 data sets and not Calibration Curve Series 0 data.

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(If there are other Calibration Curve Series data sets, write the M/S ID to an Error Report.)

(4) If Calibration Type = 03 and 02, load Calibration Type 03 data and list M/S ID and corresponding calibration types in output report.

(5) If Calibration Types = 03, 01, and 02, load as in (3) above and list M/S ID and corresponding Calibration types in output report.

(6) If any one of the Calibration Types has a value of 06 or greater, then load the data for the Calibration Type which has the lowest numerical value which is 06 or greater; and list the M/S ID and corresponding Calibration Types in an output report.

All curve data which exist for an M/S ID and Calibration Type will be output to tape. The output sequence for curve data will be 0-9, A-Z. One record will be output for each set of curve data, with all other information remaining the same.

- Processing Downlink TLM Data

  Processing for downlink TLM data to generate the RI fields which are 20 character in length, i.e., fields 1C, 1F, 1J, ..., is listed below. Formats processed will be listed in an input table.

| MMDB Data Element | RI Characters |
|---|---|
| TLM Actual Response Rate | 1-4 |
| TLM First Frame | 7-8 |
| TLM First Word | 10-12 |
| TLM Time Delay | 14-18 |
| TLM Most Significant Half Word | 20 |

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If the TLM Most Significant Half Word equals L, convert to 0 (zero) prior to loading to tape; if it equals R, convert to 1. If the value does not equal L or R, load a blank and write an error message.

- Downlist Format Processing

  Processing of RI data fields which are four characters in length, i.e., 6H, 6P, 6W, ...., is as follows:

| MMDB Element Name | RI Characters |
|---|---|
| TLM Required Response Rate | 1-4 |

Processing of RI data fields which are eighteen characters in length, i.e., 6E, 6G, 6J, ...., is as follows:

| MMDB Element Name | RI Characters |
|---|---|
| TLM Actual Response Rate | 1-4 |
| TLM First Frame | 7-8 |
| TLM First Word | 10-12 |
| TLM Time Delay | 14-18 |

- The MMDBS has the capability of storing three Tape Recorder Track Identifiers (RCDR's) per M/S ID per VCN. The RCDR's are to be loaded into the RI AH four character field in designated positions - all RCDR's/M/S ID/VCN are unique. The diagram below indicates the character position of the RI field in which the MMDBS RCDR's will be stored dependent on the values.

| Character Position | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| ID | A | D | P | M |
| ID | B | W | U | |
| ID | X | O | | |

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ID T

If the Tape Recorder Track ID's are not unique, an error will be written to a report and the RCDRs in question will not be written to tape.

- Processing DSM Data

Only DSM Numbers (commands) having a DSM Type = F (single function) or = S (salvo function) will be output to tape. If the M/S ID is directly assigned to more than one DSM Number, list the M/S ID and associated DSM Numbers on an output report and do not load the DSM field for the M/S ID.

When DSM Command data is retrieved, check the fourth and ninth characters of the M/S ID. The values should be K and U respectively; if not, write an error message and do not output the M/S ID/command on tape.

When retrieving command data, the M/S ID must be valid in the MMDBS M/S ID related area of the data base; if not, an error will be output and the data record will not be generated.

DSM command words and discrete masks are to be converted to hexidecimal for output to tape.

MDM #1 command data consists of non-blank DSM Command Word 2-1, DSM Command Word 2-3, DSM Discrete Mask 1, and DSM Discrete Mask 2. MDM #2 command data consists of non-blank DSM Command Word 2-2, DSM Command Word 2-4, DSM Discrete Mask 1, and DSM Discrete Mask 2. If MDM #1 data exist and MDM #2 data does not exist, then a

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data record will be output. If MDM #1 data does not exist but MDM #2 data exists, then change the ninth character of the M/S ID to a 'Q' and output the data record containing the new M/S ID value. If both MDM #1 and MDM #2 data exist, two records will be output - MDM #1 data record and MDM #2 data record as described above. M/S Ids changed in the ninth character from 'U' to 'Q' will be treated as independent M/S IDs during tape compare processing.

- Processing Tape Field 14

  Compare the previous tape to the present tape. If an M/S ID has been added, put an "N" in tape field 14. If an M/S ID has been deleted since the last tape, write the entire record from the old tape onto the new tape, but with a "D" in tape field 14.

  If both the previous tape and the current tape contain the same M/S ID, the following rules will determine the value to be placed in Field 14:

  (1) If neither record has calibration data, all fields of the records will be compared. If there is any difference, Tape Field 14 will contain an R.
  (2) If the M/S ID on the previous tape has no calibration data and the M/S ID on the current tape does, all records for the current tape for the M/S ID will contain an R in Tape Field 14.
  (3) If the M/S ID on the current tape has no calibration data, and the MSID on the previous tape does, Tape Field 14 will contain an R.
  (4) If the M/S ID on both tapes both contain calibration data, the Calibration Type and Calibration

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Curve Series fields will be compared.

a. If these fields are the same on both tapes, the entire record will be compared and an R in Tape Field 14 output if there are any differences.

b. If the previous tape contains a Calibration Type and a Calibration Curve Series not on the the current tape, no record will be output for the M/S ID with the previous Calibration Type and Calibration Curve Series.

c. If there is a Calibration Type and Calibration Curve Series on the current tape for the M/S ID that is not on the previous tape, the new record will contain an R in Tape Field 14.

- The tape formats are given in Table 3-7.

Header Record

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 1 | | | 1 | 63 | | Fields 1-5 are to be written |
| 2 | | | 64 | 72 | | out in the same order and format |
| 3 | | | 136 | 72 | | as they are read in from user- |
| 4 | | | 208 | 72 | | supplied data when job is |
| 5 | | | 280 | 72 | | submitted. |
| 6 | | | 352 | 2349 | | Blanks |
| | | TOTAL | | 2700 | | |

Table 3-7 SDT Tape Format



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Data Record 2-N

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 1 | AA | M/S ID | 1 | 10 | 10 | |
| 2 | AB | Nomenclature System | 11 | 34 | 34 | |
| 3 | AC | Data Range Low | 45 | 5 | 10 | Load in characters 1-5 |
| | | Data Range High | 50 | 5 | | Load in characters 6-10 |
| 4 | AD | Data Range Units | 55 | 8 | 8 | |
| 5 | AE | Telemetry Link ID | 63 | 1 | 1 | |
| 6 | AF | Accuracy Required, System | 64 | 3 | 3 | |
| 7A | FP | TLM Req. Downlink 64/128 KBS Indicator | 67 | 1 | 1 | Load for MSID/Format 032 |
| 7B | FK | TLM Req. Downlink 64/128 KBS Indicator | 68 | 1 | 1 | Load for MSID/Format 020 |
| 7C | 9W | TLM Req. Downlink 64/128 KBS Indicator | 69 | 1 | 1 | Load for MSID/Format 021 |
| 7D | 9X | TLM Req. Downlink 64/128 KBS Indicator | 70 | 1 | 1 | Load for MSID/Format 022 |
| 7E | 9Y | TLM Req. Downlink 64/128 KBS Indicator | 71 | 1 | 1 | Load for MSID/Format 024 |
| 7F | 9Z | TLM Req. Downlink 64/128 KBS Indicator | 72 | 1 | 1 | Load for MSID/Format 023 |
| 7G | FC | TLM Req. Downlink 64/128 KBS Indicator | 73 | 1 | 1 | Load for MSID/Format 012 BPS |
| 7H | FD | TLM Req. Downlink 64/128 KBS Indicator | 74 | 1 | 1 | Load for MSID/Format 013 BPS |
| 8 | CD | | 75 | | 2 | Blanks |
| 9 | CG | Device Switch Panel Nomenclature | 77 | 34 | 34 | |
| 10 | DA | BTU Card Type | 111 | 3 | 3 | If BTU Name in the input table is NON-OI, load. |
| 11 | AP | Flight/Ground | 114 | 1 | 1 | |
| 12 | DC | Sensor-S/C Supplier | 115 | 1 | 1 | |
| 13 | DD | BTU Card Type | 116 | 3 | 3 | If BTU Name in the input table is OI, load. |

Table 3-7 SDT Tape Format

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Data Records 2-N

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 14 | Z5* | | 119 | | 1 | P, N, or D |
| 15 | DF | BTU Name | 120 | 4 | 4 | If BTU Name in the input table is NON-OI, load DF, DG, DH, DJ, DK, and DL. |
| 16 | DG | BTU Card Location | 124 | 2 | 2 | |
| 17 | DH | BTU Channel Number | 126 | 2 | 2 | |
| 18 | DJ | BTU Word Number | 128 | 2 | 2 | |
| 19 | DK | BTU Start Bit Number | 130 | 2 | 2 | |
| 20 | DL | BTU Number of Bits | 132 | 2 | 2 | |
| 21 | DM | | 134 | | 4 | Blanks |
| 22 | DN | BTU Data Bus Name | 138 | 24 | 11 | The following processing applies only if BTU Name in the input table is NON-OI; otherwise load blanks. Replace the first four non-blank fields in BTU Data Bus Name with corresponding RI Data BUS Numbers from an input table to generate a value of one to four, two character numbers separated by commas. If a fifth field existed for BTU Data Bus Name, list the M/S ID and corresponding value in output report. |
| 23 | DP | BTU MIA Address | 149 | 2 | 2 | If BTU Name in the input table is NON-OI, load. |

*See Processing Tape Field 14

Table 3-7 SDT Tape Format



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Data Records 2-N

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 24 | DR | FDM Name or OI BTU Name | 151 | 4 | 4 | Load FDM Name if it exists for the M/S ID; if not, load BTU Name if the BTU Name in the input table was designated as OI. If the BTU Name is NON-OI and FDM Name does not exist, this field will remain blank. |
| 25 | DS | BTU Card Location | 155 | 2 | 2 | If BTU Name in the input table is OI, load DS, DT, DU, DV, and DW. |
| 26 | DT | BTU Channel Number | 157 | 2 | 2 | |
| 27 | DU | BTU Word Number | 159 | 2 | 2 | |
| 28 | DV | BTU Start Bit Number | 161 | 2 | 2 | |
| 29 | DW | BTU Number of Bits | 163 | 2 | 2 | |
| 30 | DX | | 165 | | 3 | Blanks |
| 31 | DY | BTU Data Bus Name | 168 | | 2 | If the BTU Name in the input table is OI, then load the first BTU Data Bus Name (converted to its corresponding 2-digit RI Data Bus Number using an input table). If more than one bus name is associated with the BTU Name, load the first, and print a message showing the others present. Load blanks if the BTU Name is NON-OI. |
| 32 | DZ | BTU MIA Address | 170 | 2 | 2 | If BTU Name in the input table is OI, load. |
| 33 | D1 | | 172 | | 6 | Blanks |
| 34 | D2 | | 178 | | 6 | Blanks |
| 35 | D3 | | 184 | | 6 | Blanks |
| 36 | D4 | | 190 | | 6 | Blanks |

Table 3-7 SDT Tape Format



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| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 37 | EP | Nomenclature, Operational | 196 | 21 | 21 | |
| 38 | EX | Cal. Accuracy | 217 | 4 | 4 | |
| 39 | FY | | 221 | | 4 | Blanks |
| 40 | F1 | | 225 | | 4 | Blanks |
| 41 | F4 | | 229 | | 4 | Blanks |
| 42 | HA | Cal. No. of Sets | 233 | 1 | 6 | Load in 1st character. |
| | HA* | Cal. Type | 234 | 1 | 6 | Convert JSC value to RI type and load in 2nd and 3rd characters: 1 to 01, 2 to 02, 3 to 04, 4 to 05. If M/S ID has two Cal. Types 01 and 02, load a value 03. If M/S ID has two Ca. Types 01 and 03, and both Cal Effectivity Curve Series are equal and a 0 or 1, load a value 01. If the Curve Series does not meet the above conditions, blank load all Cal data. |
| | HA | Cal. Data Fit | 236 | 1 | 6 | Load in 4th character. |
| | HA | Cal. No. of Data Pairs | 237 | 2 | 6 | Load in 5th and 6th character. |
| 43 | HB | Cal. Degree of Curve | 239 | 1 | 1 | |
| 44 | HC | Cal. Poly. Coeff. A0 | 240 | 14 | 14 | |
| 45 | HD | Cal. Poly. Coeff. A1 | 254 | 14 | 14 | |
| 46 | HE | Cal. Poly. Coeff. A2 | 268 | 14 | 14 | |
| 47 | HF | Cal. Poly. Coeff. A3 | 282 | 14 | 14 | |
| 48 | HG | Cal. Poly. Coeff. A4 | 296 | 14 | 14 | |
| 49 | HH | Cal. Poly. Coeff. A5 | 310 | 14 | 14 | |
| 50 | HJ | Cal. Low Valid Data Pt. 0% | 324 | 8 | 8 | |
| 51 | HK | Cal. Low Valid Data Pt. 10% | 332 | 8 | 8 | |

*See Processing Calibration Data

Table 3-7 SDT Tape Format



ORIGINAL PAGE IS OF POOR QUALITY

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 52 | HL | Cal. Low Valid Data Pt. 20% | 340 | 8 | 8 | |
| 53 | HM | Cal. Low Valid Data Pt. 30% | 348 | 8 | 8 | |
| 54 | HN | Cal. Low Valid Data Pt. 40% | 356 | 8 | 8 | |
| 55 | HP | Cal. Low Valid Data Pt. 50% | 364 | 8 | 8 | |
| 56 | HR | Cal. Low Valid Data Pt. 60% | 372 | 8 | 8 | |
| 57 | HS | Cal. Low Valid Data Pt. 70% | 380 | 8 | 8 | |
| 58 | HT | Cal. Low Valid Data Pt. 80% | 388 | 8 | 8 | |
| 59 | HU | Cal. Valid Data Pt. 90% | 396 | 8 | 8 | |
| 60 | HV | Cal. High Valid Data Pt. | 404 | 8 | 8 | |
| 61 | HW | Cal. Data Tolerance | 412 | 8 | 8 | |
| 62 | HX | Cal. Eff. Curve Series | 420 | 1 | 11 | Store in 1st character. |
| | HX | Cal. Eff. Rev. No. | 421 | 1 | 11 | Store in 2nd character. |
| | | | 422 | 1 | 11 | Store blank in 3rd character. |
| | HX | Cal. Eff. Date | 423 | 8 | 11 | Convert to YY/MM/DD and store in 4th - 11th character. |
| 63 | HY | | 431 | | 8 | Blanks |
| 64 | HZ | Cal. Indep. Variable Units | 439 | 4 | 4 | |
| 65 | H1 | | 443 | | 10 | Blanks |
| 66 | SA | | 453 | | 4 | Blanks |
| 67 | SB | GPC Software Downlist Data Type | 457 | 1 | 2 | Convert from 1-char. stored value to 2-chars. before loading. Use edit table "GPC Downlist Data Type Conversion Table". |
| 68 | SC | GPC Software Start Bit | 459 | 2 | 2 | |
| 69 | SD | GPC Software Data Length | 461 | 2 | 2 | |
| 70 | SE | GPC Software Units | 463 | 8 | 8 | |
| 71 | SF | Cal. Most Significant Bit Value | 471 | 10 | 10 | If Cal. Type = 03, load. |
| 72 | SG | GPC Software Compool Name | 481 | 32 | 32 | |
| 73 | SH | GPC Software Hal Name | 513 | 32 | 32 | |
| 74 | SJ | | 545 | | 1 | Blank |
| 75 | AZ | Parent M/S ID | 546 | | 10 | |

Table 3-7 SDT Tape Format



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| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 76 | SL | | 556 | | 20 | Blanks |
| 77 | SM | PCM MU Act. Data Ram Address | 576 | 4 | 4 | Load if BTU Name in input table is OI. |
| 78 | SN | BTU Transfer Rate | 580 | 4 | 3 | Right justify. Load last 3 Right chars. of four character length if non-blank. |
| 79 | SP | PCM MU Predef. Data Ram Address | 583 | 4 | 4 | |
| 80 | SR | | 587 | | 3 | Blanks |
| 81 | SS | Cal. Poly. Coeff. A0 | 590 | 14 | 14 | If Cal. Type = 03, load SS, ST, SU, and SV. |
| 82 | ST | Cal. Poly. Coeff. A1 | 604 | 14 | 14 | |
| 83 | SU | Cal. Poly. Coeff. A2 | 618 | 14 | 14 | |
| 84 | SV | Cal. Poly. Coeff. A3 | 632 | 14 | 14 | |
| 85 | SW | BTU/MDM 1 Bit Format | 646 | 16 | 16 | If BTU Name in the input table is NON-OI, load SW and SX. |
| 86 | SX | BTU/MDM 2 Bit Format | 662 | 16 | 16 | |
| 87 | SY | BTU/MDM 1 Bit Format | 678 | 16 | 16 | If BTU Name in the input table is OI, load. |
| 88 | SZ | | 694 | | 4 | Blanks |
| 89 | S2 | | 698 | | 2 | Blanks |
| 90 | S3 | | 700 | | 2 | Blanks |
| 91 | S5 | | 702 | | 34 | Blanks |
| 92 | S6 | | 736 | | 20 | Blanks |
| 93 | S7 | | 756 | | 8 | Blanks |
| 94 | TA | Downlink Byte Bit Format | 764 | 8 | 8 | |
| 95 | TB | Data Type | 772 | 4 | 4 | |
| 96 | TC | Downlink Start Bit | 776 | 2 | 2 | |
| 97 | TD | Data Length | 778 | 2 | 2 | |
| 98 | TF | Cal. Most Significant Bit Value | 780 | 10 | 10 | If Cal. Type = 03, load. |
| 99 | TF | Cal. GPC Offset Value | 790 | 10 | 10 | If Cal. Type = 03, load. |
| 100 | TH | | 800 | | 2 | Blanks |

Table 3-7 SDT Tape Format



ORIGINAL PAGE IS OF POOR QUALITY

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 101 | TK | | 802 | | 20 | Blanks |
| 102 | TL | | 822 | | 2 | Blanks |
| 103 | TN | | 824 | | 20 | Blanks |
| 104 | TP | Homogeneous Data Set Number | 844 | 2 | 2 | |
| 105 | TS | Cal. Scale Factor | 846 | 10 | 6 | Right justify and load 1st 6 non-blank chars. |
| 106 | TU | | 852 | | 4 | Blanks |
| 107 | TV | PCM MU Predefined Fetch Command | 856 | 4 | 4 | |
| 108 | TW | PCM MU Act. Fetch Command | 860 | 4 | 4 | |
| 109 | TX | GPC Software Signal Mnemonic | 864 | 10 | 6 | Right justify and load 1st 6 non-blank chars. |
| 110 | TY | GPC Software Input/Output/Compute | 870 | 1 | 1 | |
| 111 | TZ | | 871 | | 4 | Blanks |
| 112 | T1 | Related M/S ID | 875 | 10 | 10 | |
| 113 | T3 | Cal. Curve Type | 885 | 5 | 6 | Left justify. |
| 114 | T4 | | 891 | | 6 | Blanks |
| 115 | T5 | | 897 | | 4 | Blanks |
| 116 | T6 | | 901 | | 4 | Blanks |
| 117 | T7 | | 905 | | 2 | Blanks |
| 118 | T8 | | 907 | | 2 | Blanks |
| 119 | T9 | | 909 | | 2 | Blanks |
| 120 | ZP | Sensor Serial Number | 911 | 14 | 14 | |
| 121 | ZG | S/C 1 Serial Number | 925 | 14 | 14 | |
| 122 | 1C* | | 939 | | 20 | |
| 123 | 1F* | | 959 | | 20 | |
| 124 | 1J* | | 979 | | 20 | |
| 125 | 1M | | 999 | | 2 | Load blanks in characters 1-2. |

*See Processing Format Data

Table 3-7 SDT Tape Format



ORIGINAL PAGE IS OF POOR QUALITY

Data Record: 2-N

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| | 1M | KSC State Low | 1001 | 1 | 3 | Convert alpha O to ON, F to OFF, W to WET, D to DRY, and load in characters 3-5, right justified. |
| | 1M | | 1004 | | 2 | Load blanks in characters 6-7. |
| | 1M | KSC State High | 1006 | 1 | 3 | Convert F to OFF, alpha O to ON, W to WET, D to DRY, and load in characters 8-10, right justified. |
| | 1M | | 1009 | | 1 | Load blank in character 11. |
| | 1M** | | 1010 | | 1 | Load a D in character 12 if the M/S ID has been deleted. |
| | 1M | | 1011 | | 1 | If the value of the Telemetry Link ID field has been changed since the previously generated tape, store the previous value in the 13th character. |
| | 1M | | 1012 | | 7 | Load blanks in characters 14-20. |
| 126 | 1R* | | 1019 | | 20 | |
| 127 | 1U* | | 1039 | | 20 | |
| 128 | 1X* | | 1059 | | 20 | |
| 129 | 2A* | | 1079 | | 20 | |
| 130 | 2D* | | 1099 | | 20 | |
| 131 | 2G* | | 1119 | | 20 | |
| 132 | 2K* | | 1139 | | 20 | |
| 133 | 2N* | | 1159 | | 20 | |
| 134 | 2S* | | 1179 | | 20 | |
| 135 | 2V* | | 1199 | | 20 | |
| 136 | 2Y* | | 1219 | | 20 | |
| 137 | 3B* | | 1239 | | 20 | |

*See Processing Format Data

**See Output Requirements

Table 3-7 SDT Tape Format



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| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 138 | 3E* | | 1259 | | 20 | |
| 139 | 3H* | | 1279 | | 20 | |
| 140 | 3L* | | 1299 | | 20 | |
| 141 | 3P* | | 1319 | | 20 | |
| 142 | 3T* | | 1339 | | 20 | |
| 143 | 3W* | | 1359 | | 20 | |
| 144 | 3Z* | | 1379 | | 20 | |
| 145 | 4C* | | 1399 | | 20 | |
| 146 | 4F* | | 1419 | | 20 | |
| 147 | 4J* | | 1439 | | 20 | |
| 148 | 4M* | | 1459 | | 20 | |
| 149 | 4R* | | 1479 | | 20 | |
| 150 | 4U* | | 1499 | | 20 | |
| 151 | 4X* | | 1519 | | 20 | |
| 152 | 5A* | | 1539 | | 20 | |
| 153 | 5D* | | 1559 | | 20 | |
| 154 | 5G* | | 1579 | | 20 | |
| 155 | 5K* | | 1599 | | 20 | |
| 156 | 5N* | | 1619 | | 20 | |
| 157 | 5S* | | 1639 | | 20 | |
| 158 | 5V* | | 1659 | | 20 | |
| 159 | 5Y* | | 1679 | | 20 | |
| 160 | 6B* | | 1699 | | 20 | |
| 161 | 6F* | | 1719 | | 18 | |
| 162 | 6H* | TLM Req. Response Rate | 1737 | | 4 | |
| 163 | 6L* | | 1741 | | 18 | |
| 164 | 6P* | TLM Req. Response Rate | 1759 | | 4 | |
| 165 | 6T* | | 1763 | | 18 | |
| 166 | 6W* | TLM Req. Response Rate | 1781 | | 4 | |

*See Processing Format Data





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Data Records 2-N

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 167 | 6Z* | | 1785 | | 18 | |
| 168 | 7B* | | 1803 | | 18 | |
| 169 | 7D* | | 1821 | | 18 | |
| 170 | 7F* | | 1839 | | 18 | |
| 171 | 7H* | | 1857 | | 18 | |
| 172 | 7K* | | 1875 | | 18 | |
| 173 | 7M* | | 1893 | | 18 | |
| 174 | 7P* | | 1911 | | 18 | |
| 175 | 7S* | | 1929 | | 18 | |
| 176 | 7U* | | 1947 | | 18 | |
| 177 | 7W* | | 1965 | | 18 | |
| 178 | 7Y* | | 1983 | | 18 | |
| 179 | 8A* | | 2001 | | 18 | |
| 180 | 8C* | | 2019 | | 18 | |
| 181 | 8E* | | 2037 | | 18 | |
| 182 | 8G* | | 2055 | | 18 | |
| 183 | 8J* | | 2073 | | 18 | |
| 184 | 8L* | | 2091 | | 18 | |
| 185 | 8N* | | 2109 | | 18 | |
| 186 | 8R* | | 2127 | | 18 | |
| 187 | 8T* | | 2145 | | 18 | |
| 188 | 8V* | | 2163 | | 18 | |
| 189 | 8X* | | 2181 | | 18 | |
| 190 | 8Z* | | 2199 | | 18 | |
| 191 | AG | Required Response Rate | 2217 | 4 | 4 | Right justify. |
| 192 | AH** | Tape Recorder ID 1 | 2221 | 1 | 4 | |
| | AH** | Tape Recorder ID 2 | 2222 | 1 | 4 | |
| | AH** | Tape Recorder ID 3 | 2223 | 1 | 4 | |

*See Processing Format Data

**See Processing Tape Recorder Data

Table 3-7 SDT Tape Format

| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 193 | A1* | TLM First Word | 2225 | 3 | 3 | Load if the M/S ID exists with an EIU format (EIU TO MEC). |
| 194 | A2 | TLM First Word | 2228 | 3 | 3 | Load if the M/S ID exists with an EIU format (EIU to GPC). |
| 195 | CP | Device Name | 2231 | 15 | 15 | |
| 196 | EC | Sensor Part Number | 2246 | 15 | 15 | |
| 197 | ED | S/C 1 Part Number | 2261 | 15 | 15 | |
| 198 | EG | S/C 2 Part Number | 2276 | 15 | 15 | |
| 199 | EV | Tape Recorder 1 Track | 2291 | 2 | 2 | |
| 200 | EY | | 2293 | | 1 | Blank |
| 201 | EZ | FDM Pkg. and Channel Code | 2294 | 5 | 5 | |
| 202 | GN | BTU Signal Type | 2299 | 1 | 1 | If BTU Name in input table is OI, load. |
| 203 | GS | BTU Signal Type | 2300 | 1 | 1 | If BTU Name in input table is NON-OI, load. |
| 204 | GT | BTU Destination Equipment Name 1 | 2301 | | 15 | If BTU Name in input table is NON-OI, load. |
| 205 | H2 | Cal. Low Independent Variable | 2316 | 6 | 6 | |
| 206 | H3 | | 2322 | | 6 | Blanks |
| 207 | H4 | Cal. High Independent Variable | 2328 | 6 | 6 | |
| 208 | H5 | | 2334 | | 8 | Blanks |
| 209 | S4 | Cal. Number of Sets | 2342 | 1 | 2 | If Cal. Type = 03, load in char. 2. |
| 210 | TR | TLM Req. Homo. Data Set # | 2344 | 2 | 2 | |
| 211 | W9 | S/C 2 Serial Number | 2346 | 14 | 14 | |
| 212 | ZT* | | 2360 | | 20 | |
| 213 | ZW* | | 2380 | | 20 | |
| 214 | ZZ* | | 2400 | | 20 | |
| 215 | 6C | DSM Command Word 2-1 | 2420 | 16 | 4 | Convert to hexidecimal. |
| 216 | 9J | DSM Command Word 2-3 | 2424 | 16 | 4 | Convert to hexidecimal. |

*See Processing Format Data

Tape 3-7 SDT Tape Format



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| Field No. | RI Field ID | JSC Data Element Name | Starting Location | JSC Field Length | RI Field Length | Special Processing |
|---|---|---|---|---|---|---|
| 217 | | DSM Command Word 2-2 | 2428 | 16 | 4 | Convert to hexidecimal. |
| 218 | 9L | DSM Command Word 2-4 | 2432 | 16 | 4 | Convert to hexidecimal. |
| 219 | | DSM Discrete Mask 1 | 2436 | 16 | 4 | Convert to hexidecimal. |
| 220 | 9N | DSM Discrete Mask 2 | 2440 | 16 | 4 | Convert to hexidecimal. |
| 221 | 9E** | DSM Number | 2444 | 4 | 5 | Left justify in RI field. |
| 222 | 6G* | | 2449 | | 18 | |
| 223 | 6J* | | 2467 | | 18 | |
| 224 | 6N* | | 2485 | | 18 | |
| 225 | 6R* | | 2503 | | 18 | |
| 226A | H7 | Cal. Poly. Coeff. A4, Crv. Ord. 4 | 2521 | 14 | 6 | If Cal. Type ≠ 03 and Cal. Data Fit = 8, left justify and load 1st 6 char. |
| 226B | H8 | Cal. Poly. Coeff. A1, Crv. Ord. 1 | 2527 | 14 | 6 | If Cal. Type ≠ 03 and Cal. Data Fit = 7 or 9, left justify and load 1st 6 char. |
| 226C | Z1 | | 2533 | | 3 | Blanks |
| 226D | Z3 | | 2536 | | 3 | Blanks |
| 227A | H6 | Cal. Poly. Coeff. A4, Crv. Ord. 4 | 2539 | 14 | 9 | If Cal. Type ≠ 03 and Cal. Data Fit = 8, left justify and load 1st 9 chars. into RI char. 1 - 9. |
| 227B | Z2 | | 2548 | | 7 | Blanks |
| 227C | Z4 | | 2555 | | 1 | Blank |
| 227D | FG | | 2556 | | 1 | Blank |
| | | TOTAL | | | 2700 | |

*See Processing Format Data

**See Processing DSM Data

Table 3-7 SDT Tape Format



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### 3.3.16 FOD Input Tape

All requirements for the FOD Input tape have been cancelled per OPR request.

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# 4.0 PERFORMANCE AND OPERATIONAL REQUIREMENTS

The maximum MMDBS performance and operational requirements will be reached during the period of time of maximum flight frequency of up to one flight per week. The batch and on-line usage projections are given in the following sections.

## 4.1 BATCH PROCESSING REQUIREMENTS AND PROJECTIONS

Based on an operational status of fifty-two flights per year for the Shuttle Program, Table 4-1 contains the estimated maximum frequency of use of each of the batch programs. Also given is the corresponding volume of output for each batch program and the program type (report, utility, or system interface).

| | Batch/Program | Program Type | Maximum Frequency | Volume (Pages/Run) |
|---|---|---|---|---|
| 1. | Master Measurement List | Report | 1/Week | 450 |
| 2. | Instrumentation Parts and Component List | Report | 1/Month | 300 |
| 3. | GPC Software Input Report | Report | 1/Month | 200 |
| 4. | GPC Software Output Report | Report | 1/Month | 200 |
| 5. | Display and Recorder Summary | Report | 1/Week | 25 |
| 6. | Measurement/Stimulus Signal Routing Summary | Report | 1/Week | 40 |
| 7. | Measurement Type ID Summary | Report | 1/Week | 40 |
| 8. | Quantity Count of Components | Report | Quarterly/Major Element | 200 |
| 9. | Wideband Channel Loading vs FDM | Report | 3/Development Flight | 50 |
| 10. | Channel Loading vs MDM | Report | 1/Month | 250 |
| 11. | DSC Channel Loading | Report | 1/Month | 250 |
| 12. | Tape Recorder Loading by FDM | Report | 1/Week | 40 |
| 13. | FTR/DTO-FTO | Report | 4/Development Flight | 100 |
| 14. | ODRC Requirements and Assignments | Report | 1/Week | 75 |
| 15. | Operational/Developmental Instrumentation Report | Report | 1/Week | 150 |
| 16. | Systems Management Report | Report | 2/Flight | 150 |
| 17. | Calibration Report | Report | 1/Week | 100 |
| 18. | Response Rate Required Report | Report | 1/Month | 150 |
| 19. | Group ID Status Report | Report | 2/Flight | 40 |
| 20. | Status by Change Document | Report | 1/Week | 20 |
| 21. | FTR/DTO-FTO by Format | Report | 4/Development Flight | 100 |
| 22. | Parent Word/Voting Logic Report | Report | 1/Month/Configuration | 100 |

Table 4-1 Batch Projections



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| | Batch/Program | Program Type | Maximum Frequency | Volume (Pages/Run) |
|---|---|---|---|---|
| 23. | Pending Report | Report | 2/Week | 25 |
| 24. | Interface Signal by Channel | Report | 1/Month | 150 |
| 25. | MDM Word Channelization | Report | 1/Month | 150 |
| 26. | Downlist-Downlink Requirements Table | Report | 2/Flight | 50 |
| 27. | Downlist Assignments Table | Report | 2/Flight | 100 |
| 28. | Downlink Assignments Table | Report | 2/Flight | 100 |
| 29. | Command List | Report | 2/Flight | 50 |
| 30. | PCM MU Data RAM Address Assignments Table | Report | 2/Month | 150 |
| 31. | Instrumentation Signal Conditioner - MDM Measurement Routing | Report | 1/Month | 200 |
| 32. | Instrumentation Signal Conditioner | Report | 1/Month | 200 |
| 33. | Instrumentation MDM Report | Report | 1/Month | 200 |
| 34. | Instrumentation Critical Limits | Report | 1/Month | 200 |
| 35. | Instrumentation Caution & Warning | Report | 1/Month | 10 |
| 36. | Orbiter Systems Nomenclature | Report | 1/Month | 200 |
| 37. | Orbiter Systems Instrumentation Limits | Report | 1/Month | 200 |
| 38. | Simulator Requirements | Report | 1/Month | 200 |
| 39. | Additional FOD Instrumentation | Report | 2/Flight | 200 |
| 40. | Special MML | Report | 2/Month | 225 |
| 41. | Edit Table Update | Utility | 1/Month | 40 |
| 42. | Flight History Program | Utility | 4/Week | N/A |
| 43. | Vehicle Configuration Deletion Program | Utility | 4/Week | N/A |

Table 4-1 Batch Projections

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| | Batch/Program | Program Type | Maximum Frequency | Volume (Pages/Run) |
|---|---|---|---|---|
| 44. | Change Document Deletion Program | Utility | 1/Week | N/A |
| 45. | Pending Replacement Program | Utility | 2/Week | N/A |
| 46. | History Tape Compare Program | Utility | 3/Flight | N/A |
| 47. | Data Transfer Program | Utility | 50/Week | N/A |
| 48. | Command Uplink Data Tape | System Interface | 2/Flight | N/A |
| 49. | Downlist Telemetry Data Tape | System Interface | 2/Flight | N/A |
| 50. | Downlink Telemetry Data Tape | System Interface | 2/Flight | N/A |
| 51. | Calibration Tape | System Interface | 2/Flight | N/A |
| 52. | Downlist Requirements Tape | System Interface | 2/Flight | N/A |
| 53. | Downlist Format Update Tape | System Interface | 2/Flight | N/A |
| 54. | GPC Calibration Update Tape | System Interface | 2/Flight | N/A |
| 55. | Software Development Lab Data Tape | System Interface | 1/Month | N/A |
| 56. | SM/PL Detailed Processing Tape | System Interface | 2/Flight | N/A |
| 57. | Onboard CRT Display Requirements Tape | System Interface | 2/Flight | N/A |
| 58. | ODRC Requirements and Assignments Tape | System Interface | 1/Week | N/A |

Table 4-1 Batch Projections

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## 4.2 INTERACTIVE PROCESSING REQUIREMENTS

The interactive performance and operational requirements consist of defining terminal requirements and the on-line usage projections presented in the following sections. These requirements are taken as support objectives to be accomplished on a best effort basis.

### 4.2.1 Terminal Requirements

Terminal response time for this application is defined as the time the user completes the data input transmission to the time the system response begins to appear on the screen. The response time objective is an average 20 seconds over any one hour of terminal operation.

Video display terminals with foreground/background capabilities are required. The distribution of terminals required by the user organizations is listed in Table 4-2.

Development will be limited to H2K and H4K terminal types. The capability to use other terminals will be added as future conditions permit.

| Organization | Total No. of Terminals | Terminal Type | Terminal Locations | Number of Terminals Existing | Additional Terminals Required | Terminals In Use Concurrently |
|---|---|---|---|---|---|---|
| ASED/TCSD/CSDD | 2 | MOPS<br>- | JSC/Bldg. 16<br>JSC/Bldg. 16 | 1 | -<br>1 | 2 |
| FCD | 4 | MOPS<br>MOPS | JSC/Bldg. 4<br>JSC/MCC | 2 | - | 2 |
| POO | 2 | H2K | JSC/Bldg. 30 | 1 | 1 | 2 |
| IDSD | 1 | MOPS | JSC/Bldg. 12 | 1 | - | 1 |
| SSD | 1 | | | - | 1 | 1 |
| Vandenberg | 2 | | Vandenberg | - | 2 | 1 |
| SAMSO | 1 | | SAMSO | - | 1 | 1 |
| GDSD | 1 | H2K | Aeronutronics-Ford | - | 1 | 1 |
| ASED | 1 | | JSC/SAIL/Bldg. 16 | - | 1 | 1 |
| MSFC | 2 | MOPS | MSFC | 2 | - | 1 |
| KSC | 2 | | KSC | - | 2 | 1 |
| RI | 2 | | RI | - | 2 | 2 |

Table 4-2 Terminal Distribution Requirements



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### 4.2.2 Terminal Usage Projections

Based on the Shuttle Program having an operational status of fifty-two flights per year, the maximum frequency of use of the on-line displays is given below.

| Display | Frequency/Day |
|---|---|
| Level II/Level III Requirements | 100 |
| Sensor and S/C | 50/1 day @ month |
| FDM and RCDR Track | 5/1 day @ 3 months |
| BTU and PCM | 30 |
| MDM PROM Sequence | 30 |
| Calibration | 50 |
| GPC Software | 100 |
| SM/PL | 25 |
| SM/PL Precondition | 25 |
| SCM List | 50 |
| On-Board CRT Requirements | 50 |
| Command Uplink | 25 |
| Downlist Assignments Tables | 100 |
| Downlink Assignments Tables | 100 |
| FTR/DTO-FTC | 4 |
| ODRC Product Requirements | 20 |
| Status by Change Document | 40 |
| Group Status Text | 20 |
| Device and Simulator | 50 |
| MCC and C&W | 20 |
| Measurement Commonality Diagnostic Query | 20 |
| Signal Conditioner Query | 50 |
| MDM Assignments Query | 40 |
| M/S ID ODRC Product Assignments Query | 20 |

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| | |
|---|---|
| M/S ID Format Assignments Query | 100 |
| FTR/DTO-FTO by M/S ID Query | 2 |
| Parent Word Query | 10 |
| Status by Group ID Query | 20 |

## 4.3 SYSTEM SECURITY

MMDBS security (i.e., protection against unauthorized use) will be provided by user access codes. No restrictions will be placed on retrieval and display of information in the data base; however, updating will be controlled.

An Omnipotent Password will be available. This password will allow the user to alter the coded value of any password, updating of edit tables, and updating of approved and pending data.

All other passwords will have the following capabilities:

- Sign-on to the system for retrieval only
- Updating of pending data by form and Status Change Document Number.

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## 4.4 SYSTEM INTEGRITY (RECOVERY FROM DATA BASE LOSS)

In the event of a computer systems malfunction, the MMDBS is to be recoverable to the last file saved. Recovery of the system, to the last file saved, will be accomplished within four hours.

## 4.5 SYSTEM ESTABLISHMENT

The requirements for initially loading the MMDBS are detailed in Appendix D and were approved for inclusion into this document by Program Change Request 262. Prior to defining these requirements the MMDBS was to be delivered as a "dry system" where data could only be entered via terminal; however as stated in the requirement, the MMDBS will be initially loaded from an RI supplied data tape.

## 4.6 SYSTEM SIZE

The maximum MMDBS size will be reached during the period of time of maximum flight frequency of one flight per week. At this time, the MMDBS is estimated to require 55 million characters of raw data storage.

These estimates are based on the system using an S2K data base and the following assumptions:

- The MMDBS will have 24,000 M/S IDs.
- 24,000 M/S IDs will have either a BTU or FDM associated with it.
- 700 M/S IDs will have two calibration types with each type having a standard curve associated with it.
- 1000 M/S IDs will have actual calibration curve data.

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- 10,000 M/S IDs will have signal conditioner information.
- 500 M/S IDs will have information for 2 signal conditioners.
- An M/S ID will have a maximum of 18 vehicle configurations.
- Only 10% of the M/S IDs will change from configuration to configuration and only 10% of the data associated with those M/S IDs will change.
- The MMDBS will contain a maximum of 500 DSM Commands, 75 TLM Format IDs, 350 DRC Product Group IDs, 58 BTU Names, 20 SCM List IDs, 300 FTR IDs, 100 SM Preconditioning Group IDs, 30 CRT Page IDs, 300 Status Change Document Numbers, and 20 Status Group IDs.
- Each type of identifier listed above may have a maximum of 18 Vehicle Configuration Numbers assigned to each of its unique IDs.
- A TLM Format ID may have, on the average, 2000 M/S IDs.
- A DRC Group ID may have 80 M/S IDs.
- A BTU Name may have a maximum of 128 MDM PROM Sequence IDs, each having a maximum of 32 MDM PROM Sequence Numbers.
- An SCM List ID will have a maximum of 200 M/S IDs.
- An FTR ID will have, on the average, 50 M/S IDs.
- An SM Preconditioning Group ID will have a maximum of 5 M/S IDs and 3 SM Preconditioning Logical Expressions.
- A CRT Page ID will have 100 M/S IDs where each M/S ID will have 3 CRT Sequential Numbers.
- A Status Change Document Number will have, on the average, 10 M/S IDs and an average of 3 Vehicle Configuration Numbers. It will also have an average

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of 10 Status Group IDs which will be affected.

- The average number of Vehicle Configuration Numbers assigned to a Status Group ID will be 18.

## 4.7 TEST REQUIREMENTS

It is required that CSC perform extensive testing to demonstrate that all capabilities described in this document are correct. Selected data will be provided by POO Integration Division, but to insure comprehensive testing, the data will be supplemented by CSC to include all data configuration and elements anticipated in the operational environment.

## 4.8 OPERATIONAL PHASES

The MMDBS will be implemented for productional use in three phases. The first stage will include the following capabilities: (1) system interface programs required to generate the command uplink tape (Section 3.3.1), the downlist telemetry tape (Section 3.3.2), the downlink telemetry tape (Section 3.3.3), and the calibration tape (Section 3.3.4), (2) batch programs required to generate the Master Measurement List (Section 3.2.1) and the Command List (Section 3.2.29), and (3) the capability to input and update data related to the Master Measurements List and Command List via CRT terminal and the remaining MMDBS data elements will be updated from RI supplied tapes.

Additional software for Phase I:

- Level II/Level III Requirements Display (3.1.1)

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- Status by Change Document Display (3.1.17)
- Group Status Text Display (3.1.18)
- Flight Assignments Display (3.1.30)
- VCN Assignments Display (3.1.34)
- Measurement/Stimulus Signal Routing Summary (3.2.6)
- Measurement Type ID Summary (3.2.7)
- Group ID Status Report (3.2.19)
- Status by Change Document (3.2.20)
- Pending Report (3.2.23)
- Special MML Report (3.2.40)
- Edit Table Update (3.2.41)
- Change Document Deletion Program (3.2.44)
- RI Actual Transaction Update Tape (3.3.12)
- Data Manager Routines

Phase I online software will be developed for execution on the Hazeltine 2000 terminal only. Software communication will be interfaced through the 6676 multiplexer. Security for Phase I online software will be limited to User Number Authority at sign on.

Phase II includes Telemetry, Simulation, ODRC, FTR, and FOD products.

- Downlist Assignments Table Display (3.1.13)
- Downlink Assignments Table Display (3.1.14)
- FTR/DTO-FTO Display (3.1.15)
- ODRC Product Requirements Display (3.1.16)
- Device Display (3.1.19)
- MCC and C&W Display (3.1.20)
- Simulator Display (3.1.33)
- FTR/DTO-FTO Report (3.2.13)

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- ODRC Requirements and Assignments (3.2.14)
- Response Rate Required Report (3.2.18)
- FTR/DRO-FTO by Format (3.2.21)
- Downlist/Downlink Requirements Table (3.2.26)
- Orbiter Systems Instrumentation Limits (3.2.37)
- Flight History Program (3.2.42)
- Vehicle Configuration Deletion Program (3.2.43)
- IS - WAS Listings by CDOC (3.2.45)
- History Tape Compare Program (3.2.46)
- M/S ID Data Transfer Program (3.2.47)
- Programmers' Report Capability - Release 1 (3.2.48)
- Flight Deletion Program (3.2.50)
- Downlist Requirements Tape (3.3.5)
- Downlist Format Update Tape (3.3.6)
- Software Development Lab Data Tape (3.3.8)
- ODRC Requirements and Assignments Tape (3.3.11)

Phase II online software will be developed for execution on both the Hazeltine 2000 and 4000G terminals with the Hazeltine 2000 interfacing through the 6676 multiplexer, and the Hazeltine 4000G interfacing through the 2550-2 Host Communications Processor. Security as defined in this document will be implemented in the Phase II software.

Phase III includes remaining M/S ID related Systems Management, CFT, SCM and MDM PROM sequence products.

- Sensor and S/C Display (3.1.2)
- FDM and RCDR Track Display (3.1.3)
- BTU and PCR Display (3.1.4)

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- MDM PROM Sequence Display (3.1.5)
- Calibration Display (3.1.6)
- GPC Software Display (3.1.7)
- SM/PL Display (3.1.8)
- SM/PL Precondition Display (3.1.9)
- SCM List Display (3.1.10)
- On-Board CRT Requirements Display (3.1.11)
- Measurement Commonality Diagnostic Query Display (3.1.21)
- Signal Conditioner Assignments Query Display (3.1.22)
- MDM Assignments Query Display (3.1.23)
- M/S ID ODPC Product Assignments Query Display (3.1.24)
- M/S ID Format Assignments Query Display (3.1.25)
- FTP/DTO-FTO by M/S ID Query Display (3.1.26)
- Parent Word Query Display (3.1.27)
- Status by Group ID Query Display (3.1.28)
- Standard Cals Display (3.1.31)
- PCM MU Display (3.1.32)
- Instrumentation Parts and Component List (3.2.2)
- GPC Software Input Report (3.2.3)
- GPC Software Output Report (3.2.4)
- Display and Recorder Summary (3.2.5)
- Quantity Count of Components (3.2.8)
- Systems Management Report (3.2.16)
- Calibration Report (3.2.17)
- Prent Word/Voting Logic Report (3.2.22)
- Interface Signal by Channel (3.2.24)
- PCM MU Data RAM Address Assignments Table (3.2.30)
- Orbiter Systems Instrumentation Limits (3.2.37)
- M/S ID Deletion Program (3.2.49)
- Standard Calibration Deletion Program (3.2.51)
- GPC Calibration Update Tape (3.3.7)

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- SM/PL Detailed Processing Tape (3.3.9)
- Onboard CRT Display Requirements Tape (3.3.10)

Information required to be output by the following list of programs will be generated by the Programmers Report Capability (PRC) Program. Report formats may vary, but all information will be retrieved with one or more executions of the PRC.

- Wideband Channel Loading vs FDM (3.2.9)
- Channel Loading vs MDM (3.2.10)
- DSC Channel Loading (3.2.11)
- Tape Recorder Loading by FDM (3.2.12)
- Operational/Developmental Instrumentation Report (3.2.15)
- MDM Word Channelization (3.2.25)
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# APPENDIX A

## Data Element Dictionary

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# Data Element Dictionary

This appendix describes data elements for the MMDBS. The Measurement/Stimulus Identifier Group is listed first, followed by the additional data elements.

Each data element is defined by element name, the type of data it contains - alphanumeric (AN), date (D), decimal (DN), or integer (IN) - the size, the functional area (GROUP) to which it belongs, the description and the data validation to be performed (EDITS).

Forty-five of the data elements listed in the appendix require edit table capability and sixty-five data elements require special edits.

The M/S ID consists of ten characters divided into six subfields for identification purposes. Each subfield has a particular number of characters. An example of the M/S ID configuration follows:

| Field No. 1 | Field No. 2 | Field No. 3 | Field No. 4 | Field No. 5 | Field No. 6 |
|---|---|---|---|---|---|
| V | 45 | T | 2222 | A | * |

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 1 | MAJOR ELEMENT ID | AN | 1 |

GROUP: M/S ID

DESCRIPTION: Alpha character identifying a major element in the Shuttle Program.
Example:
A = Ground Test Article (GTA)

EDITS: Legal values in edit table.

| | | | |
|---|---|---|---|
| 2 | SUBSYSTEM ID | IN | 2 |

GROUP: M/S ID

DESCRIPTION: 2-digit subsystem ID-number.
Example:
72 = Data Processing

EDITS: Legal values in edit table.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 3 | MEASUREMENT TYPE ID | AN | 1 |

GROUP: M/S ID

DESCRIPTION: Alpha character designating the type of measurement.

A = Acceleration
B = Phase, Electrical
C = Current
D = Vibration
E = Power
F = Frequency
G = Force/Stress/Strain
H = Position/Attitude
J = Logic Status
K = Stimulus
L = Velocity
M = Multiple
N = Resistance
P = Pressure
Q = Quantity/Humidity
R = Rate
S = Switch Scan
T = Temperature
U = Radiation
V = Voltage
Y = Acoustics
W = Time
X = Discrete Event
Z = Stimuli Monitor

EDITS: One of the above.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 4 | SUBSYSTEM LOCATION | IN | 4 |

GROUP: M/S ID

DESCRIPTION: A number assigned sequentially within the subsystem. Numbers 0001-8999 are used for OFI measurements; numbers 9000-9999 are used for DFI measurements. The exception to this is an asterisk measurement which is explained in the section related to the tenth character. A further exception applies to the SRB measurement/stimulus: e.g., Field 1 contains a 'B'. Measurement/stimulus in the 1000-4000 numbers are OFI and those in 5000-8000 are DFI.

EDITS: Values 0000-9999 are legal.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 5 | SIGNAL TYPE | AN | 1 |

GROUP: M/S ID

DESCRIPTION: Alpha character identifying the software type of measurement (SM Parameter Type).

A - Analog
B - Digital Serial Software
C - Analog Software
D - Digital Serial
E - Discrete Event
F - Frequency Modulation
G - Analog GSE
H - Hardwired Analog
I -
J - SM/Payload Digital
K - Ground Test-Flight Critical
L - Digital RF Uplink
M - Ground Test
N - Discrete GSE
O -
P -
Q -
R - Analog RF Uplink
S -
T - Digital Serial GSE
U - Discrete RF Uplink
V - SM/Payload Analog
W - Hardwired Discrete
X - Discrete Event Software
Y - SM/Payload Event
Z -

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| | EDITS: One of the above. | | |
| 6 | CHARACTERISTIC FLAG | AN | 1 |
| | GROUP: M/S ID Set | | |
| | DESCRIPTION: An asterisk identifies second path for a signal that is dual routed. An alpha character identifies software routing. | | |
| | EDITS: None. | | |

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 7 | ACCURACY, REQUIRED SYSTEM | DN | 3 |

GROUP: Configuration

DESCRIPTION: This field defines, in percent of full scale, the required system accuracy of measurement data.

EDITS: None.

| | | | |
|---|---|---|---|
| 8 | ASSOCIATED SUBSYSTEM | IN | 2 |

GROUP: Basic Information

DESCRIPTION: This field specifies the subsystem (other than the primary) from which the data originates. Used for cross-reference between subsystems.

EDITS: Only elements from Subsystem ID edit table.

| | | | |
|---|---|---|---|
| 9 | BTU CARD LOCATION | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: A number defining the location (slot number) that an assigned input/output module (card) is to be installed in an MDM. This is sometimes referred to as "Card Number" or "I/O Module Number."

EDITS: 00-15 only.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 10 | BTU CARD TYPE | AN | 3 |

GROUP: BTU Channelization

DESCRIPTION: An alpha code identifying the input/output module types of an MDM (signal type).

Example:

AID = Analog Input Differential Ended

EDITS: None.

| | | | |
|---|---|---|---|
| 11 | BTU CHANNEL NUMBER | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: A number identifying the channel on the corresponding MDM Card Location ("I/O-Module", "Card Number") that is assigned to the signal of an MDM.

EDITS: 00-31 only.

| | | | |
|---|---|---|---|
| 12 | BTU DATA BUS NAMES | AN | 24 |

GROUP: MDM PROM Sequence

DESCRIPTION: From one to five, four character, names (separated by commas) associated with each BTU Name.

EDITS: Edit table.

| | | | |
|---|---|---|---|
| 13 | BTU DESTINATION EQUIPMENT NAME 1 | AN | 15 |

GROUP: BTU Channelization

DESCRIPTION: This field contains the name of the only destination equipment for non-OI routing and the first destination for OI routing.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 14 | BTU DESTINATION EQUIPMENT NAME 2 | AN | 15 |

GROUP: BTU Channelization

DESCRIPTION: This field contains the name of the second destination equipment for OI routing.

EDITS: None.

| | | | |
|---|---|---|---|
| 15 | BTU DESTINATION EQUIPMENT NAME 3 | AN | 15 |

GROUP: BTU Channelization

DESCRIPTION: This field contains the name of the third destination equipment for OI routing.

EDITS: None.

| | | | |
|---|---|---|---|
| 16 | BTU MIA ADDRESS | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: This field defines the Multiplex Interface Adapter (MIA) address assigned to an MDM.

EDITS: None.

| | | | |
|---|---|---|---|
| 17 | BTU NAME | AN | 4 |

GROUP: BTU Channelization

DESCRIPTION: The name of the BUS Terminal Unit or MDM.
Example:
GPCX = GPC 1-5

EDITS: Edit table.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 18 | BTU NUMBER OF BITS | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: Defines the number of bits in the signal within the 16-bit MDM Word Number.

EDITS: 01-64 only.

| | | | |
|---|---|---|---|
| 19 | BTU NUMBER OF WORDS | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: Specifies number of words from MDM channel, if channel is a serial I/O channel.

EDITS: None.

| | | | |
|---|---|---|---|
| 20 | BTU PLUG AND PIN/SUBSYSTEM | AN | 11 |

GROUP: BTU Channelization

DESCRIPTION: Indicates plug and pin designation of the input signal to the MDM from the sensor or S/C.

EDITS: None.

| | | | |
|---|---|---|---|
| 21 | BTU REFERENCE DESIGNATOR | AN | 12 |

GROUP: BTU Channelization

DESCRIPTION: This field contains the MDM reference designator.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 22 | BTU SIGNAL TYPE | AN | 1 |

GROUP: BTU Channelization

DESCRIPTION: This field describes type, level, and/or grounding technique of the input signal to an MDM or FDM.

Example:

B = BITE status register

EDITS: Edit table.

| | | | |
|---|---|---|---|
| 23 | BTU START BIT NUMBER | IN | 2 |

GROUP: BTU Channelization

DESCRIPTION: The start bit of a signal within a 16-bit data field (data bus word).

EDITS: 00-64.

| | | | |
|---|---|---|---|
| 24 | BTU TRANSFER RATE | DN | 4 |

GROUP: BTU Channelization

DESCRIPTION: The sample rate of data transferred to and from the GPC from respective MDMs. (This is sometimes referred to as fetch rate or I/O rate). Also, gives the actual MDM fetch rate at which the PCM MU acquires data from the MDM.

EDITS: Edit table.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 25 | BTU TYPE | AN | 2 |

GROUP: BTU Channelization

DESCRIPTION: This field is used to indicate whether a BTU is operational or non-operational.

EXAMPLE:

1 = MDM F/C

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 26 | BTU WORD NUMBER | IN | 2 |

PCR #489 included.

GROUP: BTU Channelization

DESCRIPTION: A number from 01-32 defining the specific 16-bit data word in a serial digital stream of data words coming from the MDM Channel Number.

EDITS: 01-45.

| | | | |
|---|---|---|---|
| 27 | BTU/MDM HALF WORD 1 BIT FORMAT | AN | 16 |

GROUP: BTU Channelization

DESCRIPTION: A code defining the bit format of BTU signals as represented in digital format. The bit positions represent data bit assignments 00 through 15 from left to right as transferred either to or from the BTU. (OI or non-OI)

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 28 | BTU/MDM HALF WORD 2 BIT FORMAT | AN | 16 |

GROUP: BTU Channelization

DESCRIPTION: A code defining the bit format of BTU signals as represented in digital format. This data is included only for signals that extend into a second half word (i.e., bits 16-31 of GPC direct discretes) or for a half word directly associated with the first half word (i.e., bits 00-15 of EIU command words, BCH codes, or MEC command validation codes). (Non-OI only)

EDITS: None.

| | | | |
|---|---|---|---|
| 29 | BTU/MDM HALF WORD 3 BIT FORMAT | AN | 16 |

GROUP: BTU Channelization

DESCRIPTION: A code defining the bit format of BTU signals as represented in digital format. This data is included only for signals that extend into a third half word (i.e., bits 32-47 of GPC direct discretes). (Non-OI only.)

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 30 | BTU/MDM HALF WORD 4 BIT FORMAT | AN | 16 |

GROUP: BTU Channelization

DESCRIPTION: A code defining the bit format of BTU signals as represented in digital format. This data is included only for signals that extend into a fourth half word (i.e., bits 48-63 of GPC direct discretes). (Non-OI only.)

EDITS: None.

| | | | |
|---|---|---|---|
| 31 | CALIBRATION ACCURACY | DN | 4 |

GROUP: Calibration

DESCRIPTION: This field indicates the end-to-end system inaccuracy, in percent, for the measurement using RSS summation of component errors.

EDITS: None.

| | | | |
|---|---|---|---|
| 43 | CALIBRATION CURVE TYPE | AN | 5 |

GROUP: Calibration

DESCRIPTION: This field contains a type code for the end to end measurement calibration.

OXXXX = Actual NXXXX = Standard

DXXXX = Actual

Where XXXX is alphanumeric.

EDITS: One of the above or blank.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 44 | CALIBRATION DATA FIT | IN | 1 |

GROUP: Calibration

DESCRIPTION: A code identifying the type of calibration supplied.

EXAMPLE:

1 = Raw data points are supplied

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 45 | CALIBRATION DATA TOLERANCE | AN | 8 |

GROUP: Calibration

DESCRIPTION: Contains the sigma-over-band width data (a test of the accuracy of the polynomial curve fit).

EDITS: None.

| | | | |
|---|---|---|---|
| 46 | CALIBRATION DEGREE OF CURVE | IN | 1 |

GROUP: Calibration

DESCRIPTION: States the degree of curve fit. Also used as a flag for the polynomial and piece-wise coefficients.

0 = Piecewise fit curve, no coefficients
1 = First order
2 = Second order
3 = Third order
4 = Fourth order
5 = Fifth order

EDITS: 0-5 or blank.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 47 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 01 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

| | | | |
|---|---|---|---|
| 48 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 01 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

| | | | |
|---|---|---|---|
| 49 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 02 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 50 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 02 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

| | | | |
|---|---|---|---|
| 51 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 03 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

| | | | |
|---|---|---|---|
| 52 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 03 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 53 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 04 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioners.

EDITS: None.

| | | | |
|---|---|---|---|
| 54 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 04 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 55 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 05 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 56 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 05 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 57 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 06 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 58 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 06 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 59 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 07 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 60 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 07 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 61 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 08 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 62 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 08 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 63 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 09 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 64 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 09 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 65 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 10 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 66 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 10 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 67 | CALIBRATION DEPENDENT COMPOSITE DATA POINT 11 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 68 | CALIBRATION INDEPENDENT COMPOSITE DATA POINT 11 | DN | 8 |

GROUP: Calibration

DESCRIPTION: Composite data points represent the marriage of sensor and signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 69 | CALIBRATION EFFECTIVITY, CURVE SERIES | AN | 1 |

GROUP: Calibration

DESCRIPTION: The number of the curve in a set of multi-scale calibrations (i.e., the identifier of a specific curve for a particular type of calibration).

EDITS: 0-9, A-Z.

| | | | |
|---|---|---|---|
| 70 | CALIBRATION EFFECTIVITY, DATE | D | 8 |

GROUP: Calibration

DESCRIPTION: Date the calibration was made.

EDITS: YY/MM/DD.

| | | | |
|---|---|---|---|
| 71 | CALIBRATION EFFECTIVITY, REVISION NUMBER | IN | 1 |

GROUP: Calibration

DESCRIPTION: Revision number of the calibration.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 72 | CALIBRATION GPC OFFSET VALUE | DN | 10 |

GROUP: Calibration

DESCRIPTION: The offset, or bias, value in engineering units which, subtracted from the full scale, will allow an adjusted full scale value to be determined for the purpose of GPC software scaling and conversion.

EDITS: None.

| | | | |
|---|---|---|---|
| 311 | CALIBRATION HIGH INDEPENDENT VARIABLE | AN | 6 |

GROUP: Calibration

DESCRIPTION: Counts or volts of the highest valid data point as established by the elements systems design engineer.

EDITS: None.

| | | | |
|---|---|---|---|
| 73 | CALIBRATION INDEPENDENT VARIABLE UNITS | AN | 4 |

GROUP: Calibration

DESCRIPTION: Units of the raw PCM data.

EXAMPLE:

CNTS = Counts

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 312 | CALIBRATION LOW INDEPENDENT VARIABLE | AN | 6 |

GROUP: Calibration

DESCRIPTION: Counts or volts at the lowest valid data point as established by the elements systems design engineer.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 74 | CALIBRATION MOST SIGNIFICANT BIT VALUE | DN | 10 |

GROUP: Calibration

DESCRIPTION: The value in engineering units of the most significant bit in the signal data field for use by GPC software scaling. This data element is no longer valid. See "Calibration Units" for correct definition of values contained in this element.

EDITS: None.

| | | | |
|---|---|---|---|
| 75 | CALIBRATION NUMBER OF DATA PAIRS | IN | 2 |

GROUP: Calibration

DESCRIPTION: The number of dependent/independent composite data pairs required for curve fit.

EDITS: 0-11.

| | | | |
|---|---|---|---|
| 76 | CALIBRATION NUMBER OF SETS | AN | 1 |

GROUP: Calibration

DESCRIPTION: The total number of sets of multiscale calibrations (i.e., the total number of curve series' for each calibration type).

EDITS: 0-9, A-Z.

| | | | |
|---|---|---|---|
| 77 | CALIBRATION POLY. COEFF. A0, INTERCEPT | AN | 14 |

GROUP: Calibration

DESCRIPTION: Offset coefficient value in scientific notation or Engine Parameter Key Number

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 78 | CALIBRATION POLY. COEFF. A1 CURVE ORDER 1 | AN | 14 |

GROUP: Calibration
DESCRIPTION: Coefficient value in scientific notation or Speed/Flow C Number.
EDITS: None.

| 79 | CALIBRATION POLY. COEFF. A2 CURVE ORDER 2 | AN | 14 |
|---|---|---|---|

GROUP: Calibration
DESCRIPTION: Coefficient value in scientific notation.
EDITS: None.

| 80 | CALIBRATION POLY. COEFF. A3 CURVE ORDER 3 | AN | 14 |
|---|---|---|---|

GROUP: Calibration
DESCRIPTION: Coefficient value in scientific notation.
EDITS: None.

| 81 | CALIBRATION POLY. COEFF. A4 CURVE ORDER 4 | AN | 14 |
|---|---|---|---|

GROUP: Calibration
DESCRIPTION: Coefficient value in scientific notation.
EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 82 | CALIBRATION POLY. COEFF. A5 CURVE | AN | 14 |

ORDER 5

GROUP: Calibration

DESCRIPTION: Coefficient value in scientific notation or Key Number Intercept.

EDITS: None.

| | | | |
|---|---|---|---|
| 83 | CALIBRATION SCALE FACTOR | DN | 10 |

GROUP: Calibration

DESCRIPTION: A number specifying the scale factor of an analog signal in volts per engineering unit and used for ground calibration purposes.

EDITS: None.

| | | | |
|---|---|---|---|
| 84 | CALIBRATION TYPE | IN | 2 |

GROUP: Calibration

DESCRIPTION: A code identifying the purpose of a set of calibration data.
A user-maintained Calibration Type conversion table will allow conversion of a 2-digit Calibration Type to a 1-digit alphanumeric value for actual storage in the data base. This table should only contain currently valid values for Calibration Type. The internal 1-digit value is for storage only and will not appear on any output product.

EDITS: Edit Table.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 74 | CALIBRATION UNITS | AN | 8 |

GROUP: Calibration

DESCRIPTION: Units in which the calibration is made when it is different from data range units. (This element is shown on some forms as "Calibration Most Significant Bit". Where this occurs, the first eight characters of the element represent the value for calibration units.)

EDITS: None.

| | | | |
|---|---|---|---|
| 32 | CALIBRATION LOW VALID DATA POINT | AN | 8 |

GROUP: Calibration

DESCRIPTION: Calibration ranges for percent full scale computation are as follows:

A. PCM OI/DFI Measurement, 0-255 PCM Counts

B. DFI Analog Measurement, 0-5 volts

C. GPC Unipolar Measurements, 0-511 PCM counts

D. GPC Bipolar Measurements, 0-1023 PCM counts.
Counts in twos compliment decimal magnitude form.

E. Meter Scale units, 0-100 percent

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 33 | CALIBRATION VALID DATA POINT 10 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 34 | CALIBRATION VALID DATA POINT 20 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 35 | CALIBRATION VALID DATA POINT 30 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 36 | CALIBRATION VALID DATA POINT 40 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 37 | CALIBRATION VALID DATA POINT 50 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 38 | CALBRATION VALID DATA POINT AN 60 PCT. | 8 | |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 39 | CALIBRATION VALID DATA POINT 70 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 40 | CALIBRATION VALID DATA POINT 80 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 41 | CALIBRATION VALID DATA POINT 90 PCT. | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 42 | CALIBRATION HIGH VALID DATA POINT | AN | 8 |

GROUP: Calibration

DESCRIPTION: See Calibration Low Valid Data Point description.

EDITS: None.

| | | | |
|---|---|---|---|
| 85 | CAUTION AND WARNING DISPLAY | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement is hardwired to the caution and warning system.

EXAMPLE:

C = Caution

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 86 | CREW CONTROL DEVICE | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the type of mechanical device used by the flight crew to generate the stimulus.

EXAMPLE:

C = Controller

EDITS: EDIT TABLE

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 87 | CRT APPLICABILITY | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates that the measurement may be called up by keyboard and displayed on any one or all of the onboard CRTs.

EXAMPLE:

X = Will be displayed onboard

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 88 | CRT BILEVEL-0 | AN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field denotes the text to be displayed for the zero state of a discrete parameter. The text will be right justified.

EDITS: None.

| | | | |
|---|---|---|---|
| 89 | CRT BILEVEL-1 | AN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field denotes the text to be displayed for the one state of a discrete parameter. The text will be right justified.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 90 | CRT BLANKING | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field denotes the parameter value is to be blanked upon some condition. The CRT Special Processing field should refer to an addendum paragraph defining the condition. Default will be no blanking.

EDITS: None.

| | | | |
|---|---|---|---|
| 91 | CRT BRANCHING | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field indicates that display related branching is required on this M/S ID. The CRT Special Processing field should refer to an addendum paragraph in the requirements documentation to define the conditions. Default will be no branching.

EDITS: None.

| | | | |
|---|---|---|---|
| 92 | CRT CHARACTER SIZE | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field indicates that large characters are to be used on the CRT display. Default is small.

EDITS: X or blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 93 | CRT FLASH | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field indicates the parameter value is to flash upon some condition. The CRT Special Processing field should refer to an addendum paragraph in the requirements documentation to define the conditions. Default will be no flash.

EDITS: None.

| | | | |
|---|---|---|---|
| 94 | CRT FORMAT TYPE | AN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field identifies the format type of the data value. If remote text is specified, the CRT Special Processing field should refer to an addendum paragraph in the requirements documentation which will provide the text and driving logic.

EXAMPLE:

VAR = Variable

EDITS: EDIT TABLE

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 95 | CRT INTENSITY | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field indicates that overbright intensity is to be used for displaying the parameter value. If X is specified, the CRT Special Processing field should refer to an addendum paragraph in the requirements documentation defining the conditions. Default will be normal intensity.

EDITS: None.

| | | | |
|---|---|---|---|
| 96 | CRT LEADING ZEROS | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X in this field indicates that leading zero (0) characters are displayed for decimal values. Default is no leading zeros.

EDITS: X or blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 97 | CRT PARAMETER CHARACTERISTIC | DN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field describes how the parameter value is required to appear on the CRT. The entry is in the form AA.B, where A is the total number of characters in the data value including decimal point and sign if displayed. B is the number of characters to the right of the decimal. (B = 0 for integers.)

EDITS: None.

| | | | |
|---|---|---|---|
| 98 | CRT NOMENCLATURE | AN | 20 |

GROUP: Onboard CRT

DESCRIPTION: The name assigned to the signal for display on the onboard MCDS CRT Display Unit.

EDITS: None.

| | | | |
|---|---|---|---|
| 99 | CRT PAGE ID | IN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field identifies a unique page which contains values for one or more M/S ID parameters.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 100 | CRT REVISION NUMBER | AN | 1 |

GROUP: Onboard CRT

Description: An alphanumeric code (A-Z) to show the update history for the display. All parameters changed in a given update will have the same code.

EDITS: None.

| | | | |
|---|---|---|---|
| 101 | CRT SEQUENTIAL NUMBER | IN | 1 |

GROUP: Onboard CRT

DESCRIPTION: The sequential number of the position of the M/S ID when it appears more than once on a page.

EDITS: None.

| | | | |
|---|---|---|---|
| 102 | CRT SIGN | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An X entry will indicate that the plus (+) sign is to be displayed for decimal values. Default will be no sign.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 103 | CRT SPECIAL PROCESSING | AN | 4 |

GROUP: Onboard CRT

DESCRIPTION: This field denotes that special processing is required on the parameter. The addendum paragraph entered in this field references the requirements documentation which specifies the dependent parameters, all viable conditions, and the corresponding desired output.

EDITS: None.

| | | | |
|---|---|---|---|
| 104 | CRT STATUS | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: An "X" denotes that parameter status is to be displayed.

EDITS: None.

| | | | |
|---|---|---|---|
| 105 | CRT UPDATE RATE | AN | 1 |

GROUP: Onboard CRT

DESCRIPTION: This field indicates the rate at which the parameter should be updated on the CRT. Default is B.

EXAMPLE:

B = once per two seconds

EDITS: EDIT TABLE

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 106 | CRT X-COORDINATE | IN | 4 |

GROUP: Onboard CRT

DESCRIPTION: The column number (1-51 or 1-1024) of the parameter position on the CRT. The position is determined by the left-most character.

EDITS: 1-1024.

| | | | |
|---|---|---|---|
| 107 | CRT Y-COORDINATE | IN | 4 |

GROUP: Onboard CRT

DESCRIPTION: The row number (1-26 or 1-731) of the parameter position on the CRT. An 'A' to the right of the row number specifies that greater resolution is required when the parameter is displayed on the CRT. This will allow a 1024 X 731 address grid to be used. When this is used, the coordinates specify the center of the character. The position is determined by the left-most character.

EDITS: None.

| | | | |
|---|---|---|---|
| 108 | C&W ANNUNCIATOR NOMENCLATURE | AN | 22 |

GROUP: Caution and Warning

DESCRIPTION: The nomenclature on the light on a C&W annunciator panel used by a measurement. The same nomenclature may serve for more than one M/S ID.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 109 | C&W CHANNEL NUMBER | IN | 3 |

GROUP: Caution and Warning

DESCRIPTION: The channel number on which the measurement is routed to the C&W electronics. This channel is associated with a C&W limits value.

EDITS: None.

| | | | |
|---|---|---|---|
| 110 | C&W LIMIT SENSE | AN | 1 |

GROUP: Caution and Warning

DESCRIPTION: Indicates a high, low, or dual limit sense.

EXAMPLE:

H = High

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 111 | C&W LIMIT VALUE, EU | AN | 10 |

GROUP: Caution and Warning

DESCRIPTION: Gives the high and low C&W limit values expressed in the same units as Data Range Units.

EDITS: None.

| | | | |
|---|---|---|---|
| 112 | C&W LIMIT VALUE, VOLTS | DN | 9 |

GROUP: Caution and Warning

DESCRIPTION: Gives the high and low limit values expressed in volts.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 113 | C&W MATRIX NUMBER | AN | 2 |

GROUP: Caution and Warning

DESCRIPTION: The routing assigned to an M/S ID between the C&W electronics and the C&W annunciator panel.

EDITS: None.

| | | | |
|---|---|---|---|
| 115 | DATA RANGE LOW | AN | 5 |

GROUP: Configuration

DESCRIPTION: This field contains the low limit of an analog transducer/signal conditioner to determine system performance. May also provide "discrete" status.

EDITS: None.

| | | | |
|---|---|---|---|
| 115A | DATA RANGE HIGH | AN | 5 |

GROUP: Configuration

DESCRIPTION: This field contains the high limit of an analog transducer/signal conditioner to determine system performance. May also provide "discrete" status.

EDITS: None.

| | | | |
|---|---|---|---|
| 116 | DATA RANGE UNITS | AN | 8 |

GROUP: Basic Information

DESCRIPTION: This field contains the engineering units specifications for Data Range LOW-HIGH.

EDITS: Legal values in edit table.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 117 | DATA TYPE | AN | 4 |

GROUP: Configuration

DESCRIPTION: An alphabetic abbreviation of the signal as represented in the GPC or PCM Master Unit.

Example:

BCD: Binary Coded Decimal (0-9)

EDITS: Legal values in edit table.

| | | | |
|---|---|---|---|
| 118 | DEDICATED DISPLAY | AN | 2 |

GROUP: Configuration

DESCRIPTION: This code indicates that the measurement/stimulus is hardwired to a direct reading display and is presented to the crew in various methods.

A = Aural

M = Meter

W = Thumbwheel

S = Shared Meter

G = Gage

T = Talkback

F = Flag

L = Light

X = Undefined but required

EDITS: One of the above (Max of 2) or blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 119 | DEVICE ACCURACY | DN | 4 |

GROUP: Display and Control

DESCRIPTION: This code indicates the required accuracy of the display device in ±% of full scale.

EDITS: None.

| | | | |
|---|---|---|---|
| 120 | DEVICE INPUT PLUG & PIN | AN | 12 |

GROUP: Display and Control

DESCRIPTION: The plug and pin designation of the input signal to the display device.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 121 | DEVICE NAME | AN | 15 |

GROUP: Basic Information

DESCRIPTION: This field gives the LRU or source the measurement/stimulus is generated from or received by (i.e., Rotational Hand Controller (RHC), Display Driver Unit, etc.). This field shall also indicate those measurements or stimuli that are computer generated or that are acted on in some way by the computer (i.e., CMPTD SW SCAN).

EDITS: None.

| | | | |
|---|---|---|---|
| 122 | DEVICE PANEL NOMENCLATURE | AN | 34 |

GROUP: Display and Control

DESCRIPTION: A descriptive name for the display device as inscribed on the D&C panel.

EDITS: None.

| | | | |
|---|---|---|---|
| 123 | DEVICE PANEL NUMBER | AN | 8 |

GROUP: Display and Control

DESCRIPTION: This field contains the ID number of the display and control panel on which the display device is mounted.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 124 | DEVICE REFERENCE DESIGNATOR | AN | 12 |

GROUP: Display and Control

DESCRIPTION: This code identifies the reference designator ID of the display device fed by the measurement or the input device which generates the stimulus.

EDITS: None.

| | | | |
|---|---|---|---|
| 125 | DEVICE SWITCH PANEL NOMENCLATURE | AN | 34 |

GROUP: Display and Control

DESCRIPTION: A descriptive name for the switch as described on the panel.

EDITS: None.

| | | | |
|---|---|---|---|
| 126 | DEVICE SWITCH & PANEL NUMBER | AN | 12 |

GROUP: Display and Control

DESCRIPTION: This field denotes the ID number of the display and control panel on which the switch is mounted followed by the ID number assigned to the switch on the particular panel.

EDITS: None.

| | | | |
|---|---|---|---|
| 127 | DEVICE SWITCH REFERENCE DESIGNATOR | AN | 12 |

GROUP: Display and Control

DESCRIPTION: This code identifies the switch reference designator ID of the switch number 1 on the panel.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 128 | DOWNLINK BYTE BIT FORMAT | AN | 8 |

GROUP: BTU Channelization

DESCRIPTION: A code defining the bit format of the downlinked data as represented in digital format in the 8 bit downlink word. (Not used in Downlist format.) Bits numbered from 0-7.

S = Sign
M = MSB value
L = LSB indicator
X = Variable data
0 = Constant 0
1 = Constant 1

EDITS: None.

| | | | |
|---|---|---|---|
| 114 | DOWNLINK DATA LENGTH | IN | 2 |

GROUP: Basic Information

DESCRIPTION: A number defining the number of bits necessary for an M/S ID in a downlink format.

EDITS: None.

| | | | |
|---|---|---|---|
| 291 | DOWNLINK START BIT | IN | 2 |

GROUP: Configuration

DESCRIPTION: The number defining the data start bit in the TLM Start Word. TLM downlink uses 8 bit words.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 129 | DRC BAND/PASS LIMITS | IN | 3 |

GROUP: Data Reduction

DESCRIPTION: Band established, in counts, in which the curve is considered nominal.

EDITS: None.

| | | | |
|---|---|---|---|
| 130 | DRC GROUP ID | AN | 5 |

GROUP: Data Reduction

DESCRIPTION: Identifies a unique data reduction output product which will contain data for at least one M/S ID. It is the Tab/Plot/Strip chart recorder group ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 131 | DRC LINE NUMBER | IN | 2 |

GROUP: Data Reduction

DESCRIPTION: The channel number on a plot or the column number on a tab listing where the data for a particular M/S ID is required to appear.

EDITS: None.

| | | | |
|---|---|---|---|
| 132 | DRC PLOT RANGE, LOW-HIGH | AN | 10 |

GROUP: Data Reduction

DESCRIPTION: Ordinate scale of the plot.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 133 | DSM COMMAND WORD 2-1 | IN | 16 |

GROUP: Command Uplink

DESCRIPTION: Defines the first MDM module, channel address, and MDM Number for the reset command.

EDITS: Any combination of 1s and 0s.

| 134 | DSM COMMAND WORD 2-2 | IN | 16 |
|---|---|---|---|

GROUP: Command Uplink

DESCRIPTION: Defines the second MDM module, channel address, and MDM Number for the reset command if required.

EDITS: Any combination of 1s and 0s.

| 135 | DSM COMMAND WORD 2-3 | IN | 16 |
|---|---|---|---|

GROUP: Command Uplink

DESCRIPTION: Defines the first MDM module, channel address, MDM Number for the set command.

EDITS: Any combination of 1s and 0s.

| 136 | DSM COMMAND WORD 2-4 | IN | 16 |
|---|---|---|---|

GROUP: Command Uplink

DESCRIPTION: Defines the second MDM module, channel address, and MDM Number for the set command if required.

EDITS: Any combination of 1s and 0s.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 137 | DSM DISCRETE MASK 1 | IN | 16 |

GROUP: Command Uplink

DESCRIPTION: Actual Command Word 3 in binary for the reset command.

EDITS: Any combination of 1s and 0s.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 138 | DSM DISCRETE MASK 2 | IN | 16 |

GROUP: Command Uplink

DESCRIPTION: Actual Command Word 3 in binary for the set command.

EDITS: Any combination of 1s and 0s.

| | | | |
|---|---|---|---|
| 139 | DSM NUMBER | IN | 4 |

GROUP: Command Uplink

DESCRIPTION: The ground command identifier which is entered on a ground console to cause a specific command, or series of commands, to be transmitted to the Orbiter.

EDITS: None.

| | | | |
|---|---|---|---|
| 140 | DSM TITLE | AN | 21 |

GROUP: Command Uplink

DESCRIPTION: A short description of the onboard function or functions accomplished by the command.

EDITS: None.

| | | | |
|---|---|---|---|
| 141 | DSM TYPE | AN | 1 |

GROUP: Command Uplink

DESCRIPTION: A code which indicates the type of command.

M = Multiple function command

F = Single function command

S = Salvo command

EDITS: One of the above

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 143 | FDM CHANNEL CENTER FREQUENCY | DN | 3 |

GROUP: FDM

DESCRIPTION: This field identifies the FDM Channel Center frequency in Kilo-Hertz.

EDITS: None.

| | | | |
|---|---|---|---|
| 144 | FDM CHANNEL FREQUENCY RESPONSE | AN | 1 |

GROUP: FDM

DESCRIPTION: This field identifies FDM channel frequency response in Hz.

EXAMPLE:

A = 1000 Hz D = 500 Hz

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 145 | FDM INPUT PLUG AND PIN | AN | 10 |

GROUP: FDM

DESCRIPTION: This field identifies the input plug & pin designation of the input signal to the FDM.

EDITS: None.

| | | | |
|---|---|---|---|
| 146 | FDM NAME | AN | 4 |

GROUP: FDM

DESCRIPTION: This field contains an identifier for an FDM.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 147 | FDM PACKAGE AND CHANNEL CODE | AN | 5 |

GROUP: FDM

DESCRIPTION: Characters 1 and 2 = FDM Package No. within a specific FDM Name.
Character 3 = Multiplexer (MUX) identifier.
Character 4 and 5 = FDM Channel No. within the MUX.

EDITS: None.

| 148 | FDM REFERENCE DESIGNATOR | AN | 12 |
|---|---|---|---|

GROUP: FDM

DESCRIPTION: This field identifies Vehicle area: shuttle major element subsystem, assembly designation, and assembly item number.

EDITS: None.

| 149 | FLIGHT NUMBER | AN | 8 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: Uniquely identifies a set of VCNs.

EDITS: The first character must be an asterisk '*'.

| 150 | FLIGHT PHASE, AERODYNAMIC CONTROL | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus is available from aerodynamic control, approach, landing, taxi, and stop.

EDITS: A or blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 151 | FLIGHT PHASE, ENTRY | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus is available from deorbit through acquisition of aerodynamic control.

EDITS: E or blank.

| 152 | FLIGHT PHASE, LAUNCH | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus is available any time during T-20 hours through external tank separation +15 minutes.

EDITS: L or blank.

| 153 | FLIGHT PHASE, ORBIT | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus is available during orbit circularization through deorbit.

EDITS: O(alpha) or blank.

| 154 | FLIGHT PHASE 5 | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field is coded according to its use on a flight.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 155 | FLIGHT PHASE 6 | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field is coded according to its use on a flight.

EDITS: None.

| 156 | FLIGHT PHASE 7 | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field is coded according to its use on a flight.

EDITS: None.

| 157 | FLIGHT PHASE 8 | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field is coded according to its use on a flight.

EDITS: None.

| 160 | FLIGHT/GROUND | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: Specifies the required availability of the measurement. All measurements coded "F" will also be available for ground checkout during turnaround and maintenance operation. The ground checkout initializes the PCM Master Unit (TLM) hardware output and command decoder (MDM LF and MDM LA) through ground umbilicals.

EDITS: EDIT TABLE

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 161 | FTR DATA PRIORITY | AN | 1 |

GROUP: FTR/DTO-FTO

DESCRIPTION: Indicates the importance of a measurement in satisfying a flight test requirement.

EXAMPLE:

M = Mandatory

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 162 | FTR ID | AN | 8 |

GROUP: FTR/DTO-FTO

DESCRIPTION: An identifier assigned to a unique flight test requirement or detailed test objective.

EDITS: None.

| | | | |
|---|---|---|---|
| 163 | FTR REQUIRED RESPONSE RATE | AN | 4 |

GROUP: FTR/DTO-FTO

DESCRIPTION: The minimum sample rate required for an M/S ID to satisfy the flight test requirement.

EDITS: None.

| | | | |
|---|---|---|---|
| 164 | GPC SOFTWARE COMPOOL NAME | AN | 32 |

GROUP: GPC Software

DESCRIPTION: A name identifying the specific GPC software data set (COMPOOL) where the M/S ID is stored in the GPC memory (assigned by IBM).

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 165 | GPC SOFTWARE DATA LENGTH | IN | 2 |

GROUP: GPC Software

DESCRIPTION: A number that represents the number of bits of the M/S ID in the GPC internal signal (assigned by IBM).

EDITS: 01-64 or blank.

| | | | |
|---|---|---|---|
| 166 | GPC SOFTWARE DESTINATION MODULE | AN | 47 |

GROUP: GPC Software

DESCRIPTION: A series of seven character acronyms, separated by commas, that identify the GPC destination software modules of M/S IDs generated by a source software functional element.

EDITS: None.

| | | | |
|---|---|---|---|
| 167 | GPC SOFTWARE DOWNLIST AVAILABILITY | AN | 1 |

GROUP: GPC Software

DESCRIPTION: This field contains an indicator that a measurement is available for downlist.

EDITS: None.

| | | | |
|---|---|---|---|
| 168 | GPC SOFTWARE DOWNLIST DATA TYPE | AN | 1 |

GROUP: GPC Software

DESCRIPTION: A number representing the data type for the signals within the downlist (assigned by IBM).

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 169 | GPC SOFTWARE HAL NAME | AN | 32 |

GROUP: GPC Software

DESCRIPTION: A unique program listing name assigned to the M/S ID for GPC programming purposes (assigned by IBM).

EDITS: None.

| | | | |
|---|---|---|---|
| 170 | GPC SOFTWARE INPUT/OUTPUT/COMPUTE | AN | 1 |

GROUP: GPC Software

DESCRIPTION: An alphabetic code indicating that the signal is to be either an input (I) to, an output (O) from, or computed (C) within the GPC.

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 171 | GPC SOFTWARE REQUIRED UPDATE RATE | AN | 29 |

GROUP: GPC Software

DESCRIPTION: From 1 to 6, 4-character fields defining the required computation update rate, in updates per second, of a GPC internal software M/S ID.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 172 | GPC SOFTWARE SIGNAL MNEMONIC | AN | 10 |

GROUP: GPC Software

DESCRIPTION: This field contains an alphanumeric acronym uniquely identifying the user interface signals and the flight control (MH) system.

Characters 1 and 2

Example: RM = Redundancy Management

Character 3

Example: I = External Input

Character 4-10

Example: Signal Name - External Interface (LRU Related name)

EDITS: None.

| | | | |
|---|---|---|---|
| 173 | GPC SOFTWARE SOURCE MODULE | AN | 47 |

GROUP: GPC Software

DESCRIPTION: From one to six, seven character, acronyms (separated by commas) that identify the GPC software modules which are the sources (generators) of the M/S ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 174 | GPC SOFTWARE START BIT | IN | 2 |

GROUP: GPC Software

DESCRIPTION: A number identifying the GPC internal signal start bit (defined by IBM). GPC words may be up to 64 bits.

EDITS: 00-64.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 175 | GPC SOFTWARE UNITS | AN | 8 |

GROUP: GPC Software

DESCRIPTION: Engineering units description associated with software computations (assigned by IBM).

EDITS: Edit table.

| | | | |
|---|---|---|---|
| 301 | HOMOGENEOUS DATA SET NUMBER | IN | 2 |

GROUP: Configuration

DESCRIPTION: An identifier common to a set of M/S IDs that have the same time tag (updated at the same time).

EDITS: None.

| | | | |
|---|---|---|---|
| 309 | KSC STATE LOW | AN | 1 |

GROUP: Configuration

DESCRIPTION: The value used by KSC in the preprocessor for an event measurement in zero state.

O - On
F - Off
W - Wet
D - Dry

EDITS: O (alpha), F, W, D, or Blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 310 | KSC STATE HIGH | AN | 1 |

GROUP: Configuration

DESCRIPTION: The value used by KSC in the preprocessor for an event measurement in one state.

O - On

F - Off

W - Wet

D - Dry

EDITS: O (alpha), F, W, D, or Blank.

| 142 | LAUNCH COMMIT CRITERIA | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The value contained in this field indicates that the associated measurement is referenced in the Launch Mission Rules, and must be evaluated prior to committing to launch a Space Shuttle.

EDITS: None.

| 176 | MASTER EVENTS CONTROLLER | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: Indicates that the measurement is associated with the sequences of the master events controller.

EDITS: "X" or Blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 177 | MCC DISPLAY MSK NUMBER 1 | IN | 4 |

GROUP: Configuration

DESCRIPTION: A number giving the Manual Select Keyboard (MSK) address for selecting Mission Control Center (MCC) digital television equipment. One MSK number may apply to more than one M/S ID. Normally used for payload M/S IDs and those having a Telemetry Link ID of 1, 5, or D.

EDITS: None.

| | | | |
|---|---|---|---|
| 178 | MCC DISPLAY MSK NUMBER 2 | IN | 4 |

GROUP: Configuration

DESCRIPTION: A number giving the Manual Select Keyboard (MSK) address for selecting Mission Control Center (MCC) digital television equipment. One MSK number may apply to more than one M/S ID. Normally used for payload M/S IDs and those having a Telemetry Link ID Of 1, 5, or D.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 179 | MCC DISPLAY MSK NUMBER 3 | IN | 4 |

GROUP: Configuration

DESCRIPTION: A number giving the Manual Select Keyboard (MSK) address for selecting Mission Control Center (MCC) digital television equipment. One MSK number may apply to more than one M/S ID. Normally used for payload M/S IDs and those having a Telemetry Link ID of 1, 5, or D.

EDITS: None.

| | | | |
|---|---|---|---|
| 180 | MDM PROM ADDRESS, ACTUAL | IN | 3 |

GROUP: MDM PROM Sequence

DESCRIPTION: Actual starting address of an MDM PROM sequence should the PCM MU fetch PROM command require use of the MDM PROM sequence.

EDITS: 0-512.

| | | | |
|---|---|---|---|
| 181 | MDM PROM ADDRESS, REQUIRED | IN | 3 |

GROUP: MDM PROM Sequence

DESCRIPTION: The required starting address of an MDM PROM sequence should the PCM MU fetch PROM command require use of the MDM PROM sequence.

EDITS: 0-512.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 182 | MDM PROM MODE CONTROL | IN | 2 |

GROUP: MDM PROM Sequence

DESCRIPTION: Defines the operation of the MDM (two characters).

00 Prepare MDM to receive command data words (receive).

01 Prepare MDM to transmit response data words (transmit).

10 Send the BITE status and reset the BITE status register.

11 Perform IOM BITE.

EDITS: None.

| | | | |
|---|---|---|---|
| 183 | MDM PROM SEQUENCE ID | AN | 2 |

GROUP: MDM PROM Sequence

DESCRIPTION: The unique identifier assigned to the hardware fetch PROM sequence program within an MDM. The ID is unique only within an MDM.

EDITS: None.

| | | | |
|---|---|---|---|
| 184 | MDM PROM SEQUENCE LENGTH, ACTUAL | IN | 2 |

GROUP: MDM PROM Sequence

DESCRIPTION: Identifies the actual number of instructions to execute in an MDM PROM sequence should the PCM MU fetch PROM command require use of an MDM PROM sequence.

EDITS: 00-31.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 185 | MDM PROM SEQUENCE LENGTH, REQUIRED | IN | 2 |

GROUP: MDM PROM Sequence

DESCRIPTION: Number of required instructions in a PROM sequence.

EDITS: 00-31.

| | | | |
|---|---|---|---|
| 186 | MDM PROM SEQUENCE NUMBER | IN | 2 |

GROUP: MDM PROM Sequence

DESCRIPTION: The order in which the M/S ID data is retrieved for the execution of an MDM PROM sequence program.

EDITS: 00-31.

| | | | |
|---|---|---|---|
| 187 | MDM UTILIZATION | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the type of MDM through which the measurement or stimuli is routed.

EXAMPLE: D = DFI

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 188 | MEASUREMENT INTERFACE CONTROL | AN | 1 |

GROUP: Basic Information

DESCRIPTION: Identifies those measurements that cross major element interfaces.

X = Level II

EDITS: "X" or blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 189 | MEASUREMENT PURPOSE CATEGORY | IN | 2 |

GROUP: Configuration

DESCRIPTION: This field denotes the measurement purpose.

Example:

1 = System Configuration - The purpose of these measurements are to:
Inform the flight crew regarding such items as quantity of remaining expendables or consumables, commanded configuration or mode of system elements, etc.

EDITS: None.

| | | | |
|---|---|---|---|
| 191 | NOMENCLATURE, OPERATIONAL | AN | 21 |

GROUP: Configuration

DESCRIPTION: Defines the M/S ID in the ground procedure documents and displays.

EDITS: None.

| | | | |
|---|---|---|---|
| 192 | NOMENCLATURE, SYSTEM | AN | 34 |

GROUP: Basic Information

DESCRIPTION: Definitive title assigned to each measurement/stimulus.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 193 | OPERATIONAL LIMITS 1 HIGH | AN | 5 |

GROUP: Configuration

DESCRIPTION: The high value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 194 | OPERATIONAL LIMITS 1 LOW | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The low value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 195 | OPERATIONAL LIMITS 2 HIGH | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The high value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 196 | OPERATIONAL LIMITS 2 LOW | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The low value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 197 | OPERATIONAL LIMITS 3 HIGH | AN | 5 |

GROUP: Configuration

DESCRIPTION: The high value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 198 | OPERATIONAL LIMITS 3 LOW | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The low value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 199 | OPERATIONAL LIMITS 4 HIGH | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The high value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 200 | OPERATIONAL LIMITS 4 LOW | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The low value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 201 | OPERATIONAL LIMITS 5 HIGH | AN | 5 |

GROUP: Configuration

DESCRIPTION: The high value which the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 202 | OPERATIONAL LIMITS 5 LOW | AN | 5 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: The low value owhich the parameter may reach before it is considered to be out of tolerance.

EDITS: None.

| 203 | OPERATIONAL/DEVELOPMENT APPLICATION | AN | 1 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: This field indicates that the measurement/stimulus is operational or development. An operational measurement that is required for ground checkout or servicing which is also required to be monitored in flight during the development test program is coded "C", indicating the measurement is required to satisfy both purposes - common.

EXAMPLE:

M = Operational

EDITS: EDIT TABLE

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 204 | PARALLEL SWITCH CONTROL | AN | 2 |

GROUP: Configuration

DESCRIPTION: This code indicates that the stimulus is generated by the GSE or by the GPC during ground checkout operations.

EXAMPLE:

G = Ground Computer via Ground Decoder

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 205 | PARENT M/S ID | AN | 10 |

GROUP: Configuration

DESCRIPTION: The identification of the associated primary parent word where the measurement can be found in the MDM/GPC software.

EDITS: Same edits as M/S ID.

| | | | |
|---|---|---|---|
| 206 | PCM MU ACTUAL DATA RAM ADDRESS | IN | 4 |

GROUP: PCM

DESCRIPTION: A number identifying the address of the M/S ID in the PCM MU data RAM (assigned by the PCM MU compiler).

EDITS: None.

| | | | |
|---|---|---|---|
| 207 | PCM MU ACTUAL FETCH COMMAND | IN | 4 |

GROUP: PCM

DESCRIPTION: Defines the actual first command in the PCM MU fetch sequence that requests the measurement to be transferred from the MDM to the PCM MU.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 208 | PCM MU FETCH COMMAND ADDRESS | IN | 4 |

GROUP: PCM

DESCRIPTION: The address in the PCM MU fetch RAM where the fetch command is stored. (Assigned by the PCM MU compiler).

EDITS: None.

| | | | |
|---|---|---|---|
| 209 | PCM MU PREDEFINED DATA RAM ADDRESS | IN | 4 |

GROUP: PCM

DESCRIPTION: Predefined data RAM address requirement imposed upon the PCM MU compiler. Not all data RAM addresses are predefined.

EDITS: None.

| | | | |
|---|---|---|---|
| 210 | PCM MU PREDEFINED FETCH COMMAND | IN | 4 |

GROUP: PCM

DESCRIPTION: Defines the required first command in the PCM MU fetch sequence that requests the measurement to be transferred to the PCM MU.

EDITS: None.

| | | | |
|---|---|---|---|
| 211 | RELATED M/S ID | AN | 10 |

GROUP: Configuration

DESCRIPTION: The identification of another related M/S ID similar to Response M/S ID. It is also the identification label of the M/S ID as annotated in the GPC software.

EDITS: Same edits as M/S ID.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 212 | REMARKS | AN | 50 |

GROUP: Basic Information

DESCRIPTION: This field describes the peculiar characteristics or other pertinent information, as required, to describe the M/S ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 213 | REQUIRED RESPONSE RATE | AN | 4 |

GROUP: Configuration

DESCRIPTION: The minimum sampling rate required by any onboard system to reproduce data with sufficient frequency response to satisfy measurement requirements.

EDITS: Edit table.

| | | | |
|---|---|---|---|
| 214 | RESPONSE M/S ID | AN | 10 |

GROUP: Configuration

DESCRIPTION: The identification of a corresponding verification or response for the M/S ID.

EDITS: Same edits as M/S ID.

| | | | |
|---|---|---|---|
| 215 | RF UPLINK | AN | 1 |

GROUP: Configuration

DESCRIPTION: Indicates that the stimulus is originated on the ground and received by the Shuttle through the RF uplink.

EDITS: "X" or Blank.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 216 | SCM BINARY 0 TEXT | AN | 4 |

GROUP: Configuration

DESCRIPTION: Text that describes the state of the M/S ID if the discrete indicates binary 0.

EDITS: None.

| 217 | SCM BINARY 1 TEXT | AN | 4 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: Text that describes the state of the M/S ID if the discrete indicates binary 1.

EDITS: None.

| 218 | SCM DISCREPANCY MESSAGE TEXT | AN | 6 |
|---|---|---|---|

GROUP: Configuration

DESCRIPTION: Text that describes the "out of configuration" state of the M/S ID.

EDITS: None.

| 219 | SCM HIGH LIMIT VALUE | DN | 11 |
|---|---|---|---|

GROUP: SCM

DESCRIPTION: The high limit or state for the SCM List ID.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 220 | SCM LIST ID | IN | 2 |

GROUP: SCM

DESCRIPTION: Identifier of the SCM list to which an M/S ID belongs. The ID of the list of measurements and limit values or states which must be considered together by the SCM.

EDITS: None.

| | | | |
|---|---|---|---|
| 221 | SCM LOW LIMIT VALUE OR STATE | DN | 11 |

GROUP: SCM

DESCRIPTION: The low limit or state for the SCM List ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 222 | SENSOR INSTALLATION DRAWING NUMBER | AN | 11 |

GROUP: Sensor

DESCRIPTION: This field contains the drawing # describing the installation of the sensor hardware.

EDITS: None.

| | | | |
|---|---|---|---|
| 223 | SENSOR LOCATION COORDINATES | AN | 27 |

GROUP: Sensor

DESCRIPTION: This field contains the location coordinates of the originating measurement.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 224 | SENSOR LOCATION DESCRIPTOR | AN | 19 |

GROUP: Sensor

DESCRIPTION: This field contains a brief verbal description of the originating measurement location.

EDITS: None.

| | | | |
|---|---|---|---|
| 225 | SENSOR PACKAGE REFERENCE DESIGNATOR | AN | 12 |

GROUP: Sensor

DESCRIPTION: This field contains the reference designator for the sensor or source equipment.

EDITS: None.

| | | | |
|---|---|---|---|
| 226 | SENSOR PART NUMBER | AN | 15 |

GROUP: Sensor

DESCRIPTION: This field contains the specification drawing # or other identifying part # of the sensor.

EDITS: None.

| | | | |
|---|---|---|---|
| 227 | SENSOR RESPONSIBILITY | IN | 2 |

GROUP: Sensor

DESCRIPTION: This field identifies the Shuttle subsystem group which is providing the necessary instrumentation component to satisfy the measurement requirements.

EDITS: Legal values from Subsystem ID edit table.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 228 | SENSOR SERIAL NUMBER | AN | 14 |

GROUP: Sensor

DESCRIPTION: A unique identification of a particular sensor. Only 5 percent of the M/S IDs will be valued for this field.

EDITS: None.

| | | | |
|---|---|---|---|
| 229 | SENSOR-S/C SUPPLIER | AN | 1 |

GROUP: Sensor

DESCRIPTION: This code indicates the individual contractor/subcontractor responsible to provide the particular transducer required to make the measurement.

EDITS: None.

| | | | |
|---|---|---|---|
| 230 | SENSOR TYPE | AN | 1 |

GROUP: Sensor

DESCRIPTION: A code which gives the type of sensor device used to originate the input signal for the M/S ID.

EXAMPLE:

A = PIEZOELECTRIC (MC372-ØØØ1)

EDITS: Edit Table

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 231 | SIGNAL CONDITIONER CARD AND CHANNEL | AN | 7 |

GROUP: S/C

DESCRIPTION: This code identifies the ID number of the signal conditioner card and channel within the S/C module used by the measurement.

EDITS: None.

| | | | |
|---|---|---|---|
| 232 | SIGNAL CONDITIONER INPUT PLUG & PIN | AN | 18 |

GROUP: S/C

DESCRIPTION: Characters 1-10 identify signal conditioner input connector and pin assignments for the signal coming from the sensor or a second signal conditioner. Characters 11-18 identify pin assignments for the excitation of the sensor.

EDITS: None.

| | | | |
|---|---|---|---|
| 233 | SIGNAL CONDITIONER INSTALLATION DRAWING # | AN | 11 |

GROUP: S/C

DESCRIPTION: This field contains the drawing # describing the installation of the signal conditioning hardware in a sub-assembly or on a vehicle.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 234 | SIGNAL CONDITIONER NAME | AN | 4 |

GROUP S/C

DESCRIPTION: This field contains a four character identifier for the signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 235 | SIGNAL CONDITIONER OUTPUT PLUG AND PIN | AN | 15 |

GROUP: S/C

DESCRIPTION: Characters 1-9 identify output connector and pin assignments for the output of the signal conditioner. Characters 10-15 identify the pin assignments for the output signal to displays and controls, or power to strain gage and vibration amplifiers.

EDITS: None.

| | | | |
|---|---|---|---|
| 236 | SIGNAL CONDITIONER PACKAGE REFERENCE DESIGNATOR | AN | 12 |

GROUP: S/C

DESCRIPTION: This field references the signal conditioner to a location by standard drawing code.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 237 | SIGNAL CONDITIONER PART NUMBER | AN | 15 |

GROUP: S/C

DESCRIPTION: This field contains the specification drawing # or other identifying part # of the signal conditioner.

EDITS: None.

| | | | |
|---|---|---|---|
| 238 | SIGNAL CONDITIONER RESPONSIBILITY | IN | 2 |

GROUP: S/C

DESCRIPTION: This field identifies the Shuttle subsystem group which is responsible for the necessary component to satisfy the measurement requirements.

EDITS: Legal values from Subsystem ID edit table.

| | | | |
|---|---|---|---|
| 239 | SIGNAL CONDITIONER SERIAL NUMBER | AN | 14 |

GROUP: S/C

DESCRIPTION: A unique identification of a particular S/C. Only 5 percent of the M/S IDs will be valued for this field.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 240 | SIMULATOR REQUIREMENT | AN | 1 |

GROUP: Basic

DESCRIPTION: Alpha character defining simulation requirements.

D = Dynamically Simulated

S = Statically Simulated

= Not required

EDITS: One of the above.

| | | | |
|---|---|---|---|
| 241 | SIMULATOR VALUE, STATIC | AN | 8 |

GROUP: Basic

DESCRIPTION: The value generated within the Shuttle Mission Simulation Complex for statically simulated parameters.

EDITS: Legal values in edit table.

| | | | |
|---|---|---|---|
| 242 | SITE, EDWARDS | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus will be used at Edwards during checkout.

EDITS: E.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 243 | SITE, MAINTENANCE AND REFURBISHMENT | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus will be used at Maintenance and Refurbishment during checkout.

EDITS: M.

| | | | |
|---|---|---|---|
| 244 | SITE, PAD | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus will be used at Pad during checkout.

EDITS: P.

| | | | |
|---|---|---|---|
| 245 | SITE, PALMDALE | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus will be used at Palmdale during checkout.

EDITS: A.

| | | | |
|---|---|---|---|
| 246 | SITE, POST LANDING AND SAFING | AN | 1 |

GROUP: Configuration

DESCRIPTION: This S indicates the measurement/stimulus will be used at the Post Landing and Safing site during checkout.

EDITS: S.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 247 | SITE, VERTICAL ASSEMBLY BUILDING | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates the measurement/stimulus will be used at the VAB during checkout.

EDITS: V.

| | | | |
|---|---|---|---|
| 248 | SM ACQUISITION RATE | DN | 2 |

GROUP: Systems Management/Payload

DESCRIPTION: The rate in samples per second at which the parameter is acquired by the SM application. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 249 | SM ALARM CLASS | IN | 1 |

GROUP: Systems Management/Payload

DESCRIPTION: Specifies which type of alarm is to be turned on when a M/S ID has exceeded its limits. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 250 | SM ALARM INDICATOR | IN | 2 |

GROUP: Systems Management/Payload

DESCRIPTION: Indicates the particular C&W light to be turned on by software. (This field is also used for payload.)

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 251 | SM CONSTANT INITIAL VALUE | DN | 16 |

GROUP: Systems Management/Payload

DESCRIPTION: A value used in GPC computation. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 252 | SM DESIRED CURVE SERIES | IN | 1 |

GROUP: Systems Management/Payload

DESCRIPTION: The desired calibration curve series number for a PCM calibration. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 253 | SM LIMIT SET HIGH VALUE | DN | 5 |

GROUP: SM/PL Limit Set

DESCRIPTION: The high value of the particular limit set specified in SM Limit Set Number. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 254 | SM LIMIT SET NUMBER | AN | 1 |

GROUP: SM/PL Limit Set

DESCRIPTION: The number assigned to a particular set of limit values. (This field is also used for payload.)

EXAMPLE:

C - C&W Set

EDITS: EDIT TABLE

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 255 | SM LIMIT SET LOW VALUE OR STATE | DN | 5 |

GROUP: SM/PL Limit Set

DESCRIPTION: The low value or NO-GO state, if discrete, of the particular limit set specified in SM Limit Set Number.

EDITS: None.

| | | | |
|---|---|---|---|
| 256 | SM MAJOR MESSAGE ID ALERT | IN | 3 |

GROUP: Systems Management/Payload

DESCRIPTION: This field contains an identifier for the Alert major messages.

EDITS: None.

| | | | |
|---|---|---|---|
| 257 | SM MAJOR MESSAGE ID C&W | IN | 3 |

GROUP: System Management/Payload

DESCRIPTION: This field contains an identifier for the C&W major messages. (This field is also used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 258 | SM MAJOR MESSAGE ID NON FDA | IN | 3 |

GROUP: System Management/Payload

DESCRIPTION: This field contains an identifier for the Non-FDA major messages. (It is not used for payload.)

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 259 | SM MESSAGE TEXT, MAJOR | AN | 20 |

GROUP: Systems Management/Payload

DESCRIPTION: This field contains the text which corresponds to major message IDs.

EDITS: None.

| | | | |
|---|---|---|---|
| 260 | SM MESSAGE TEXT, MINOR | AN | 4 |

GROUP: Systems Management/Payload

DESCRIPTION: This field contains the text which corresponds to minor message IDs. (Common field for SM & PL.)

EDITS: None.

| | | | |
|---|---|---|---|
| 261 | SM MINOR MESSAGE ID ALERT | IN | 2 |

GROUP: Systems Management/Payload

DESCRIPTION: This field contains an identifier for the alert minor messages.

EDITS: None.

| | | | |
|---|---|---|---|
| 262 | SM MINOR MESSAGE ID C&W | IN | 2 |

GROUP: System Management/Payload

DESCRIPTION: This field contains an identifier for the C&W minor messages. (This field is also used for PL.)

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 263 | SM MINOR MESSAGE ID NON-FDA | IN | 2 |

GROUP: System Management/Payload

DESCRIPTION: This field contains an identifier for the Non-FDA minor messages. (It is not used for payload.)

EDITS: None.

| | | | |
|---|---|---|---|
| 264 | SM NOISE FILTER VALUE | IN | 2 |

GROUP: Systems Management/Payload

DESCRIPTION: The maximum number of times an M/S ID is allowed to be outside the values of its limits set before a message is displayed. (This field is also used for payload.)

EDITS: 0-15.

| | | | |
|---|---|---|---|
| 265 | SM PARAMETER SOURCE | AN | 3 |

GROUP: Systems Management/Payload

DESCRIPTION: Indicates the source of a message. An M/S ID does not have limits if this field is valued.

EDITS: None.

| | | | |
|---|---|---|---|
| 266 | SM PARAMETER TYPE | AN | 1 |

GROUP: Systems Management/Payload

DESCRIPTION: A code used by SM to override character nine of the M/S ID.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 267 | SM PAYLOAD USE | AN | 1 |

GROUP: Systems Management/Payload

DESCRIPTION: Identifies the parameters that are used by PL and should be output on tape or CRT if PL field is selected.

EDIT: X.

| | | | |
|---|---|---|---|
| 268 | SM PRECONDITION GROUP ID | IN | 3 |

GROUP: Systems Management/Payload

DESCRIPTION: The identifier of the SM precondition group to which the M/S ID belongs. An SM precondition group contains one or more M/S IDs which have the same preconditioning logical expression and the same number of limit sets. (Values will be 1-99 for SM use and 100-999 for PL use.)

EDITS: None.

| | | | |
|---|---|---|---|
| 269 | SM PRECONDITION LOGICAL EXPRESSION | AN | 70 |

GROUP: SM/PL Limit Set

DESCRIPTION: The preconditioning selection logic for the M/S ID associated with the particular set designated in the Limit Set Number. Used to determine which limit set for M/S ID is to be used for SM processing.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 270 | SM SOURCE | AN | 4 |

GROUP: Systems Management/Payload

DESCRIPTION: Functional source of the parameters acquired by SM.

EXAMPLE:

GNC = GN & C Application

EDITS: EDIT TABLE

| | | | |
|---|---|---|---|
| 271 | SM SUBSYSTEM ID | IN | 2 |

GROUP: Systems Management/Payload

DESCRIPTION: Identifies the SM subsystem for each M/S ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 272 | SM WARMUP TIME DELAY | DN | 3 |

GROUP: System Management/Payload

DESCRIPTION: The time that must expire before a parameter is limit sensed.

EDITS: None.

| | | | |
|---|---|---|---|
| 273 | SSH DRAWING NUMBER | AN | 5 |

GROUP: Configuration

DESCRIPTION: Represents the drawing number (paragraph number format) in the Shuttle Systems Handbook where the M/S ID appears.

EDITS: None.

ORIGINAL PAGE IS
OF POOR QUALITY

| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 307 | SSH PAGE NUMBER | IN | 2 |

GROUP: Configuration

DESCRIPTION: Page number of SSH drawing where zone number is applicable.

EDITS: 00-99.

| 308 | SSH ZONE NUMBER | AN | 2 |
|---|---|---|---|

PCR #436 included.

GROUP: Configuration

DESCRIPTION: Zone coordinates on the SSH drawing where M/S ID is located.

EDITS: First character must be alpha, second character must be numeric.

| 274 | STATUS CDOC REVISION NUMBER | AN | 1 |
|---|---|---|---|

GROUP: Status

DESCRIPTION: A revision number for the status change document number.

EDITS: None.

| 275 | STATUS CHANGE DOCUMENT ENTRY DATE | D | 8 |
|---|---|---|---|

GROUP: Status

DESCRIPTION: This field will contain the machine date of the time the Status Change Document Number is entered.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 276 | STATUS CHANGE DOCUMENT NUMBER | AN | 7 |

GROUP: Status

DESCRIPTION: An identifier assigned to a document used to formally control updates of the data base.

EDITS: None.

| | | | |
|---|---|---|---|
| 277 | STATUS CHANGE REASON | AN | 30 |

GROUP: Status

DESCRIPTION: A brief text indicating the purpose of the change document.

EDITS: None.

| | | | |
|---|---|---|---|
| 278 | STATUS CYCLE NUMBER | AN | 4 |

GROUP: Status

DESCRIPTION: An incremental code that will be updated for a group when the implementation date is updated.

EDITS: None.

| | | | |
|---|---|---|---|
| 279 | STATUS GROUP ID | AN | 10 |

GROUP: Status

DESCRIPTION: Identification of a functional area of the data base for which status information is required.

EDITS: EDIT TABLE.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 280 | STATUS IMPLEMENTATION DATE | D | 8 |

GROUP: Status

DESCRIPTION: The date on which the data specified by a change document was entered into the approved data base.

EDITS: None.

| 281 | STATUS REQUIRED IMPLEMENTATION DATE | D | 8 |
|---|---|---|---|

GROUP: Status

DESCRIPTION: The date by which the update requirements, imposed by a change document, are required to be implemented.

EDITS: None.

| 282 | STATUS RESPONSIBLE ORGANIZATION | AN | 5 |
|---|---|---|---|

GROUP: Status

DESCRIPTION: Identifier assigned to the organization responsible for the update information identified by one or more Status Group IDs.

EDITS: None.

| 283 | STATUS TEXT | AN | 420 |
|---|---|---|---|

GROUP: Status

DESCRIPTION: A text field, associated with a Status Group ID which is available for entering any status information about that group.

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 284 | SWITCH SCAN | AN | 1 |

GROUP: Configuration

DESCRIPTION: This field indicates that the stimulus is monitored by the switch scan management function of S/M.

Examples:

F = stimulus is monitored by switch scan.

S = a physical switch is associated with the individual stimulus.

M = when a switch has multiple positions (such as a rotary selector switch), an M is used for only one of those multiple positions.

C = stimulus is monitored by circuit breaker.

EDITS: None.

| | | | |
|---|---|---|---|
| 285 | SWITCH SIGNAL TYPE | AN | 1 |

GROUP: Configuration

DESCRIPTION: This character indicates the type of signal that is being generated:

C = Continuous M = Momentary

EDITS: One of the above.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 286 | SYSTEM MANAGEMENT USE | AN | 1 |

GROUP: Configuration

DESCRIPTION: An "X" indicates the measurement/stimulus is required to be used for System Management. (Non FDA-Annunciation parameters are not required to have this field entered since they are not necessarily SM.)

EDITS: X or blank.

| | | | |
|---|---|---|---|
| 287 | TAPE RECORDER ID | AN | 1 |

GROUP: Tape Recorder

DESCRIPTION: This field denotes the recorder which will store the data. The codes are as follows:

A = Shuttle Carrier Aircraft (SCA)
B = Booster
D = PCM recorder for DFI
I = Impact (SRB)
T = Training Aircraft
M = Loop & Maintenance
P = Payload
U = Wide Band, 28 track (MARS)
W = Wide Band, 14 track
O = Orbiter Experiment Recorder
X = Undefined but required

EDITS: One of the above (Max of 3).

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 288 | TAPE RECORDER TRACK | IN | 2 |

GROUP: Tape Recorder

DESCRIPTION: This field identifies the track of the recording device.

EDITS: None.

| | | | |
|---|---|---|---|
| 289 | TELEMETRY LINK ID | AN | 1 |

GROUP: Configuration

DESCRIPTION: Indicates the telemetry system that will transmit the measurement.

EDITS: Edit table.

| | | | |
|---|---|---|---|
| 290 | TLM ACTUAL RESPONSE RATE | DN | 4 |

GROUP: Format

DESCRIPTION: Actual rate (samples/sec.) the measurement will be inserted in downlink (from compiler) or downlist (from IBM) format.

EDITS: None.

| | | | |
|---|---|---|---|
| 292 | TLM FIRST FRAME | IN | 2 |

GROUP: Format

DESCRIPTION: First sub-frame in which the measurement is specified to appear (starts) within the major frame of a downlink or downlist format.

EDITS: 01-99.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 293 | TLM FIRST WORD | IN | 3 |

GROUP: Format

DESCRIPTION: First 16 bit word (sometimes called Time Slot) in downlist or 8 bit word in downlink in the minor frame in which the measurement appears (within the major frame).

EDITS: 001-999.

| | | | |
|---|---|---|---|
| 294 | TLM FORMAT DESCRIPTOR | AN | 34 |

GROUP: Format

DESCRIPTION: A unique title for each TLM Format ID.

EDITS: None.

| | | | |
|---|---|---|---|
| 295 | TLM FORMAT ID | AN | 4 |

GROUP: Format

DESCRIPTION: A unique value which identifies a telemetry major frame format which contains a set of M/S IDs. A particular format is unique within a format type and may be used on more than one flight.

EDITS: None.

ORIGINAL PAGE IS
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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 296 | TIM FORMAT TYPE | IN | 1 |

GROUP: Format Basic

DESCRIPTION: This field will be used to indicate the data base storage for the telemetry format.

1 = GPC (Downlist)
2 = OI/128KBS
3 = OI/64KBS
4 = DFI/128KBS
5 = Payload
6 = SSME
7 = ET/SRB DFI

EDITS: As above.

| | | | |
|---|---|---|---|
| 298 | TIM LOW BIT RATE INDICATOR | IN | 1 |

GROUP: Format

DESCRIPTION: Indicates whether the M/S ID is used in a specific GPC format. It specifies which toggle buffer contains the M/S ID, indicating that it is compatible with either a 64KBS or a 128KBS format.

0 = 128 only (either toggle buffer)
1 = 64 and 128 (upper toggle buffer only)

EDITS: One of the above.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 297 | TLM MOST SIGNIFICANT HALF WORD | AN | 1 |

GROUP: Format

DESCRIPTION: This field indicates which half of the 16 bit data word contains the most significant bit of the measurement. The field applies to downlink only.
L = Left half R = Right half

EDITS: L or R.

| | | | |
|---|---|---|---|
| 299 | TLM REQUIRED FIRST FRAME | IN | 2 |

GROUP: Format

DESCRIPTION: Required first frame location where the M/S ID is to be included in a particular format. (Downlink only.)

EDITS: None.

| | | | |
|---|---|---|---|
| 300 | TLM REQUIRED FIRST WORD | IN | 3 |

GROUP: Format

DESCRIPTION: First word location in first frame where measurement is required to be included in a particular format. (Downlink only.)

EDITS: None.

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 302 | TLM REQUIRED L/P WORD INDICATOR | AN | 1 |

GROUP: Format

DESCRIPTION: Indicates the requirement to include the M/S ID in the left or right half of a data word. (Downlink only.)
L = Left Half
R = Right Half

EDITS: L or R.

| | | | |
|---|---|---|---|
| 303 | TLM REQUIRED RESPONSE RATE | DN | 4 |

GROUP: Format

DESCRIPTION: Rate at which the measurement is required to be included in the downlink or downlist format.

EDITS: None.

| | | | |
|---|---|---|---|
| 304 | TLM TIME DELAY | DN | 5 |

GROUP: Format

DESCRIPTION: Time delay in milliseconds from Fetch to downlink output (staleness factor).

EDITS: The 4th character must be a decimal point.

| | | | |
|---|---|---|---|
| 305 | VEHICLE CONFIGURATION NUMBER | AN | 8 |

GROUP: Configuration

DESCRIPTION: Uniquely identifies a major hardware/software element.

EDITS: First character must be legal Major Element (Edit Table for Major Element).

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| ID# | ELEMENT NAME | TYPE | SIZE |
|---|---|---|---|
| 306 | VOTING LOGIC M/S ID | AN | 10 |

GROUP: Flight

DESCRIPTION: The identification of an associated/resultant voting logic M/S ID. It is also the identification of the associated secondary parent word where the measurement can be found in the MDM/GPC software. This field is not used for stimuli M/S IDs.

EDITS: Same as M/S ID.

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# APPENDIX B

## Abbreviations and Acronyms

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# ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ACMB | - Application Configuration Management Board |
| ASCII | - American Standard Code for Information Interchange |
| ASED | - Avionics Systems Engineering Division |
| BCD | - Binary Coded Decimal |
| BITE | - Built In Test Equipment |
| BPI | - Bits Per Inch |
| BTU | - Bus Terminal Unit |
| CCD | - Change Control Board |
| CDC | - Control Data Corporation |
| CDOC | - Status Change Document Number |
| Coeff. | - Coefficient |
| COMPOOL | - Common Data Pool |
| CPS | - Cycles Per Second |
| CRT | - Cathode Ray Tube |
| CSC | - Computer Sciences Corporation |
| CSDD | - Control Systems Development Division |
| C&W | - Caution and Warning |
| DDD | - Digital Display Device |
| DFI | - Developmental Flight Instrumentation |
| DP/S | - Data Processing/Software |
| DRC | - Data Reduction Complex |
| DRD | - Detailed Requirements Document |
| DSAD | - Data Systems and Analysis Directorate |
| DSC | - Dedicated Signal Conditioner |
| DSM | - Data Select Matrix |
| DTCS | - Digital Test Comm[illegible] System |
| DTO | - Detailed Test [illegible]ive |
| D&C | - Display and Control |
| EBCDIC | - Extended Binary Coded Decimal Interchange Code |
| EIU | - Engine Interface Unit |
| ET | - External Tank |

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| | |
|---|---|
| E&D | - Engineering and Development Directorate |
| FCD | - Flight Control Division |
| FDM | - Frequency Division Multiplexer<br>Frequency Demodulator |
| FM | - Frequency Modulation |
| FOD | - Flight Operations Directorate |
| FSD | - Flight Simulation Division |
| FTO | - Flight Test Objective |
| FTR | - Flight Test Requirements |
| GCIL | - Ground Command Interface Logic |
| GDSD | - Ground Data Systems Division |
| GN&C | - Guidance, Navigation, and Control |
| GPC | - General Purpose Computer |
| GSE | - Ground Support Equipment |
| G&N | - Guidance and Navigation |
| HAL | - High Order Assembly Language |
| HZ | - Hertz (Cycles Per Second) |
| IBM | - International Business Machines, Inc. |
| ID | - Identifier |
| IDSD | - Institutional Data Systems Division |
| IMMDBS | - Interim Master Measurement Data Base System |
| IOM | - Input/Output Module |
| IPCL | - Instrumentation Parts and Components Lists |
| I/O | - Input/Output |
| JSC | - Lyndon B. Johnson Space Center |
| KBS | - Kilobits Per Second |
| KRONOS | - CDC CYBER 70 Series Operating System |
| KSC | - Kennedy Space Center |
| LPS | - Launch Processor System |
| LRU | - Line Replacement Unit |
| L-R | - Left-Right |
| MCC | - Mission Control Center |
| MCDS | - Multifunction CRT Display System |

| | |
|---|---|
| MDM | - Multiplex(er)/Demultiplex(er) |
| ME | - Main Engineer |
| MH | - Millihenry |
| MIA | - Multiplex Interface Adapter |
| MMDBS | - Master Measurement Data Base System |
| MML | - Master Measurement List |
| MMU | - Mass Memory Unit |
| MOPS | - Mission Operations Planning System |
| MRI | - MRI Systems, Incorporated |
| MSB | - Most Significant Bit |
| MSCR | - Measurement/Stimulus Change Request |
| MSFC | - Marshall Space Flight Center |
| MSK | - Mask |
| MU | - Master Unit |
| MUX | - Multiplexer |
| M&R | - Maintenance and Refurbishment |
| M/S | - Measurement/Stimulus |
| NASA | - National Aeronautics and Space Administration |
| NOS | - Network Operating System |
| ODRC | - Orbiter Data Reduction Complex |
| OFI | - Operational Flight Instrumentation |
| OFT | - Operational Flight Test |
| OI | - Operational Instrumentation |
| OPR | - Office of Prime Responsibility |
| O/D | - Operational/Developmental |
| PCM | - Pulse-Code Modulation |
| PCR | - Program Change Request |
| PDI | - Payload Data Interleaver |
| PICRS | - Program Information Coordination and Review Service |
| PL | - Payload |
| PLI | - S2K Procedural Language Interface |
| PLU | - Payload Use |
| Poly. | - Polynomial |



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| | |
|---|---|
| POO | - Program Operations Office |
| PRCB | - Program Requirements Control Board |
| PROM | - Programmable Read Only Memory |
| PSI | - Pounds Per Square Inch |
| PSIA | - Pounds Per Square Inch Absolute |
| RAM | - Random Access Memory |
| RF | - Radio Frequency |
| RHC | - Rotational Hand Controller |
| RI | - Rockwell International |
| RSS | - Root Sum Square/Square |
| SAIL | - Shuttle Avionics Integration Laboratory |
| SCA | - Shuttle Carrier Aircraft |
| SCM | - Subsystem Configuration Monitor |
| SM | - Systems Management |
| SPIMS | - Shuttle Program Information Management Systems |
| SRB | - Solid Rocket Booster |
| SSD | - Spacecraft Software Division |
| SSH | - Shuttle System Handbook |
| SSME | - Space Shuttle Main Engine |
| SSPO | - Space Shuttle Program Office |
| S2K | - System 2000 Data Base Management System |
| S/C | - Signal Conditioner |
| S/S | - Samples Per Second |
| TACAN | - Tactical Air Navigator |
| TBD | - To Be Determined |
| TCS | - Terminal Control System |
| TLM | - Telemetry |
| VAB | - Vertical Assembly Building |
| VDC | - Volts Direct Current |
| WB | - Wide Band |

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# APPENDIX C

## DATA ELEMENTS BY STATUS GROUP ID

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# Data Element by Status Group ID

This appendix lists the data elements by Status Group ID, and represents four tables used by various programs in the system. Following is a list of the Status Group IDs by dependency. The Status Group IDs and data elements listed here are correct as of the date of publication of this document. However, discrepancies may exist at any given time because changes may be made to the system tables by authorized users (see Section 3.2.41).

## FLIGHT DEPENDENT STATUS GROUP IDS

CBI

FIB

LINKRQ

LINKACT

LISTRQ

LISTACT

## VCN DEPENDENT STATUS GROUP IDS

ETU

EROM

MSIDCAL

FDM

GPCSW

MMLV

CW

MCC

PCMMU

SENSIG

UPLNK

DEVICE1

DEVICE2

DEVICE3

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SPECIAL FLIGHT (*STS-0) STATUS GROUP IDS

BASIC

STANDCAL

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STATUS GROUP ID

BASIC

DATA ELEMENTS

M/S ID

Major Element ID

Subsystem ID

Measurement Type ID

Subsystem Location

Signal Type

Characteristic Flag

Associated Subsystem

Downlink Data Length

Data Range Units

Measurement Interface Control

Measurement Purpose Category

Nomenclature, System

Operational/Development Application

Remarks

Device Name

Simulator Requirement

Simulator Value, Static

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STATUS GROUP ID

ETU

DATA ELEMENTS

ETU Card Location
ETU Card Type
ETU Channel Number
ETU Destination Equipment Name 1
ETU Destination Equipment Name 2
ETU Destination Equipment Name 3
ETU MIA Address
ETU Name
ETU Number of Bits
ETU Number of Words
ETU Plug & Pin/Subsystem
ETU Reference Designator
ETU Signal Type
ETU Start Bit Number
ETU Transfer Rate
ETU Type
ETU Word Number
ETU/MDM Half Word 1 Bit Format
ETU/MDM Half Word 2 Bit Format
ETU/MDM Half Word 3 Bit Format
ETU/MDM Half Word 4 Bit Format
Downlink Byte Bit Format
Downlink Start Bit

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STATUS GROUP ID

CRT

DATA ELEMENTS

CRT Bilevel 0
CRT Bilevel 1
CRT Blanking
CRT Branching
CRT Character Size
CRT Flash
CRT Format Type
CRT Intensity
CRT Leading Zeros
CRT Parameter Characteristic
CRT Nomenclature
CRT Page ID
CRT Revision Number
CRT Sequential Number
CRT Sign
CRT Special Processing
CRT Status
CRT Update Rate
CRT X-Coordinate
CRT Y-Coordinate
M/S ID for CRT Page IDs

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STATUS GROUP ID

CW

DATA ELEMENTS

C&W Annunciator Nomenclature

C&W Channel Number

C&W Limit Sense

C&W Limit Value, EU

C&W Limit Value, Volts

C&W Matrix Number

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STATUS GROUP ID

DEVICE1

DATA ELEMENTS

Device Accuracy

Device Input Plug & Pin 1

Device Panel Nomenclature

Device Panel Number 1

Device Reference Designator 1

Device Switch Panel Nomenclature

Device Switch & Panel Number 1

Device Switch Reference Designator 1

ORIGINAL PAGE IS
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STATUS GROUP ID

Device2

DATA ELEMENTS

Device Input Plug & Pin 2

Device Panel Number 2

Device Reference Designator 2

Device Switch & Panel Number 2

Device Switch Reference Designator 2

ORIGINAL PAGE IS
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STATUS GROUP ID

Device3

DATA ELEMENTS

Device Input Plug & Pin 3

Device Panel Number 3

Device Reference Designator 3

Device Switch & Panel Number 3

Device Switch Reference Designator 3

STATUS GROUP ID

FDM

ORIGINAL PAGE IS
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DATA ELEMENTS

FDM Channel Center Frequency

FDM Channel Frequency Response

FDM Input Plug and Pin

FDM Name

FDM Package and Channel Code

FDM Reference Designator

Tape Recorder Track 1

Tape Recorder Track 2

Tape Recorder Track 3

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STATUS GROUP ID

FTR

DATA ELEMENTS

FTR ID

FTR Required Response Rate

FTR Data Priority

M/S ID for FTR IDs

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STATUS GROUP ID

GPCSW

DATA ELEMENTS

GPC Software Compool Name
GPC Software Data Length
GPC Software Destination Module
GPC Software Downlist Availability
GPC Software Downlist Data Type
GPC Software HAL Name
GPC Software Input/Output/Compute
GPC Software Required Update Rate
GPC Software Signal Mnemonic
GPC Software Source Module
GPC Software Start Bit
GPC Software Units
Homogeneous Data Set Number

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STATUS GROUP ID

IINKACT

DATA ELEMENTS

TLM Actual Response Rate (Downlink)

TLM First Frame (Downlink)

TLM First Word (Downlink)

TLM Most Significant Half Word (Downlink)

TLM Time Delay (Downlink)

M/S ID for TLM Format ID

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STATUS GROUP ID

LINKRQ

DATA ELEMENTS

TLM Format Type

TLM Format ID

TLM Format Descriptor

TLM Required First Frame (Downlink)

TLM Required First Word (Downlink)

TLM Required L-R Word Indicator (Downlink)

TLM Required Response Rate (Downlink)

M/S ID for TLM Format ID

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STATUS GROUP ID

LISTACT

DATA ELEMENTS

TIM Actual Response Rate (Downlist)

TIM First Frame (Downlist)

TIM First Word (Downlist)

TIM Time Delay (Downlist)

M/S ID for TLM Format ID

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STATUS GROUP ID

LISTRQ

DATA ELEMENTS

TLM Format Type

TLM Format ID

TLM Format Descriptor

TLM Low Bit Rate Indicator

TLM Required Response Rate (Downlist)

M/S ID for TLM Format ID

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STATUS GROUP ID

MCC

DATA ELEMENTS

SSH Drawing Number
SSH Page Number
SSH Zone Number
MCC Display MSK Number 1
MCC Display MSK Number 2
MCC Display MSK Number 3
Nomenclature, Operational
Operational Limits 1 High
Operational Limits 1 Low
Operational Limits 2 High
Operational Limits 2 Low
Operational Limits 3 High
Operational Limits 3 Low
Operational Limits 4 High
Operational Limits 4 Low
Operational Limits 5 High
Operational Limits 5 Low

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STATUS GROUP ID

MSIDCAL

DATA ELEMENTS

Calibration Accuracy
Calibration Low Valid Data Point
Calibration Valid Data Point 10 Pct.
Calibration Valid Data Point 20 Pct.
Calibration Valid Data Point 30 Pct.
Calibration Valid Data Point 40 Pct.
Calibration Valid Data Point 50 Pct.
Calibration Valid Data Point 60 Pct.
Calibration Valid Data Point 70 Pct.
Calibration Valid Data Point 80 Pct.
Calibration Valid Data Point 90 Pct.
Calibration High Valid Data Point
Calibration Curve Type
Calibration Data Fit
Calibration Data Tolerance
Calibration Degree of Curve
Calibration Dependent Composite Data Point 01
Calibration Dependent Composite Data Point 02
Calibration Dependent Composite Data Point 03
Calibration Dependent Composite Data Point 04
Calibration Dependent Composite Data Point 05
Calibration Dependent Composite Data Point 06
Calibration Dependent Composite Data Point 07
Calibration Dependent Composite Data Point 08
Calibration Dependent Composite Data Point 09
Calibration Dependent Composite Data Point 10
Calibration Dependent Composite Data Point 11

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Calibration Effectivity, Curve Series
Calibration Effectivity, Date
Calibration Effectivity, Revision Number
Calibration Independent Composite Data Point 01
Calibration Independent Composite Data Point 02
Calibration Independent Composite Data Point 03
Calibration Independent Composite Data Point 04
Calibration Independent Composite Data Point 05
Calibration Independent Composite Data Point 06
Calibration Independent Composite Data Point 07
Calibration Independent Composite Data Point 08
Calibration Independent Composite Data Point 09
Calibration Independent Composite Data Point 10
Calibration Independent Composite Data Point 11
Calibration Independent Variable Units
Calibration Units (1st 8 characters of MSB)
Calibration Number of Data Pairs
Calibration Number of Sets
Calibration Poly. Coeff. A0, Intercept
Calibration Poly. Coeff. A1 Curve Order 1
Calibration Poly. Coeff. A2 Curve Order 2
Calibration Poly. Coeff. A3 Curve Order 3
Calibration Poly. Coeff. A4 Curve Order 4
Calibration Poly. Coeff. A5 Curve Order 5
Calibration Scale Factor
Calibration Type
Calibration Low Independent Variable
Calibration High Independent Variable
Sensor Serial Number
S/C 1 Serial Number
S/C 2 Serial Number

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STATUS GROUP ID

MMLV

DATA ELEMENTS

Accuracy, Required System
Caution and Warning Display
Crew Control Device
CRT Applicability
Data Range Low-High
Data Type
Dedicated Display
Launch Commit Criteria
Flight Phase, Aerodynamic Control
Flight Phase, Entry
Flight Phase, Launch
Flight Phase, Orbit
Flight Phase 5
Flight Phase 6
Flight Phase 7
Flight Phase 8
KSC State Low
KSC State High
Flight/Ground
Master Events Controller
MDM Utilization
Parallel Switch Control
Parent M/S ID
Related M/S ID
Response M/S ID
Required Response Rate
RF Uplink

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Site, Edwards
Site, Maintenance and Refurbishment
Site, Pad
Site, Palmdale
Site, Post Landing & Safing
Site, Vertical Assembly Building
Switch Scan
Switch Signal Type
System Management Use
Telemetry Link ID
Voting Logic M/S ID
Sensor - SC Supplier
Tape Recorder ID 1
Tape Recorder ID 2
Tape Recorder ID 3

STATUS GROUP ID

ECMMU

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DATA ELEMENTS

ECM MU Actual Data RAM Address

ECM MU Actual Fetch Command

ECM MU Fetch Command Address

ECM MU Predefined Data RAM Address

ECM MU Predefined Fetch Command

ORIGINAL PAGE IS
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STATUS GROUP ID

PROM

DATA ELEMENTS

MDM PROM Address, Actual

MDM PROM Address, Required

MDM PROM Mode Control

MDM PROM Sequence ID

MDM PROM Sequence Length, Actual

MDM PROM Sequence Length, Required

MDM PROM Sequence Number for 32 M/S IDs

PIU Name

STATUS GROUP ID

SENSIG

ORIGINAL PAGE IS
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DATA ELEMENTS

Sensor Installation Drawing Number
Sensor Location Coordinates
Sensor Location Descriptor
Sensor Package Reference Designator
Sensor Part Number
Sensor Responsibility
Sensor Type
Signal Conditioner Card and Channel 1
Signal Conditioner Card and Channel 2
Signal Conditioner Input Plug & Pin 1
Signal Conditioner Input Plug & Pin 2
Signal Conditioner Installation Drawing No. 1
Signal Conditioner Installation Drawing No. 2
Signal Conditioner Name 1
Signal Conditioner Name 2
Signal Conditioner Output Plug & Pin 1
Signal Conditioner Output Plug & Pin 2
Signal Conditioner Package Reference Designator 1
Signal Conditioner Package Reference Designator 2
Signal Conditioner Part Number 1
Signal Conditioner Part Number 2
Signal Conditioner Responsibility 1
Signal Conditioner Responsibility 2

ORIGINAL PAGE IS
OF POOR QUALITY

STATUS GROUP ID

STANDCAL

DATA ELEMENTS

Calibration Accuracy
Calibration Low Valid Data Point
Calibration Valid Data Point 10 Pct.
Calibration Valid Data Point 20 Pct.
Calibration Valid Data Point 30 Pct.
Calibration Valid Data Point 40 Pct.
Calibration Valid Data Point 50 Pct.
Calibration Valid Data Point 60 Pct.
Calibration Valid Data Point 70 Pct.
Calibration Valid Data Point 80 Pct.
Calibration Valid Data Point 90 Pct.
Calibration High Valid Data Point
Calibration Curve Type
Calibration Data Tolerance
Calibration Degree of Curve
Calibration Dependent Composite Data Point 01
Calibration Dependent Composite Data Point 02
Calibration Dependent Composite Data Point 03
Calibration Dependent Composite Data Point 04
Calibration Dependent Composite Data Point 05
Calibration Dependent Composite Data Point 06
Calibration Dependent Composite Data Point 07
Calibration Dependent Composite Data Point 08
Calibration Dependent Composite Data Point 09
Calibration Dependent Composite Data Point 10
Calibration Dependent Composite Data Point 11
Calibration Independent Composite Data Point 01

Calibration Independent Composite Data Point 02
Calibration Independent Composite Data Point 03
Calibration Independent Composite Data Point 04
Calibration Independent Composite Data Point 05
Calibration Independent Composite Data Point 06
Calibration Independent Composite Data Point 07
Calibration Independent Composite Data Point 08
Calibration Independent Composite Data Point 09
Calibration Independent Composite Data Point 10
Calibration Independent Composite Data Point 11
Calibration Units (1st 8 characters of MSB)
Calibration Number of Data Pairs
Calibration Poly. Coeff. A0, Intercept
Calibration Poly. Coeff. A1 Curve Order 1
Calibration Poly. Coeff. A2 Curve Order 2
Calibration Poly. Coeff. A3 Curve Order 3
Calibration Poly. Coeff. A4 Curve Order 4
Calibration Poly. Coeff. A5 Curve Order 5
Calibration Low Independent Variable
Calibration High Independent Variable

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STATUS GROUP ID

UPLNK

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DATA ELEMENTS

DSM Number

DSM Title

DSM Type

DSM Command Word 2-1

DSM Command Word 2-2

DSM Command Word 2-3

DSM Command Word 2-4

DSM Discrete Mask 1

DSM Discrete Mask 2

Related DSM Number 1

Related DSM Number 2

Related DSM Number 3

Related DSM Number 4

Related DSM Number 5

Related DSM Number 6

Related DSM Number 7

Related DSM Number 8

Related DSM Number 9

Related DSM Number 10

M/S ID for DSM Numbers

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OTHER:

Data Elements Not Identified with a Status Group ID

CALIBRATION

Calibration Scale Factor

Calibration GPC Offset Value

SCM

SCM Bainary 1 Text

SCM Binary 0 Text

SCM Discrepancy Message Text

SCM High Limit Value

SCM List ID

SCM Low limit Value or State

SM

SM Acquisition Rate

SM Alarm Class

SM Alarm Indicator

SM Constant Initial Value

SM Desired Curve Series

SM Major Message ID Alert

SM Major Message ID C&W

SM Major Message ID Non-FDA

SM Message Source

SM Message Text, Major

SM Message Text, Minor

SM Minor Message ID Alert

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SM Minor Message ID C&W

SM Minor Message ID Non-FDA

SM Noise Filter Value

SM Number of Alert Limit Sets

SM Parameter Source

SM Parameter Type

SM Payload Use

SM Source

SM Subsystem ID

SM Limit Set High Value

SM Limit Set Number

SM Limit Set Low Value or State

SM Precondition Group ID

SM Warmup Time Delay

SM Precondition Logical Expression - 1

SM Precondition Logical Expression - 2

SM Precondition Logical Expression - 3

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# APPENDIX D

## MMDBS Initial Load Requirements

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MMDBS Initial Load Requirements

Data to be initially loaded into the JSC MMDBS will consist of the M/S ID data in the Rockwell International (RI) Master Measurement Data Base Master File. This file is created and maintained on tape with a batch system which will run on an IBM 360 computer. The input and output requirements for an initial load follow. A subsequent update capability from RI via tape will be defined later in another program change request.

The OPR will supply the following:

- A 1600 BPI, EBCDIC, 9 track Master File tape; odd parity, maximum character per record - 7400 with 17,500 characters per block. Each block will be a fixed length and a record will not be split between blocks. If necessary the blocks will be blank filled. The record format is given in Table D-3.

- RI Vehicle Effectivity (Z1 field) values (maximum 3) which are to be selected for load into the JSC MMDBS. Each of these effectivities will have different M/S IDs assigned.

- Corresponding to each RI Vehicle Effectivity selected for loading, Vehicle Configuration Numbers (VCNs) must be supplied --- one for each major element type to be loaded.

- Flight Number to which the input Vehicle Configuration Numbers are assigned. Only data for one flight will be loaded.

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- A table of valid BTU Names and corresponding BTU Type and BTU Data Bus Names.

- A table of RI IDs identifying the formats which are to be loaded. The user will supply the corresponding TLM Format IDs and related TLM Format Types, TLM Format Descriptors, and TLM Req. Downlink 64/128 KBS Indicator values to be entered in the JSC data base for the selected formats. The TLM Format IDs relate to an RI format. The TLM Format Type may not be blank valued, the TLM Format Descriptor may be blank. If the TLM Format Type equal one, then the TLM Req. Downlink 64/128 KBS Indicator must not be blank valued. A TLM Format ID and its related data will not be selected for loading if the corresponding TLM Format Type and the TLM Req. Downlink 64/128 KBS Indicator are not entered by the user as required --- an error message will result.

- Edit table information required for data element validation --- the edits for the data elements (see Table D-1) indicate whether an edit table is to be used.

The processing required to load the data base follows:

- Only data related to a maximum of three RI Vehicle Effectivity values will be loaded.

- Both pending and approved MML data will be loaded, subject to the following logical edits:

  (1) If RI field Z3 is blank and if it is the first occurrence of the M/S ID, it may be an approved

M/S ID and related data. Check next record. If the next record contains the same M/S ID and the same Z1 value, check Z3. If RI's Z3 is valued, the data on the record is pending. Then check RI Z4. If Z4 = A, then the pending action is to add the M/S ID and related data. Verify that the Nomenclature, System values are the same on both records; if not, print error. Regardless of the Nomenclature, System values, do not load previous record, but load last record as pending data. IF Z4 = S, then the pending action is to delete the M/S ID from the system. Load both records into the JSC MMDBS --- the first as approved data, the second as pending data.

If Z4 = blank, then the pending action is to implemented changes to related data fields for the approved M/S ID. Verify that the Nomenclature, system values on both records are the same; if not, print error. Regardless of the Nomenclature, System values, load both records into the data base --- the first as approved data, the second as pending data. The pending data record may contain a dollar sign ($) as the first character of a data element field to indicate that the pending action is to delete the approved data value - set it to blank.

(2) If RI Z3 is blank (Z1 may or may not have the same value), then two records in sequence for an M/S ID have Z3 = blank. Print an error message and do not load either record.



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(3) If only one record for an M/S ID occurs and Z3 - blank, then load M/S ID and the data as approved. If Z3 is valued print error and do not load.

(4) Only one set of pending data (information from one pending data record) will be loaded for an M/S ID. If subsequent pending data records occur they will be ignored. The pending data elements are listed in Section 2.3, Table 2-2 of the MMDBS DRD.

- If the Operational/Development Application data element is not a valid value (may not be blank), the M/S ID and corresponding related data will not be loaded. An error message will be printed.

- If the Nomenclature, System data element is not valued for an M/S ID, the M/S ID and its corresponding related data will not be loaded. An error message will be printed. This check will be made for approved and pending M/S IDs which are to be initially loaded.

- A data element value associated with an M/S ID will be validated as indicated in the Table D-1. If the value does not meet the edit criteria established, an error message will result and the data element value will not be loaded for the M/S ID.

- When data basic to a SM Preconditioning Group ID or an M/S ID, is entered into the system, subsequent related data assignments to the identifier will be made, and the basic data for those IDs will be ignored.

- An error report will be generated listing all data discrepancies encountered while performing the initial load.

- The data elements in the following functional areas will not be loaded: Data Reduction, MDM PROM Sequence, Subsystem Configuration Monitor, Command Uplink, Onboard CRT Display and Status Group.

- RI's U2, UJ, and UT data field values will be loaded as the JSC's GPC Software Destination Module, GPC Software Required Update Rate, and GPC Software Source Module data element values, respectively; however, different RI fields will be selected to load the JSC elements in the future. This will require some rework and additional processing.

- As indicated in Table D-1, an M/S ID may have only one calibration type and one set of curve data for that type loaded from the RI tape.

Table D-1 lists the RI fields (RI ID) which are to be loaded into the corresponding JSC MMDBS data element fields. If an element is not to be loaded, an N/L will appear in the RI ID column. The JSC MMDBS data element lengths (JSC Lngth), the RI lengths (RI Lngth), the data validations, special processing, and adjustments (right justified - RJ or left justified - LJ) are stated for each element.

Table D-3 is a copy of the MMDB Master File Format received from RI. The tape for the initial load is to be in this format and each record may contain up to 20 segments of data. The total



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number of characters and the data elements in each segment are listed in Tables D-4 thru D-34. If the data record occurs at the beginning of a block, there will be an additional four characters (4) at the beginning of the record. These characters will be ignored.

The header record format is listed below.

| Columns | Description |
|---|---|
| 1-10 | Unused |
| 11-16 | New DBFN |
| 17-24 | Date (MM/DD/YY) |
| 25-30 | Old DBFN |
| 31-113 | Unused |

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| RI ID | Date Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| AA | M/S ID | 10 | 10 | | Char 1 : Table MEID<br>Char 2&3: Table SSID<br>Char 4 : A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9 : A-H,J-N,R,T-Y<br>Char 10 : None<br>in the DRD | |
| AF | ACCURACY, REQ. SYSTEM | 3 | 3 | RJ | Decimal number | |
| AW | ASSOCIATED SUBSYSTEM | 2 | 2 | RJ | Table SSID | |
| DG,DS | BTU CARD LOCATION | 2 | 2 | RJ | 0-15 | In order to process BTU Data, check DR. If DR is valued and is a valid BTU Name then store in BTU Name. If not valid, store in FDM Name. If it is not valued, check DF against the BTUNAME edit table. If DF is valued and valid, store DF in BTU Name; if not valued or valid, print error. If DF value was stored, the left column of RI IDs will be used; if DR, then the right column. BTU Data Bus Names will be loaded from a table of BTU Names. There may be five bus names for each BTU Name. BTU Type will be loaded from the table of BTU Names. There will be one type for each name in the table. |
| DA,DD | BTU CARD TYPE | 3 | 3 | LJ | None | |
| DH,DT | BTU CHANNEL NUMBER | 2 | 2 | RJ | 0-31 | |
| | BTU DATA BUS NAMES | 24 | 11,2 | | Table BTUNAME | |
| GT,GU | BTU DEST. EQUIP. NAME 1 | 15 | 15 | LJ | None | |
| N/L,GV | BTU DEST. EQUIP. NAME 2 | 15 | 15 | LJ | None | |
| N/L,GW | BTU DEST. EQUIP. NAME 3 | 15 | 15 | LJ | None | |
| DP,DZ | BTU MIA ADDRESS | 2 | 2 | RJ | 0-99 | |
| DF,DR | BTU NAME | 4 | 4 | LJ | Table BTUNAME | |
| DB, DW | BTU NUMBER OF BITS | 2 | 2 | RJ | 1-16 | |
| N/L,N/L | BTU NUMBER OF WORDS | 2 | | | 0-99 | |
| FZ,EN | BTU PLUG AND PIN/SUBSYSTEM | 11 | 11 | | None | |
| GP,GP | BTU REFERENCE DESIG. | 12 | 9 | LJ | None | |
| GS,GW | BTU SIGNAL TYPE | 1 | 1 | | Table BTUSIGL | |
| DK,DV | BTU START BIT NUMBER | 2 | 2 | RJ | 0-15 | |
| SN,SN | BTU TRANSFER RATE | 4 | 3 | RJ | Table BTURATE | |
| | BTU TYPE | 2 | | | 1-16 | |
| DJ,DU | BTU WORD NUMBER | 2 | 2 | RJ | 1-32 | |
| SW,SY | BTU/MDM H/W 1 BIT FORMAT | 16 | 16 | | None | |
| SX,N/L | BTU/MDM H/W 2 BIT FORMAT | 16 | 16 | | None | |
| N/L,N/L | BTU/MDM H/W 3 BIT FORMAT | 16 | | | | |
| N/L,N/L | BTU/MDM H/W 4 BIT FORMAT | 16 | | | | |
| F2,F3,EX | CAL. ACCURACY | 4 | 4 | | Decimal number | If after conversion of RI's HA field, Cal. Type = 4 load F2, if = 2 load F3, if = 1 load EX. |
| HJ | CAL. COMP. DATA PT. 0% | 8 | 8 | | None | |
| HK | CAL. COMP. DATA PT. 10% | 8 | 8 | | None | |
| HL | CAL. COMP. DATA PT. 20% | 8 | 8 | | None | |
| HM | CAL. COMP. DATA PT. 30% | 8 | 8 | | None | |
| HN | CAL. COMP. DATA PT. 40% | 8 | 8 | | None | |

Table D-1 Initial Load Data Validation and Conversion



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| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| HP | CAL. COMP. DATA PT. 50% | 8 | 8 | | None | |
| HR | CAL. COMP. DATA PT. 60% | 8 | 8 | | None | |
| HS | CAL. COMP. DATA PT. 70% | 8 | 8 | | None | |
| HT | CAL. COMP. DATA PT. 80% | 8 | 8 | | None | |
| HU | CAL. COMP. DATA PT. 90% | 8 | 8 | | None | |
| HV | CAL. COMP. DATA PT. 100% | 8 | 8 | | None | |
| T3 | CAL. CURVE TYPE | 5 | 6 | LJ | NXXXX = Standard,<br>XXXXX = Actual | Store 1st 5 chars. If the 1st char. is an N indicating that the curve is a standard and if the curve was not previously entered, load the curve type and related curve data (see Table D-2). If it was previously entered, load the curve type and ignore the related data. |
| HA | CAL. DATA FIT | 1 | 6 | | 1-6 | Store 4th char. |
| HW | CAL. DATA TOLERANCE | 8 | 8 | | None | |
| HE | CAL. DEGREE OF CURVE | 1 | 1 | | 0-5 | |
| NA | CAL. DEP. COMP. DATA PT 01 | 8 | 8 | | Decimal number | |
| NB | CAL. IND. COMP. DATA PT 01 | 8 | 8 | | Decimal number | |
| NC | CAL. DEP. COMP. DATA PT. 02 | 8 | 8 | | Decimal number | |
| ND | CAL. IND. COMP. DATA PT. 02 | 8 | 8 | | Decimal number | |
| NE | CAL. DEP. COMP. DATA PT. 03 | 8 | 8 | | Decimal number | |
| NF | CAL. IND. COMP. DATA PT. 03 | 8 | 8 | | Decimal number | |
| NG | CAL. DEP. COMP. DATA PT. 04 | 8 | 8 | | Decimal number | |
| NH | CAL. IND. COMP. DATA PT. 04 | 8 | 8 | | Decimal number | |
| NJ | CAL. DEP. COMP. DATA PT. 05 | 8 | 8 | | Decimal number | |
| NK | CAL. IND. COMP. DATA PT. 05 | 8 | 8 | | Decimal number | |
| NL | CAL. DEP. COMP. DATA PT. 06 | 8 | 8 | | Decimal number | |
| NM | CAL. IND. COMP. DATA PT. 06 | 8 | 8 | | Decimal number | |
| NN | CAL. DEP. COMP. DATA PT. 07 | 8 | 8 | | Decimal number | |
| NP | CAL. IND. COMP. DATA PT. 07 | 8 | 8 | | Decimal number | |
| NR | CAL. DEP. COMP. DATA PT. 08 | 8 | 8 | | Decimal number | |
| NS | CAL. IND. COMP. DATA PT. 08 | 8 | 8 | | Decimal number | |
| NT | CAL. DEP. COMP. DATA PT. 09 | 8 | 8 | | Decimal number | |
| NU | CAL. IND. COMP. DATA PT. 09 | 8 | 8 | | Decimal number | |
| NV | CAL. DEP. COMP. DATA PT. 10 | 8 | 8 | | Decimal number | |
| NW | CAL. IND. COMP. DATA PT. 10 | 8 | 8 | | Decimal number | |
| NX | CAL. DEP. COMP. DATA PT. 11 | 8 | 8 | | Decimal number | |
| NY | CAL. IND. COMP. DATA PT. 11 | 8 | 8 | | Decimal number | |
| HX | CAL. EFF., CURVE SERIES | 1 | 11 | | 0-9 | Store 1st char. |
| HX | CAL. EFF., DATE | 8 | 11 | | Date in format | Store 4th-11th chars. |

Table D-1 Initial Load Data Validation and Conversion (continued)

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| BI ID | Data Elem. | JSC Lngth | BI Lngth | BI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | | | | | MM/DD/YY | |
| HX | CAL. EFF., REV. NO. | 1 | 11 | | 0-9 | Store 2nd char. |
| TF | CAL. GPC OFFSET VALUE | 10 | 10 | RJ | Decimal number | Store if Cal. Type=3 |
| HZ | CAL. IND. VAR. UNITS | 4 | 4 | | CNTS,VOLT,PCNT,SCPT | |
| SF,TE | CAL. MOST SIGN. BIT VALUE | 10 | 10 | | Decimal number | If BI field SB=09 or blank store TE; if not, store SF |
| HA | CAL. NO. OF DATA PAIRS | 2 | 6 | | 0-11 | Store 5th & 6th chars. |
| HA | CAL. NO. OF SETS | 1 | 6 | | 0-9 | Store 1st char. |
| HC,SS | CAL. POLY. COEFF. A0, INT. | 14 | 14 | | Decimal number | If Cal. Type = 3 store SS; if not, store HC |
| HD,ST | CAL. POLY. COEFF. A1 CRV. ORDER 1 | 14 | 14 | | Decimal numbers | If Cal. Type = 3 store ST; if not, store HD |
| HE,SU | CAL. POLY. COEFF. A2 CRV. ORDER 2 | 14 | 14 | | Decimal numbers | If Cal. Type = 3 store SU; if not, store HE |
| HF,SV | CAL. POLY. COEFF. A3 CRV. ORDER 3 | 14 | 14 | | Decimal numbers | If Cal. Type = 3 store SV; if not, store HF |
| HG | CAL. POLY. COEFF. A4 CRV. ORDER 4 | 14 | 14 | | Decimal numbers | If Cal. Type = 3 do not load |
| HH | CAL. POLY. COEFF. A5 CRV. ORDER 5 | 14 | 14 | | Decimal numbers | If Cal. Type = 3 do not load |
| TS | CAL. SCALE FACT. | 10 | 6 | | Decimal numbers | |
| HA | CAL. TYPE | 1 | 6 | | 1,2,3, and/or 4 per VCN | Convert BI type (3rd char) to JSC type as follows: 1 to 1, 2 to 2, 3 to 1 & 2 (load both JSC types with same BI data), 4 to 3, 5 to 4. |
| AM | CAUTION AND WARNING DISPLAY | 1 | 1 | | C,E,W,X | |
| CK | CREW CONTROL DEVICE | 1 | 2 | LJ | B,C,K,P,R,S,V,W | Convert CB to B |
| BW | CRT APPLICABILITY | 1 | 1 | | B,U,X | |
| N/L | CRT BILEVEL-0 | 4 | | | | ** CRT data elements will be entered into the MMDBS with a special load procedure to be determined.** |
| N/L | CRT BILEVEL-1 | 4 | | | | |
| N/L | CRT BLANKING | 1 | | | | |
| N/L | CRT BRANCHING | 1 | | | | |
| N/L | CRT CHARACTER SIZE | 1 | | | | |
| N/L | CRT DOWNLIST | 1 | | | | |
| N/L | CRT FLASH | 1 | | | | |
| N/L | CRT FORMAT TYPE | 4 | | | | |
| N/L | CRT INTENSITY | 1 | | | | |
| N/L | CRT ITEM NO. | 2 | | | | |
| N/L | CRT LEADING ZEROS | 1 | | | | |
| N/L | CRT M/S ID CHARACTERISTIC | 3 | | | | |
| N/L | CRT NOMENCLATURE | 20 | | | | |
| N/L | CRT PAGE ID | 4 | | | | |
| N/L | CRT RESOLUTION REQUIRED | 1 | | | | |
| N/L | CRT REVISION NO. | 1 | | | | |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| N/L | CRT SEQ. NO. | 1 | | | | |
| N/L | CRT SIGN | 1 | | | | |
| N/L | CRT SPECIAL PROC. | 4 | | | | |
| N/L | CRT STATUS | 1 | | | | |
| N/L | CRT UPDATE RATE | 1 | | | | |
| N/L | CRT X-COORDINATE | 2 | | | | |
| N/L | CRT Y-COORDINATE | 2 | | | | |
| N/L | C&W ANNUNCIATOR NOMEN. | 22 | | | | **C&W data elements will be entered into the MMDBS via terminal** |
| N/L | C&W CHANNEL NO. | 3 | | | | |
| N/L | C&W LIMIT SENSE | 1 | | | | |
| N/L | C&W LIMIT VALUE, EU | 10 | | | | |
| N/L | C&W LIMIT VALUE, VOLTS | 9 | | | | |
| N/L | C&W MATRIX NO. | 2 | | | | |
| TD | DATA LENGTH | 2 | 2 | | 0-99 | |
| AC | DATA RANGE LOW | 5 | 10 | | None | Store 1st 5 chars. |
| AC | DATA RANGE HIGH | 5 | 10 | | None | Store chars. 6-10 |
| AD | DATA RANGE UNITS | 8 | 8 | LJ | Table ENGUNIT | |
| TB | DATA TYPE | 4 | 4 | | Table DATATYP | |
| AL | DEDICATED DISPLAY | 2 | 5 | | Combination of A,F,G,L, M,T,W,X or S | First two non-blank codes are loaded. If Additional values exist in RI field, list them in error report. |
| GG | DEVICE ACCURACY | 4 | 4 | RJ | Decimal number | |
| GE | DEVICE INPUT PLUG & PIN #1 | 12 | 12 | LJ | None | |
| N/L | DEVICE INPUT PLUG & PIN #2 | 12 | | | | |
| N/L | DEVICE INPUT PLUG & PIN #3 | 12 | | | | |
| CP | DEVICE NAME | 15 | 15 | LJ | None | |
| N/L | DEVICE PANEL NOMENCLATURE | 34 | | | | |
| GH | DEVICE PANEL NUMBER #1 | 8 | 8 | LJ | None | |
| N/L | DEVICE PANEL NUMBER #2 | 8 | | | | |
| N/L | DEVICE PANEL NUMBER #3 | 8 | | | | |
| GF | DEVICE REF. DESIGNATOR #1 | 12 | 9 | LJ | None | |
| N/L | DEVICE REF. DESIGNATOR #2 | 12 | | | | |
| N/L | DEVICE REF. DESIGNATOR #3 | 12 | | | | |
| CG | DEVICE SWITCH PANEL NOMEN. | 34 | 34 | LJ | None | |
| CL | DEVICE SWITCH & PANEL NO. #1 | 12 | 12 | LJ | None | |
| N/L | DEVICE SWITCH & PANEL NO. #2 | 12 | | | | |
| N/L | DEVICE SWITCH & PANEL NO. #3 | 12 | | | | |
| FV | DEVICE SWITCH REF. DESIGNATOR #1 | 12 | 12 | LJ | None | |
| FW | DEVICE SWITCH REF. DESIGNATOR #2 | 12 | 12 | LJ | None | |
| N/L | DEVICE SWITCH DEV. DESIGNATOR #3 | 12 | | | | |
| TA | DOWNLINK BYTE BIT FORMAT | 8 | 8 | LJ | None | |

Table D-1 Initial Load Data Validation and Conversion (continued)

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| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| N/L | DRC BAND/PASS LIMITS | 3 | | | | **DRC data elements will be loaded into the MMDBS with a special procedure to be determined** |
| N/L | DRC GROUP ID | 5 | | | | |
| N/L | DRC LINE NUMBER | 2 | | | | |
| N/L | DRC PLOT RANGE, LOW-HIGH | 10 | | | | |
| N/L | DSM COMMAND WORD 2-1 | 16 | | | | **DSM data values are to be loaded via terminal.** |
| N/L | DSM COMMAND WORD 2-2 | 16 | | | | |
| N/L | DSM COMMAND WORD 2-3 | 16 | | | | |
| N/L | DSM COMMAND WORD 2-4 | 16 | | | | |
| N/L | DSM DISCRETE MASK | 16 | | | | |
| N/L | DSM DISCRETE MASK 2 | 16 | | | | |
| N/L | DSM NUMBER | 4 | | | | |
| N/L | DSM TITLE | 21 | | | | |
| N/L | DSM TYPE | 1 | | | | |
| BR | FAILURE MODE EFFECTS ANALYSIS | 1 | 1 | | C | |
| FS | FDM CHANNEL CENTER FREQ. | 3 | 3 | RJ | Decimal number | |
| EU | FDM CHANNEL FREQ. RESPONSE | 1 | 1 | | A,B,C,D,E,F | |
| GL | FDM INPUT PLUG & PIN | 10 | 10 | LJ | None | |
| DR | FDM NAME | 4 | 4 | LJ | None | If it doesn't match BTU Name edit table, store here. |
| EZ | FDM PACKAGE AND CHANNEL CODE | 5 | 5 | LJ | Char. 1 & 2 = 01-03<br>Char. 3 = A-Z,<br>Char. 4 & 5 = 01-15 | |
| GM | FDM REF. DESIGNATOR | 12 | 9 | LJ | None | |
| | FLIGHT NUMBER | 8 | | | | A flight number will be provided at execution time |
| BP | FLIGHT PHASE, AERO. CONTROL | 1 | 1 | | A | Convert X to A |
| BN | FLIGHT PHASE, ENTRY | 1 | 1 | | E | Convert X to E |
| BL | FLIGHT PHASE, LAUNCH | 1 | 1 | | L | Convert X to L |
| BM | FLIGHT PHASE, ORBIT | 1 | 1 | | O (alpha) | Convert X to O |
| N/L | FLIGHT PHASE 5 | 1 | | | | |
| N/L | FLIGHT PHASE 6 | 1 | | | | |
| N/L | FLIGHT PHASE 7 | 1 | | | | |
| N/L | FLIGHT PHASE 8 | 1 | | | | |
| N/L | FLIGHT PHASE 9 | 1 | | | | |
| N/L | FLIGHT PHASE 10 | 1 | | | | |
| AP | FLIGHT/GROUND | 1 | 1 | | F,G,S | |
| | FTR Data Pricrity | 1 | 10 | | M,H,- | Store 10th char. of the FTR ID. Convert 1 to M, 2 to H. |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| MA-MH, MJ-MN, MP, MR-MZ | FTR ID | 8 | 10 | LJ | None | Store the 1st 8 char as ID if not previously loaded and enter the M/S ID with the corres. data. If ID previously loaded, enter the M/S ID with corres. data. |
| 4A | FTR REQ. RESPONSE RATE | 4 | 4 | RJ | None | |
| SG | GPC SOFTWARE COMPOOL NAME | 32 | 32 | LJ | None | |
| SD | GPC SOFTWARE DATA LENGTH | 2 | 2 | RJ | 1-64 | |
| U2 | GPC SOFT. DEST. MODULE | 47 | 55 | | Six 7 char. fields separated by commas | Ignore U3-U9 |
| N/L | GPC SOFTWARE DOWNLIST AVAILABILITY | | | | | |
| SB | GPC SOFTWARE DOWNLIST DATA TYPE | 1 | 2 | RJ | 1-9 | Store the 2nd char. |
| SH | GPC SOFTWARE HAL NAME | 32 | 32 | LJ | None | |
| TY | GPC SOFTWARE INPUT/OUTPUT/COMPUTE | 1 | 1 | | C,I,O (alpha) | |
| UJ | GPC SOFTWARE REQ. UPDATE RATE | 29 | 7 | RJ | None | Store 1st 4 chars. Ignore UK-UN, UP, UR, US |
| TX | GPC SOFTWARE SIGNAL MNEMONIC | 10 | 10 | LJ | Char 1&2: Table GPCMNE1<br>Char 3: Table GPCMNE2<br>Char 4-10: None | |
| UT | GPC SOFTWARE SOURCE MODULE | 47 | 7 | | None | Ignore UU-UZ, U1 |
| SC | GPC SOFTWARE START BIT | 2 | 2 | RJ | 00-64 | |
| SE | GPC SOFTWARE UNITS | 8 | 8 | LJ | Table GPCUNIT | |
| DE | MASTER EVENTS CONTROLLER | 1 | 1 | | X | |
| N/L | MCC DISPLAY ESK NO. 1 | 4 | | | | |
| N/L | MCC DISPLAY ESK NO. 2 | 4 | | | | |
| N/L | MCC DISPLAY ESK NO. 3 | 4 | | | | |
| N/L | MDM PROM ADDRESS, ACTUAL | 3 | | | | (T6) **MDM PROM Sequence ID |
| N/L | MDM PROM ADDRESS, REQUIRED | 3 | | | | (T5) is not available; the MDM |
| N/L | MDM PROM MODE CONTROL | 2 | | | | PROM data elements will not be |
| N/L | MDM PROM SEQUENCE ID | 2 | | | | loaded** |
| N/L | MDM PROM SEQ. LENGTH, ACTUAL | 2 | | | | (T7) |
| N/L | MDM PROM SEQ. LENGTH, REQUIRED | 2 | | | | (S2) |
| N/L | MDM PROM SEQ. NUMBER | 2 | | | | (T8,S3) |
| N/L | MDM UTILIZATION | 1 | | | | |
| FA | MEASUREMENT INTERFACE CONTROL | 1 | 1 | | X | Convert value to X, |
| CM | MEAS. PURPOSE CATEGORY | 2 | 3 | | 0-99 | Store 2 right most characters. |
| EP | NOMENCLATURE, OPERATIONAL | 21 | 21 | LJ | None | |
| AB | NOMENCLATURE, SYSTEM | 34 | 34 | LJ | None | |
| N/L | OPERATIONAL LIMITS 1 HIGH | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 1 LOW | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 2 HIGH | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 2 LOW | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 3 HIGH | 5 | | | None | |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| N/L | OPERATIONAL LIMITS 3 LOW | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 4 HIGH | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 4 LOW | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 5 HIGH | 5 | | | None | |
| N/L | OPERATIONAL LIMITS 5 LOW | 5 | | | None | |
| AN | OPERATIONAL/DEVELOPMENT APP. | 1 | 1 | | M,D,G,C | Convert T to G. If not valued do not load M/S ID; print error. |
| CH | PARALLEL SWITCH CONTROL | 2 | 2 | LJ | G,F,GA | |
| AZ | PARENT M/S ID | 10 | 10 | LJ | Char 1: Table MEID<br>Char 2&3: Table SSID<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,R,T-Y<br>Char 10: None | |
| SM | PCM MU ACT. DATA RAM ADDRESS | 4 | 4 | RJ | 0-9999 | |
| TW | PCM MU ACT. FETCH COMMAND | 4 | 4 | RJ | 0-9999 | |
| N/L | PCM MU FETCH COMMAND ADD. | 4 | | | | |
| SP | PCM MU PREDEFINED DATA RAM ADD. | 4 | 4 | RJ | 0-9999 | |
| TV | PCM MU PREDEFINED FETCH COMMAND | 4 | 4 | RJ | 0-9999 | |
| BB,T1 | RELATED M/S ID | 10 | 10 | LJ | Char 1: Table MEID<br>Char 2&3: Table SSID<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,R,T-Y<br>Char 10: None | Check 1st and 2nd chars. of M/S ID. If they = V9 then store value from RI's T1; otherwise store value from RI's BB. |
| GR | REMARKS | 50 | 50 | LJ | None | |
| AG | REQUIRED RESPONSE RATE | 4 | 4 | RJ | Table REQRATE | |
| AY | RESPONSE M/S ID | 10 | 10 | LJ | Char 1: Table MEID<br>Char 2&3: Table SSID<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,R,T-Y<br>Char 10: None | |
| CB | RF UPLINK | 1 | 2 | | X | Store 1st char. |
| N/L | SCM BINARY 0 TEXT | 4 | | | | **The SCM data elements will not be loaded. SCM List ID cannot be determined** |
| N/L | SCM BINARY 1 TEXT | 4 | | | | |
| N/L | SCM DISCREPANCY MESSAGE TEXT | 6 | | | | |
| N/L | SCM HIGH LIMIT VAL. OR STATE | 11 | | | | |
| N/L | SCM LIST ID | 2 | | | | |
| N/L | SCM LOW.LIMIT VAL. OR STATE | 11 | | | | |
| EB | SENSOR INSTAL. DRAWING NO. | 11 | 11 | LJ | None | |
| CT | SENSOR LOC. COORDINATES | 27 | 27 | LJ | None | |
| N/L | SENSOR LOC. DESCRIPTOR | 19 | | | | |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| GD | SENSOR PACKAGE REF. DESIG. | 12 | 12 | LJ | None | |
| EC | SENSOR PART NUMBER | 15 | 15 | LJ | None | |
| EA | SENSOR RESPONSIBILITY | 2 | 2 | RJ | Table SSID | |
| ZF | SENSOR SERIAL NUMBER | 14 | 18 | | None | |
| DC | SENSOR-S/C SUPPLIER | 1 | 1 | | None | |
| N/L | SENSOR TYPE | 1 | | | A-Z | |
| GK | SIGNAL COND. 1 CARD AND CHANNEL | 7 | 7 | LJ | None | |
| E5 | SIGNAL COND. 2 CARD AND CHANNEL | 7 | 7 | LJ | None | |
| EK | SIGNAL COND. 1 INPUT PLUG & PIN | 18 | 18 | LJ | None | |
| E2 | SIGNAL COND. 2 INPUT PLUG & PIN | 18 | 18 | LJ | None | |
| EF | SIGNAL COND. 1 INSTALLATION DRWG. | #18 | 11 | LJ | None | |
| EJ | SIGNAL COND. 2 INSTALLATION DRWG. | #11 | 11 | LJ | None | |
| N/L | SIGNAL COND. 1 NAME | 4 | | | None | |
| N/L | SIGNAL COND. 2 NAME | 4 | | | None | |
| EM | SIGNAL COND. 1 OUTPUT PLUG AND PIN | 15 | 15 | LJ | None | |
| E4 | SIGNAL COND. 2 OUTPUT PLUG AND PIN | 15 | 15 | LJ | None | |
| EL | SIGNAL COND. 1 PACK. REF. DESIG. | 12 | 9 | LJ | None | |
| E3 | SIGNAL COND. 2 PACK. REF. DESIG. | 12 | 9 | LJ | None | |
| ED | SIGNAL COND. 1 PART NUMBER | 15 | 15 | LJ | None | |
| EG | SIGNAL COND. 2 PART NUMBER | 15 | 15 | LJ | None | |
| EE | SIGNAL COND. 1 RESPONSIBILITY | 2 | 2 | LJ | None | |
| EH | SIGNAL COND. 2 RESPONSIBILITY | 2 | 2 | LJ | Table SSID | |
| ZG | SIGNAL COND. 1 SERIAL NUMBER | 14 | 10 | | | |
| N/L | SIGNAL COND. 2 SERIAL NUMBER | 14 | | | | |
| N/L | SIMULATOR REQUIREMENTS | 1 | | | | |
| N/L | SIMULATOR VALUE, STATIC | 8 | | | | |
| BT | SITE, EDWARDS | 1 | 1 | | E | Convert X to E |
| BY | SITE, MAINT. AND REFURB. | 1 | 1 | | M | Convert X to M |
| BX | SITE, PAD | 1 | 1 | | P | Convert X to P |
| BS | SITE, PALMDALE | 1 | 1 | | A | Convert X to A |
| BU | SITE, POST LANDING & SAFING | 1 | 1 | | S | Convert X to S |
| BV | SITE, VERT. ASSEMBLY BUILD. | 1 | 1 | | V | Convert X to V |
| | SM ACQUISITION RATE | 2 | 2 | | Decimal Number | Compare P1,P2,P4,P6,P7; store largest value |
| PK | SM ALARM CLASS, ALERT | 1 | 1 | | 0-9 | Store PK if PA,PB, or PC valued. |
| PL | SM ALARM CLASS C&W | 1 | 1 | | 0-9 | Store PL if PD valued. |
| N/L | SM ALARM CLASS NON FDA | 1 | | | | |
| PM | SM ALARM INDICATOR ALERT | 2 | 2 | RJ | 0-99 | |
| PM | SM ALARM INDICATOR C&W | 2 | 2 | RJ | 0-99 | |
| N/L | SM ALARM INDICATOR NON FDA | 2 | | | | |
| RZ | SM CONSTANT INITIAL VALUE | 16 | 16 | | Decimal Number | |
| N/L | SM DESIRED CURVE SERIES | 1 | | | | |
| PA | SM LIMIT SET 1 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS
OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | PI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| PB | SM LIMIT SET 2 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| PC | SM LIMIT SET 3 HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| PD | SM LIMIT SET C HIGH VALUE | 5 | 10 | | Decimal number | Store Chars. 6-10 |
| | SM LIMIT SET 1 ID | 1 | | | 1 | Store 1 if PA is valued |
| | SM LIMIT SET 2 ID | 1 | | | 2 | Store 2 if PB is valued |
| | SM LIMIT SET 3 ID | 1 | | | 3 | Store 3 if PC is valued |
| | SM LIMIT SET C ID | 1 | | | C | Store C if PD is valued |
| PA | SM LIMIT SET 1 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PB | SM LIMIT SET 2 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PC | SM LIMIT SET 3 LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PD | SM LIMIT SET C LOW VALUE OR STATE | 5 | 10 | | Decimal number | Store 1st 5 char. |
| PM | SM MAJOR MESSAGE ID ALERT | 3 | 5 | | 0-999 | Store 1st 3 chars. |
| PM | SM MAJOR MESSAGE ID C&W | 3 | 5 | | 0-999 | Store 1st 3 chars. |
| N/L | SM MAJOR MESSAGE ID NON FDA | 3 | | | | |
| N/L | SM MESSAGE SOURCE | 3 | | | | |
| PP | SM MESSAGE TEXT, MAJ. | 20 | 28 | | None | If not previously loaded, store chars. 1-20 in table MAJMSG corres. to the Maj. Message ID. If previously loaded, verify that the text is the same. If it is not, print error. |
| PP | SM MESSAGE TEXT, MINOR | 4 | 28 | | None | If not previously loaded, store chars. 22-25 in table MINMSG corres. to the Min. Message ID. If previously loaded, verify that the text is the same. If it is not, print error. |
| PM | SM MINOR MESSAGE ID ALERT | 2 | 5 | | 0-999 | Store 4th & 5th chars. |
| PM | SM MINOR MESSAGE ID C&W | 2 | 5 | | 0-999 | Store 4th & 5th chars. |
| N/L | SM MINOR MESSAGE ID NON FDA | 2 | | | | |
| PJ | SM NOISE FILTER VALUE ALERT | 2 | 2 | RJ | 0-15 | |
| PJ | SM NOISE FILTER VALUE C&W | 2 | 2 | RJ | 0-15 | |
| | SM NO. OF OPERATIONAL LIMIT SETS | 1 | | | 0-9 | To be determined based on number of alert limit sets entered for the M/S ID |
| N/L | SM PARAMETER SOURCE | 3 | | | | |
| N/L | SM PARAMETER TYPE | 1 | | | | |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| PG | SM PRECONDITION GROUP ID | 3 | 2 | | 000-999 | If the ID has not been previously entered into the system it is to be entered with the corres. limit set numbers and logical expressions. The M/S ID is to be assigned. If previously entered only the M/S ID will be assigned if it has the same limit sets. |
| | SM PRECONDITION LOGICAL EXP. | 70 | | | None | Set 1 - PT,PU,PV,PW,PX,PY,PZ straight pickup 70 char.<br>Set 2 - RA,RB,RC,RD,RE,RF,RG straight pickup 70 char.<br>Set 3 - RH,RJ,RK,RL,RM,RN,RP straight pickup 70 char.<br>Crit - RR,RS,RT,RU,RV,RW,RX straight pickup 70 char. |
| N/L | SM SOURCE | 4 | | | | |
| P9 | SM SUBSYSTEM ID | 2 | 2 | | 0-99 | |
| PH | SM WARMUP TIME DELAY | 3 | 3 | LJ | Decimal number | |
| N/L | SSH DRAWING NUMBER | 5 | | | | |
| N/L | STATUS CDOC REV. NUMBER | 1 | | | | |
| N/L | STATUS CHANGE DOC. ENTRY DATE | 8 | | | | |
| BJ | STATUS CHANGE DOCUMENT NO. | 7 | 8 | | None | Store 1st 8 chars. Only load when entering pending data. |
| N/L | STATUS CHANGE REASON | 30 | | | | |
| N/L | STATUS CYCLE NO. | 4 | | | | |
| N/L | STATUS GROUP ID | 10 | | | | |
| N/L | STATUS IMPLEMENTATION DATE | 8 | | | | |
| N/L | STATUS REQ. IMPLEMENTATION DATE | 8 | | | | |
| N/L | STATUS RESP. ORG. | 5 | | | | |
| N/L | STATUS TEXT | 700 | | | | |
| CJ | SWITCH SCAN | 1 | 2 | | None | |
| CR | SWITCH SIGNAL TYPE | 1 | 1 | | C,M | |
| AJ | SYSTEM MANAGEMENT USE | 1 | 1 | | X | |
| AH | TAPE RECORDER ID 1 | 1 | 4 | | A,B,D,I,M,P,T,U,W,X | Store 1st non-blank char. |
| AH | TAPE RECORDER ID 2 | 1 | 4 | | A,B,D,I,M,P,T,U,W,X | Store 2nd non-blank char. |
| N/L | TAPE RECORDER ID 3 | 1 | | | | |
| EV | TAPE RECORDER 1 TRACK | 2 | 2 | | 0-99 | |
| E6 | TAPE RECORDER 2 TRACK | 2 | 2 | | 0-99 | |
| N/L | TAPE RECORDER 3 TRACK | 2 | | | | |
| AE | TELEMETRY LINK ID | 1 | 1 | | 1,2,3,4,5,6,7,A,B,D,G,L,S,T,W,X | |
| TC | TLM ACTUAL START BIT | 2 | 2 | | 0-99 | |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| TR | TLM REQ. HOMO. DATA SET # | 2 | 2 | | 0-99 | |
| | TLM FORMAT DESCRIPTOR | 34 | | | None | The descriptor will be loaded from the table of Format IDs. There will be one descriptor for each ID. |
| 1B | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | The user will supply the Format IDs and corres. Format Type via a table look-up for each of the RI Formats. Store the format ID if not previously loaded and enter the M/S ID and related format data. |
| 1B | TLM REQUIRED FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type≠1 | Store Char. 6 & 7 of field with Dnlk Format 129 |
| 1B | TLM REQUIRED FIRST WORD | 3 | 26 | | 0-999, TLM Format Type≠1 | Store Char. 9-11 of field with Dnlk Format 129 |
| 1B | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R, TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 129 |
| 1B | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 129 |
| 1C | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 129 |
| 1C | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 129 |
| 1C | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 129 |
| 1C | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 129 |
| 1C | TLM TIME DELAY | 5 | 20 | | Char 1-3=000-999<br>Char 4=•<br>Char 5=0-9 | Store char. 14-18 of field with Dnlk Format 129 |
| 1B | TLM FORMAT TYPE | 1 | | | 1-7 | Format Type will be loaded from the table of Format IDs. |
| 1E | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1E | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type≠1 | Store char. 6 & 7 of field with Dnlk Format 161 |
| 1E | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type≠1 | Store char. 9-11 of field with Dnlk Format 161 |
| 1E | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 161 |
| 1E | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 161 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 1F | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 161 |
| 1F | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 161 |
| 1F | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 161 |
| 1F | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 161 |
| 1F | TLM TIME DELAY | 5 | 20 | | Char. 1-3 = 000-999, Char. 4 = •, Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 161 |
| 1E | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1H | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1H | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type≠1 | Store char. 6 & 7 of field with Dnlk Format 164 |
| 1H | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type≠1 | Store char. 9-11 of field with Dnlk Format 164 |
| 1H | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 164 |
| 1H | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 164 |
| 1J | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 164 |
| 1J | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 164 |
| 1J | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 164 |
| 1J | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 164 |
| 1J | TLM TIME DELAY | 5 | 20 | | Char. 1-3 = 000-999 Char. 4 = • Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 164 |
| 1H | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1L | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1L | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 165 |
| 1L | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with with Dnlk Format 165 |
| 1L | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 165 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 1L | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 165 |
| 1M | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 165 |
| 1M | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 165 |
| 1M | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 165 |
| 1M | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 165 |
| 1M | TLM TIME DELAY | 5 | 20 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 165 |
| 1L | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1P | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1P | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 166 |
| 1P | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 166 |
| 1P | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R, TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 166 |
| 1P | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 166 |
| 1R | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | STore char. 2-4 of field with Dnlk Format 166 |
| 1R | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 166 |
| 1R | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 166 |
| 1R | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 166 |
| 1R | TLM TIME DELAY | 5 | 20 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 166 |
| 1P | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1T | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1T | TLM REQ. first frame | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 171 |
| 1T | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 171 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 1T | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 171 |
| 1T | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 171 |
| 1U | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 171 |
| 1U | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 171 |
| 1U | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 171 |
| 1U | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 171 |
| 1U | TLM TIME DELAY | 5 | 20 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Sore char. 14-18 of field with Dnlk Format 171 |
| 1T | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1W | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1W | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 162 |
| 1W | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 162 |
| 1W | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 162 |
| 1E | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 162 |
| 1X | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 162 |
| 1X | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 162 |
| 1X | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 162 |
| 1X | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 162 |
| 1X | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 162 |
| 1W | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 1Z | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 1Z | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 163 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 1Z | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 163 |
| 1Z | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type≠1 | Store char. 1 of field with Dnlk Format 163 |
| 1Z | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 163 |
| 2A | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 163 |
| 2A | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 163 |
| 2A | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 163 |
| 2A | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store Char. 20 of field with Dnlk Format 163 |
| 2A | TLM TIME DELAY | 5 | 20 | | Char. 3 - 000-999<br>Char. 4 = •<br>Char 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 163 |
| 1Z | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2C | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2C | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 160 |
| 2C | TLM REQ. FIRST WORD | 3 | 26 | | 0-9999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 160 |
| 2C | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 160 |
| 2C | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 160 |
| 2D | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 160 |
| 2D | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 160 |
| 2D | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 160 |
| 2D | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 160 |
| 2D | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 160 |
| 2C | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2F | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 2F | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format-Spare |
| 2F | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format-Spare |
| 2F | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format-Spare |
| 2F | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format-Spare |
| 2G | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format-Spare |
| 2G | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format-Spare |
| 2G | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format-Spare |
| 2G | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format-Spare |
| 2G | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format-Spare |
| 2F | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2J | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2J | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 167 |
| 2J | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 167 |
| 2J | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 167 |
| 2J | TLM REQ. RESP. RATE | 4 | 26 | | Decimal numbers | Store char. 13-15 of field with Dnlk Format 167 |
| 2K | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 167 |
| 2K | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 167 |
| 2K | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 167 |
| 2K | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 167 |
| 2K | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 167 |
| 2J | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 2M | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2M | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 169 |
| 2M | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 169 |
| 2M | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 169 |
| 2M | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 169 |
| 2N | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char 2-4 of field with Dnlk Format 169 |
| 2N | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 169 |
| 2N | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 169 |
| 2N | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 169 |
| 2N | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 169 |
| 2M | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2R | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2R | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 8 of field with Dnlk Format 172 |
| 2R | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 172 |
| 2R | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 172 |
| 2R | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 172 |
| 2S | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 172 |
| 2S | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 172 |
| 2S | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 172 |
| 2S | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 172 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 2S | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 172 |
| 2R | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2U | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2U | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 002 |
| 2U | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 002 |
| 2U | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 002 |
| 2U | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char 13-15 of field with Dnlk Format 002 |
| 2V | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 002 |
| 2V | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 002 |
| 2V | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char 10-12 of field with Dnlk Format 002 |
| 2V | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 002 |
| 2V | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 002 |
| 2U | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 2X | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 2X | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 003 |
| 2X | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 003 |
| 2X | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 003 |
| 2X | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 003 |
| 2Y | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 003 |
| 2Y | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 003 |
| 2Y | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 003 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | HI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 2Y | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 003 |
| 2Y | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 003 |
| 2X | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3A | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3A | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 004 |
| 3A | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 004 |
| 3A | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 004 |
| 3A | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 004 |
| 3B | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 004 |
| 3B | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 004 |
| 3B | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 004 |
| 3B | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 004 |
| 3B | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 004 |
| 3A | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3D | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3D | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 005 |
| 3D | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 005 |
| 3D | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 005 |
| 3D | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 005 |
| 3E | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 005 |
| 3E | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with with Dnlk Format 005 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 3E | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 005 |
| 3E | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 005 |
| 3E | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 - •,<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 005 |
| 3D | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3G | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3G | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 006 |
| 3G | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 006 |
| 3G | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 006 |
| 3G | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 006 |
| 3H | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 006 |
| 3H | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 006 |
| 3H | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 006 |
| 3H | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 006 |
| 3H | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 006 |
| 3G | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3K | TLM FORMAT ID | 4 | 26 | | Must be unique withing the system | Table look-up |
| 3K | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠1 | Store char. 6 & 7 of field with Dnlk Format 007 |
| 3K | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 007 |
| 3K | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 007 |
| 3K | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 007 |
| 3L | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 007 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 3L | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 007 |
| 3L | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 007 |
| 3L | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 007 |
| 3L | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 007 |
| 3K | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3N | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3N | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 008 |
| 3N | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 008 |
| 3N | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 008 |
| 3N | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 008 |
| 3P | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 008 |
| 3P | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 008 |
| 3P | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 008 |
| 3P | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 008 |
| 3P | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 008 |
| 3N | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3S | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3S | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 009 |
| 3S | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 009 |
| 3S | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 009 |
| 3S | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 009 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS
OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 3T | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 009 |
| 3T | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 009 |
| 3T | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 009 |
| 3T | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 009 |
| 3T | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 009 |
| 3S | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3V | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3V | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 010 |
| 3V | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 010 |
| 3V | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 010 |
| 3V | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 010 |
| 3W | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 010 |
| 3W | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 010 |
| 3W | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 010 |
| 3W | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 010 |
| 3W | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 010 |
| 3V | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 3Y | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 3Y | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 011 |
| 3Y | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 011 |
| 3Y | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 011 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 3Y | TLM REQ RESP RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 011. |
| 3Z | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 011 |
| 3Z | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 011 |
| 3Z | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 011 |
| 3Z | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 011 |
| 3Z | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 011 |
| 3Y | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4B | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4B | TLM REQ. FIRST FRAME | 2 | 26 | | 00-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 140 |
| 4B | TLM REQ. FIRST WORD | 3 | 26 | | 000-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 140 |
| 4B | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 140 |
| 4B | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 140 |
| 4C | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk FORMAT 140 |
| 4C | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 140 |
| 4C | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 140 |
| 4C | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk FORMAT 140 |
| 4C | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 140 |
| 4E | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4E | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4E | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 199 |
| 4E | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 199 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 4E | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 199 |
| 4E | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 199 |
| 4F | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 199 |
| 4F | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 199 |
| 4F | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 199 |
| 4F | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 199 |
| 4F | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 199 |
| 4E | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4H | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4H | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format-Spare |
| 4H | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format-Spare |
| 4H | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format-Spare |
| 4H | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format-Spare |
| 4J | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format-Spare |
| 4J | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format-Spare |
| 4J | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format-Spare |
| 4J | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format-Spare |
| 4J | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format-Spare |
| 4H | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4L | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4L | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠1 | Store char. 6 & 7 of field with DFI Dnlk Format-012 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS
OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 4L | TLM REQ. FIRST WORD | 3 | 26 | | 000-999. TLM Format Type ≠1 | Store char. 9-11 of field with DFI Dnlk Format-012 |
| 4L | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 012 |
| 4L | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 012 |
| 4M | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 012 |
| 4M | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 012 |
| 4M | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 012 |
| 4M | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 012 |
| 4M | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 012 |
| 4L | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4P | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4P | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 013 |
| 4P | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 013 |
| 4P | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 013 |
| 4P | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 013 |
| 4R | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 013 |
| 4R | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 013 |
| 4R | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 013 |
| 4R | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 013 |
| 4R | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 013 |
| 4P | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4T | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 4T | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with Dnlk Format 014 |
| 4T | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with Dnlk Format 014 |
| 4T | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with Dnlk Format 014 |
| 4T | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with Dnlk Format 014 |
| 4U | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with Dnlk Format 014 |
| 4U | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with Dnlk Format 014 |
| 4U | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with Dnlk Format 014 |
| 4U | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with Dnlk Format 014 |
| 4U | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlk Format 014 |
| 4T | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 4W | TLM FORMAT ID | 4 | 26 | | Must be unique the system | Table look-up |
| 4W | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 015 |
| 4W | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 015 |
| 4W | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 015 |
| 4W | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 015 |
| 4X | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 015 |
| 4X | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 015 |
| 4X | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 015 |
| 4X | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 015 |
| 4X | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 015 |
| 4W | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 4Z | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 4Z | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 016 |
| 4Z | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 016 |
| 4Z | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 016 |
| 4Z | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 016 |
| 5A | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 016 |
| 5A | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 016 |
| 5A | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 016 |
| 5A | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 016 |
| 5A | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Format 016 |
| 4Z | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5C | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5C | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format-Spare |
| 5C | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format-Spare |
| 5C | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format-Spare |
| 5C | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format-Spare |
| 5D | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format-Spare |
| 5D | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format-Spare |
| 5D | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format-Spare |
| 5D | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format-Spare |
| 5D | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999 | Store char. 14-18 of |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | PI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | | | | | Char. 4 = • | field with DFI Dnlk Format-Spare |
| | | | | | Char. 5 = 0-9 | |
| 5C | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5F | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5F | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 173 |
| 5F | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 173 |
| 5F | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 173 |
| 5F | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 173 |
| 5G | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 173 |
| 5G | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 173 |
| 5G | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 173 |
| 5G | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 173 |
| 5G | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999 | Store char. 14-18 of field |
| | | | | | Char. 4 = • | with DFI Dnlk Format 173 |
| | | | | | Char. 5 = 0-9 | |
| 5F | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5J | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5J | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 174 |
| 5J | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type = 1 | Store char. 9-11 of field with DFI Dnlk Format 174 |
| 5J | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 174 |
| 5J | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 174 |
| 5K | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 174 |
| 5K | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 174 |
| 5K | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 174 |
| 5K | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | | | | | | DFI Dnlk Format 174 |
| 5K | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 174 |
| 5J | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5M | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5M | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 175 |
| 5M | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with with DFI Dnlk Format 175 |
| 5M | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 175 |
| 5M | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 175 |
| 5N | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 175 |
| 5N | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 175 |
| 5N | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 175 |
| 5N | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 175 |
| 5N | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 175 |
| 5M | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5R | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5R | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 176 |
| 5R | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 176 |
| 5R | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 176 |
| 5R | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 176 |
| 5S | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 176 |
| 5S | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 176 |
| 5S | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| | | | | | | with DFI Dnlk Format 176 |
| 5S | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 176 |
| 5S | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 176 |
| 5R | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5U | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5U | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 085 |
| 5U | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 085 |
| 5U | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type = 1 | Store char. 1 of field with DFI Dnlk Format 085 |
| 5U | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 085 |
| 5V | TLM ACT RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 085 |
| 5V | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format 085 |
| 5V | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format 085 |
| 5V | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format 085 |
| 5V | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 085 |
| 5U | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 5X | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 5X | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format 170 |
| 5X | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format 170 |
| 5X | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format 170 |
| 5X | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format 170 |
| 5Y | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format 170 |
| 5Y | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 5Y | TLM FIRST WORD | 3 | 20 | | 0-999 | with DFI Dnlk Format 170 Store char. 10-12 of field |
| 5Y | TLM MOST SIG. H/W | 1 | 20 | | L,R | with DFI Dnlk Format 170 Store char. 20 of field with DFI Dnlk Format 170 |
| 5Y | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format 170 |
| 5X | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6A | TLM FORMAT ID | 4 | 26 | | Must be unique within the system | Table look-up |
| 6A | TLM REQ. FIRST FRAME | 2 | 26 | | 0-99. TLM Format Type ≠ 1 | Store char. 6 & 7 of field with DFI Dnlk Format-Spare |
| 6A | TLM REQ. FIRST WORD | 3 | 26 | | 0-999. TLM Format Type ≠ 1 | Store char. 9-11 of field with DFI Dnlk Format-Spare |
| 6A | TLM REQ. L-R WORD IND. | 1 | 26 | | L,R,TLM Format Type ≠ 1 | Store char. 1 of field with DFI Dnlk Format-Spare |
| 6A | TLM REQ. RESP. RATE | 4 | 26 | | Decimal number | Store char. 13-15 of field with DFI Dnlk Format-Spare |
| 6B | TLM ACT. RESP. RATE | 4 | 20 | | Decimal number | Store char. 2-4 of field with DFI Dnlk Format-Spare |
| 6B | TLM FIRST FRAME | 2 | 20 | | 0-99 | Store char. 7 & 8 of field with DFI Dnlk Format-Spare |
| 6B | TLM FIRST WORD | 3 | 20 | | 0-999 | Store char. 10-12 of field with DFI Dnlk Format-Spare |
| 6B | TLM MOST SIG. H/W | 1 | 20 | | L,R | Store char. 20 of field with DFI Dnlk Format-Spare |
| 6B | TLM TIME DELAY | 5 | 20 | | Char. 3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with DFI Dnlk Format-Spare |
| 6A | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6D | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6D | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6D | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6D | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 001-Spare |
| 6E | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 001-Spare |
| 6E | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6E | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 001-Spare |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 6E | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 001-Spare |
| 6F | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6F | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6F | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store a value of 0 |
| 6F | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 034 |
| 6G | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 034 |
| 6G | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6G | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 034 |
| 6G | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 034 |
| 6H | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6H | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6H | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6H | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6J | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6J | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6J | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |
| 6J | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6K | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6K | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6K | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6K | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6L | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6L | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6L | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 6L | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6M | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6M | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6M | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Stores value of 0 |
| 6M | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 039 |
| 6N | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 039 |
| 6N | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6N | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 039 |
| 6N | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 039 |
| 6P | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6P | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6P | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6P | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6R | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6R | TLM ACT. FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6R | TLM ACT. FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |
| 6R | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6S | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6S | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6S | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6S | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6T | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6T | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6T | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 6T | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 0-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6U | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6U | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6U | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6U | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6U | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6V | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6V | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |
| 6V | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6W | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6W | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6W | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6W | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6X | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6X | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6X | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |
| 6X | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 6Y | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 6Y | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 6Y | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 6Y | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format-Spare |
| 6Z | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format-Spare |
| 6Z | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 6Z | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format-Spare |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 6Z | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format-Spare |
| 7A | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7A | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7A | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 7A | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 011-Spare |
| 7B | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 011-Spare |
| 7B | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7B | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 011-Spare |
| 7B | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 011-Spare |
| 7C | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7C | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9W | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7C | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 021 |
| 7D | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 021 |
| 7D | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7D | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 021 |
| 7D | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 021 |
| 7E | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7E | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9X | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7E | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 022 |
| 7F | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 022 |
| 7F | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7F | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 022 |

Table D-1 Initial Load Data Validation and Conversion (continued)



ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 7F | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 022 |
| 7G | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7G | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9Z | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7G | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 023 |
| 7H | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 023 |
| 7H | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7H | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 023 |
| 7H | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 023 |
| 7J | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7J | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9X | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7J | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 024 |
| 7K | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 024 |
| 7K | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7K | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 024 |
| 7K | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 024 |
| 7L | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7L | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9X | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7L | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 025 |
| 7M | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 025 |
| 7M | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7M | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 025 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 7M | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 025 |
| 7N | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7N | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7N | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store a value of 0 |
| 7N | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 030 |
| 7P | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 030 |
| 7P | TLM ACT. FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7P | TLM ACT. FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 030 |
| 7P | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 030 |
| 7R | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7R | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7R | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store a value of 0 |
| 7R | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 031 |
| 7S | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 031 |
| 7S | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7S | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 031 |
| 7S | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 031 |
| 7T | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7T | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9X | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 7T | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 032 |
| 7U | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 032 |
| 7U | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7U | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 032 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | FI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 7U | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 032 |
| 7V | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7V | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7V | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store a value of 0 |
| 7V | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 033 |
| 7W | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 033 |
| 7W | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7W | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 033 |
| 7W | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 033 |
| 7X | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7X | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7X | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store a value of 0 |
| 7X | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 040 |
| 7Y | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 040 |
| 7Y | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 7Y | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 040 |
| 7Y | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 040 |
| 7Z | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 7Z | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 7Z | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 7Z | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 041 |
| 8A | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 041 |
| 8A | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8A | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 041 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Length | RI Length | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 8A | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 041 |
| 8B | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8B | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8B | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8B | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 043 |
| 8C | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 043 |
| 8C | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8C | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 043 |
| 8C | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 043 |
| 8D | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8D | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 9W | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | 1 | | 0,1 | |
| 8D | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 012 BFCS Ascent |
| 8E | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format 012 BFCS Ascent |
| 8E | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8E | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format 012 BFCS Ascent |
| 8E | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format 012 BFCS Ascent |
| 8F | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8F | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8F | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8F | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format BFCS |
| 8G | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format BFCS |
| 8G | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8G | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format BFCS |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 8G | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format BFCS |
| 8H | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8H | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8H | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8H | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format BFCS |
| 8J | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format BFCS |
| 8J | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8J | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format BFCS |
| 8J | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format BFCS |
| 8K | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8K | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8K | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8K | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format BFCS |
| 8L | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format BFCS |
| 8L | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8L | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format BFCS |
| 8L | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format BFCS |
| 8M | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8M | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8M | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8M | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format BFCS |
| 8N | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlist Format BFCS |
| 8N | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8N | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlist Format BFCS |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | RI Lngth | RI ADJ | Edits | Action To Be Taken |
|---|---|---|---|---|---|---|
| 8N | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlist Format BFCS |
| 8P | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8P | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8P | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 8P | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with GPC Dnlist Format-Spare |
| 8R | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlst Format-Spare |
| 8R | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8R | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlst Format-Spare |
| 8R | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlst Format-Spare |
| 8S | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8S | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8S | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | |
| 8S | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with GPC Dnlist Format-Spare |
| 8T | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlst Format-Spare |
| 8T | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8T | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlst Format-Spare |
| 8T | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlst Format-Spare |
| 8U | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8U | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8U | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8U | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 051 |
| 8V | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlst Format 051 |
| 8V | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8V | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlst Format 051 |

Table D-1 Initial Load Data Validation and Conversion (continued)

ORIGINAL PAGE IS OF POOR QUALITY

| RI ID | Data Elem. | JSC Lngth | HI Lngth | RI ADJ | Edits | Action To be Taken |
|---|---|---|---|---|---|---|
| 8V | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlst Format 051 |
| 8W | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8W | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8W | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8W | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with Dnlist Format 050 |
| 8X | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlst Format 050 |
| 8X | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8X | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlst Format 050 |
| 8X | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlst Format 050 |
| 8Y | TLM FORMAT ID | 4 | | | Must be unique within the system | Table look-up |
| 8Y | TLM FORMAT TYPE | 1 | | | 1-7 | Table look-up |
| 8Y | TLM REQ. DOWNLINK 64/128 KBS IND. | 1 | | | 0,1 | Store the value 0 |
| 8Y | TLM REQ. RESP. RATE | 4 | 4 | | Decimal number | Store the value with GPC Dnlist Format 049 |
| 8Z | TLM ACT. RESP. RATE | 4 | 18 | | Decimal number | Store char. 1-4 of field with Dnlst Format 049 |
| 8Z | TLM FIRST FRAME | 2 | 18 | | 0-99 | Store chars. 7&8 |
| 8Z | TLM FIRST WORD | 3 | 18 | | 0-999 | Store char. 10-12 of field with Dnlst Format 049 |
| 8Z | TLM TIME DELAY | 5 | 18 | | Char. 1-3 = 000-999<br>Char. 4 = •<br>Char. 5 = 0-9 | Store char. 14-18 of field with Dnlst Format 049 |
| Z1 | VEHICLE CONFIG. NUMBER | 8 | 3 | | | Convert 3rd char. to JSC VCNs entered by the user at execution time |
| BA | VOTING LOGIC M/S ID | 10 | 10 | LJ | Char 1: Table MEID<br>Char 2&3: Table SSID<br>Char 4: A-H,J-N,P-Z<br>Char 5-8: 0000-9999<br>Char 9: A-H,J-N,R,T-Y<br>Char 10: None | |

Table D-1 Initial Load Data Validation and Conversion (concluded)



ORIGINAL PAGE IS OF POOR QUALITY

ORIGINAL PAGE IS
OF POOR QUALITY

| Calibration Curve Type* |
|---|
| Calibration Accuracy |
| Calibration Computed Data Point 0 Pct. |
| Calibration Computed Data Point 10 Pct. |
| Calibration Computed Data Point 20 Pct. |
| Calibration Computed Data Point 30 Pct. |
| Calibration Computed Data Point 40 Pct. |
| Calibration Computed Data Point 50 Pct. |
| Calibration Computed Data Point 60 Pct. |
| Calibration Computed Data Point 70 Pct. |
| Calibration Computed Data Point 80 Pct. |
| Calibration Computed Data Point 90 Pct. |
| Calibration Computed Data Point 100 Pct. |
| Calibration Data Tolerance |
| Calibration Degreee of Curve |
| Calibration Dependent Composite Data Point 01 |
| Calibration Dependent Composite Data Point 02 |
| Calibration Dependent Composite Data Point 03 |
| Calibration Dependent Composite Data Point 04 |
| Calibration Dependent Composite Data Point 05 |
| Calibration Dependent Composite Data Point 06 |
| Calibration Dependent Composite Data Point 07 |
| Calibration Dependent Composite Data Point 08 |
| Calibration Dependent Composite Data Point 09 |
| Calibration Dependent Composite Data Point 10 |
| Calibration Dependent Composite Data Point 11 |
| Calibration GPC OFFSET Value |
| Calibration Independent Composite Data Point 01 |
| Calibration Independent Composite Data Point 02 |
| Calibration Independent Composite Data Point 03 |
| Calibration Independent Composite Data Point 04 |
| Calibration Independent Composite Data Point 05 |
| Calibration Independent Composite Data Point 06 |
| Calibration Independent Composite Data Point 07 |
| Calibration Independent Composite Data Point 08 |
| Calibration Independent Composite Data Point 09 |
| Calibration Independent Composite Data Point 10 |
| Calibration Independent Composite Data Point 11 |
| Calibration Poly. Coeff. A0, Intercept |
| Calibration Poly. Coeff. A1 Curve Order 1 |
| Calibration Poly. Coeff. A2 Curve Order 2 |
| Calibration Poly. Coeff. A3 Curve Order 3 |
| Calibration Poly. Coeff. A4 Curve Order 4 |
| Calibration Poly. Coeff. A5 Curve Order 5 |
| Calibration Scale Factor |

*More than one M/S ID can reference the same Calibration Curve Type

Table D-2 Standard Calibration Data Elements

| Field ID | Data Elements | Columns | Description | Comments |
|---|---|---|---|---|
| Control Characters | -- | 1-6 | -- | Ignore |
| M/S ID | AA | 7-16 | M/S ID | Standard |
| EFF | Z1 | 17-19 | Vehicle EIASN(S) | See List Attached |
| PND # | Z3 | 20 | J = JSC Initiated Pending<br>K = KSC Initiated Pending<br>M = MMC Initiated Pending<br>N = MSFC Initiated Pending<br>R = RI Initiated Pending | Indicates Pending Record |
| | | 21,22 | 01-99 (Numeric only) | |
| Pnd Act Code | Z4 | 23 | A = Add<br>S = Subtract<br>Blank = Revision | Action Type |
| Unused | -- | 24 | -- | -- |
| Segment Indicators | A-Z, 1-9 | 25-88 | Binary 1 indicates Segments Present | 81, 82 unused |
| Previous M/S ID | Z6 | 89-98 | M/S ID | Last M/S ID Before Modification |
| DBPN | -- | 99-104 | Latest Modified DBPN | As of Date |
| Date | -- | 105,106 | MM | Month Last Modified |
| | | 107 | / | |
| | | 108,109 | DD | Day Last Modified |
| | | 110 | / | |
| | | 111,112 | YY | Year Last Modified |
| Unused | -- | 113-119 | -- | -- |
| Data | -- | 120-EOR | Data Segments | Variable Length |

Table D-3 RI MMDB Master File Format

ORIGINAL PAGE IS OF POOR QUALITY

Total Characters: 120

ORIGINAL PAGE IS
OF POOR QUALITY

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | AB | 34 | Measurement/Stimuli Nomenclature |
| 2 | AC | 10 | Data Range Low/High |
| 3 | AD | 08 | Data Range Unit |
| 4 | AE | 01 | Telemetry - Link, ID |
| 5 | AF | 03 | System Accuracy, Required |
| 6 | AG | 04 | Response Rate, Required |
| 7 | AH | 04 | Tape Recorder ID |
| 8 | AJ | 01 | System Management Monitor |
| 9 | AK | 03 | Payload Identifier Number |
| 10 | AL | 05 | Dedicated Display |
| 11 | AM | 01 | Caution and Warning |
| 12 | AN | 01 | Operational/Development |
| 13 | AP | 01 | Flight/Ground |
| 14 | AR | 06 | Flight |
| 15 | AS | 08 | Splice Installation Date |
| 16 | AW | 02 | Associated Subsystem No. 1 |
| 17 | AX | 02 | Associated Subsystem No. 2 |
| 18 | AY | 10 | Stimulus - Measurement No. 1 |
| 19 | AZ | 10 | Primary Parent Word |
| 20 | A1 | 03 | Engine to Controller Data Word |
| 21 | A2 | 03 | EIU to GPC Data Word |

Table D-4 RI MMDB Data Segment A

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 84

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | BA | 10 | Stimulus - Measurement No. 3 |
| 2 | BB | 10 | Associated M/S ID |
| 3 | BC | 01 | Delta |
| 4 | BD | 01 | Deltb |
| 5 | BE | 07 | Master Change Record Number (MCR NO.) |
| 6 | BF | 08 | MCR Number In Data Base Date |
| 7 | BG | 10 | PCIN/PRCB/CCB Number |
| 8 | BH | 08 | PCIN/PRCB/CCB Date |
| 9 | BJ | 08 | M/S Change Request Number |
| 10 | BK | 08 | M/S Change Request Date |
| 11 | BL | 01 | Flight Phase, Launch |
| 12 | BM | 01 | Flight Phase, Orbit |
| 13 | BN | 01 | Flight Phase, Entry |
| 14 | BP | 01 | Flight Phase, Aero |
| 15 | BR | 01 | Failure Mode Evaluation Analysis |
| 16 | BS | 01 | Site, Palmdale |
| 17 | BT | 01 | Site, Edwards |
| 18 | BU | 01 | Site, Post Landing and Safeing (PL&S) |
| 19 | BV | 01 | Site, Vertical Assembly Building (VAB) |
| 20 | BW | 01 | Cathode Ray Tube |
| 21 | BX | 01 | Site, PAD 39 |
| 22 | BY | 01 | Site, Maint. and Refurb. |
| 23 | BZ | 01 | Meas. Special Util (POGO "P") |

Table D-5 RI MMDB Data Segment B

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 172

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | CA | 01 | Umbilical Indicator |
| 2 | CB | 02 | RF Uplink |
| 3 | CC | 02 | Go-No Go Requirement |
| 4 | CD | 02 | Monitor Stimulus (KMON) |
| 5 | CE | 02 | Ground Decoder Pre Power MDM |
| 6 | CG | 34 | D&C Panel Nomenclature |
| 7 | CH | 02 | Parallel Switch Control |
| 8 | CJ | 02 | Switch Scan |
| 9 | CK | 02 | Crew Control Device |
| 10 | CL | 12 | Panel/Switch/Number |
| 11 | CM | 03 | Measurement Purpose Category |
| 12 | CP | 15 | Equipment Name - Source |
| 13 | CR | 01 | Switch Signal Type |
| 14 | CS | 12 | Equipment Reference Designator, Source |
| 15 | CT | 27 | XYZ Coordinates - Location |
| 16 | CU | 19 | Destination Coordinate Descriptor |
| 17 | CV | 12 | Equipment Ref. Designator, Destination |
| 18 | CW | 11 | Interface Ref. Document No. 1 |
| 19 | CX | 11 | Interface Ref. Document No. 2 |

Table D-6 RI MMDB Data Segment C

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 97

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | DA | 03 | BTU/MDM/ID Module Type (NON-OI) |
| 2 | DB | 01 | Master Events Controller |
| 3 | DC | 01 | Transducer |
| 4 | DD | 03 | MDM/FDM Module Type (OI) |
| 5 | DE | 01 | Downey GSE |
| 6 | DF | 04 | BTU/MDM/IU ID (NON-OI) |
| 7 | DG | 02 | BTU/MDM/IU Card Location (NON-OI) |
| 8 | DH | 02 | BTU/MDM/IU Channel Number (NON-OI) |
| 9 | DJ | 02 | BTU/MDM/IU Word Number (NON-OI) |
| 10 | DK | 02 | BTU/MDM/IU Start Bit Number (NON-OI) |
| 11 | DL | 02 | BTU/MDM/IU Number of Bits (NON-OI) |
| 12 | DM | 04 | GPC Required Input/Output Rate (NON-OI) |
| 13 | DN | 11 | GPC Data Bus Number (NON-OI) |
| 14 | DP | 02 | BTU/MDM/IU MIA Address (NON-OI) |
| 15 | DR | 04 | MDM/FDM ID (OI) |
| 16 | DS | 02 | MDM Card Location (OI) |
| 17 | DT | 02 | MDM Channel Number (OI) |
| 18 | DU | 02 | MDM Word Number (OI) |
| 19 | DV | 02 | MDM Start Bit Number (OI) |
| 20 | DW | 02 | MDM Number of Bits (OI) |
| 21 | DX | 03 | MDM Fetch Rate Required (OI) |
| 22 | DY | 02 | PCM MU Data Bus Number (OI) |
| 23 | DZ | 02 | MDM MIA Address (OI) |
| 24 | D1 | 06 | GPC CPDS Mnemonic-Level A Software |
| 25 | D2 | 06 | GPC CPDS Mnemonic-Level B GN&C |
| 26 | D3 | 06 | GPC CPDS Mnemonic-Level B SM |
| 27 | D4 | 06 | GPC CPDS Mnemonic-Level B VU |
| 28 | D5 | 06 | GPC CPDS Mnemonic-Level A Payload |
| 29 | D6 | 06 | GPC CPDS Mnemonic-Level B Payload |

Table D-7 RI MMDB Data Segment D

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 304

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | EA | 02 | Responsibility - Sensor |
| 2 | EB | 11 | Sensor Installation Drawing Number |
| 3 | EC | 15 | Sensor Part Number |
| 4 | ED | 15 | Signal Conditioner 1, Part Number |
| 5 | EE | 02 | Signal Conditioner 1, S/S Responsibility |
| 6 | EF | 11 | Signal Conditioner 1, Installation Drawing Number |
| 7 | EG | 15 | Signal Conditioner 2, Part Number |
| 8 | EH | 02 | Signal Conditioner 2, S/S Responsibility |
| 9 | EJ | 11 | Signal Conditioner 2, Installation Drawing Number |
| 10 | EK | 18 | Signal Conditioner No. 1 Input Plug and Pin |
| 11 | EL | 09 | Signal Conditioner No. 1 Package Reference Designator |
| 12 | EM | 15 | Signal Conditioner No. 1 Output Plug and Pin |
| 13 | EN | 11 | OI MDM in Plug/Pin |
| 14 | EP | 21 | Operation Nomenclature |
| 15 | ER | 24 | Unassigned |
| 16 | ES | 24 | Unassigned |
| 17 | ET | 24 | Unassigned |
| 18 | EU | 01 | FDM Loading Frequency |
| 19 | EV | 02 | Recorder 1 Track Number |
| 20 | EW | 06 | Calibration Code and Type |
| 21 | EX | 04 | Accuracy Actual |
| 22 | EY | 01 | Flight Test |
| 23 | EZ | 05 | FDM Channel Loading |
| 24 | E1 | 04 | GTA Remards Code |
| 25 | E2 | 18 | Signal Conditboner No. 2 Input Plug and Pin |
| 26 | E3 | 09 | Signal Conditioner No. 2 Package Reference Designator |
| 27 | E4 | 15 | Signal Conditioner No. 2 Output Plug and Pin |
| 28 | E5 | 07 | Signal Conditioner No. 2 Package Module Number |
| 29 | E6 | 02 | Recorder 2 Track Number |

Table D-8 RI MMDB Data Segment E

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 87

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | FA | 01 | Level 2 Control |
| 2 | FB | 01 | Main Propulsion Test, Artical, MPTA |
| 3 | FC | 01 | Ground Vibration Horizontal Test Artical, GVHT |
| 4 | FD | 01 | Ground Vibration Vertical Test Article, GVVT |
| 5 | FE | 01 | Flight Control Hydraulic Test Article, FCHL |
| 6 | FF | 01 | LDR 32 ORBIT C/O |
| 7 | FG | 01 | RCS FWD WSTF |
| 8 | FH | 01 | OMS/RCS WSTF |
| 9 | FJ | 01 | GTA T/V APS |
| 10 | FK | 01 | LDR 20 OPS O |
| 11 | FL | 01 | Signal Origin, Sail |
| 12 | FM | 01 | GTA THRMF |
| 13 | FN | 01 | Circuit Breaker |
| 14 | FP | 02 | Ace Use |
| 15 | FR | 12 | Unassigned |
| 16 | FS | 03 | FDM Center Frequency |
| 17 | FT | 01 | Toggle Buffer Option |
| 18 | FU | 01 | PCM Compiler Mix Option |
| 19 | FV | 12 | Switch Reference Designator 1 |
| 20 | FW | 12 | Switch Reference Designator 2 |
| 21 | FY | 04 | Transducer Accuracy |
| 22 | FZ | 11 | MDM/IU Plug and Pin (NON-OI) |
| 23 | F1 | 04 | Signal Conditioner Accuracy |
| 24 | F2 | 04 | Internal GPC Computation Rate - Ascent |
| 25 | F3 | 04 | Internal GPC Computation Rate - Entry |
| 26 | F4 | 04 | MDM/FDM Accuracy |

Table D-9 RI MMDB Data Segment F

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 220

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | GA | 15 | Meter Part Number |
| 2 | GB | 03 | GPC/SM MDM Fetch Rate Required |
| 3 | GC | 03 | OI PCM MU MDM Fetch Rate No. 2 - Actual |
| 4 | GD | 12 | Transducer Reference Designator |
| 5 | GE | 12 | D&C In-Plug and Pin |
| 6 | GF | 12 | D&C Reference Designator |
| 7 | GG | 04 | Meter Accuracy |
| 8 | GH | 08 | Entry Major Mode Validation - BFC |
| 9 | GK | 07 | Signal Conditioner 1 Package Module Number |
| 10 | GL | 10 | FDM In-Plug and Pin |
| 11 | GM | 09 | FDM Reference Designator |
| 12 | GN | 01 | Type of Measurement OI(IPCL) |
| 13 | GP | 09 | MDM Reference Designator |
| 14 | GR | 50 | Remarks |
| 15 | GS | 01 | Type of Measurement NON-OI |
| 16 | GT | 15 | Destination Equipment Name NON-OI |
| 17 | GU | 15 | Destination Equipment Name 1 |
| 18 | GV | 15 | Destination Equipment Name 2 |
| 19 | GW | 15 | Destination Equipment Name 3 |
| 20 | GX | 01 | GSE Station Set 7 |
| 21 | GY | 01 | GSE Station Set 8 |
| 22 | GZ | 01 | GSE Station Set 9 |
| 23 | G1 | 01 | GSE Station Set 16 |

Table D-10 RI MMDB Data Segment G

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 267

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | HA | 06 | Calibration Flags |
| 2 | HB | 01 | Degree of Curve Fit |
| 3 | HC | 14 | Poly Coeff. A0 Intercept |
| 4 | HD | 14 | Poly Coeff. A1 Intercept |
| 5 | HE | 14 | Poly Coeff. A2 Intercept |
| 6 | HF | 14 | Poly Coeff. A3 Intercept |
| 7 | HG | 14 | Poly Coeff. A4 Intercept |
| 8 | HH | 14 | Poly Coeff. A5 Intercept |
| 9 | HJ | 08 | Computed Calibration Data Point 0 Pct. |
| 10 | HK | 08 | Computed Calibration Data Point 10 Pct. |
| 11 | HL | 08 | Computed Calibration Data Point 20 Pct. |
| 12 | HM | 08 | Computed Calibration Data Point 30 Pct. |
| 13 | HN | 08 | Computed Calibration Data Point 40 Pct. |
| 14 | HP | 08 | Computed Calibration Data Point 50 Pct. |
| 15 | HR | 08 | Computed Calibration Data Point 60 Pct. |
| 16 | HS | 08 | Computed Calibration Data Point 70 Pct. |
| 17 | HT | 08 | Computed Calibration Data Point 80 Pct. |
| 18 | HU | 08 | Computed Calibration Data Point 90 Pct. |
| 19 | HV | 08 | Computed Calibration Data Point 100 Pct. |
| 20 | HW | 08 | Calibration Data Tolerance |
| 21 | HX | 11 | Measurement Calibration Effectivity |
| 22 | HY | 08 | Calibration Tape Date (MM/DD/YY) |
| 23 | HZ | 04 | Calibration Independent Variable |
| 24 | H1 | 10 | GPC Most Significant Bit Value |
| 25 | H2 | 06 | Zero (0) Percent Count Value |
| 26 | H3 | 06 | Fifty (50) Percent Count Value |
| 27 | H4 | 06 | One Hundred (100) Percent Count Value |
| 28 | H5 | 08 | Calibration Units |
| 29 | H6 | 09 | Engine Parameter Key Number |
| 30 | H7 | 06 | Key Number Intercept |
| 31 | H8 | 06 | Speed/Flow C Number |

Table D-11 RI MMDB Data Segment H

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 228

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | JA | 10 | Electrical Signal Range (Low-High) |
| 2 | JB | 08 | Electrical Signal (Units) |
| 3 | JC | 05 | RMS SIO Word Bit |
| 4 | JD | 02 | Prime Frame Increment |
| 5 | JE | 03 | First Prime Rate |
| 6 | JF | 03 | Time Slot |
| 7 | JG | 01 | Bit |
| 8 | JH | 03 | GSE Sample Rate |
| 9 | JJ | 12 | GSE Console Number |
| 10 | JK | 12 | Plug and Pin Out Origin |
| 11 | JL | 12 | Plug and Pin Out Return Origin |
| 12 | JM | 12 | Unit 1 Plug and Pin In |
| 13 | JN | 12 | Unit 1 Plug and Pin In Return |
| 14 | JP | 12 | Unit Number 1 Part Number |
| 15 | JR | 12 | Unit 1 Plug and Pin Out |
| 16 | JS | 12 | Unit 1 Plug and Pin Out Return |
| 17 | JT | 12 | Unit 2 Plug and Pin In |
| 18 | JU | 12 | Unit 2 Plug and Pin In Return |
| 19 | JV | 12 | Unit Number 2 Part Number |
| 20 | JW | 12 | BFS GPC Software Assembly Ref. Location |
| 21 | JX | 12 | BFS Mnemonic Name |
| 22 | JY | 12 | Unit 3 Input Plug and Pin In |
| 23 | JZ | 12 | Unit 3 Input Plug and Pin In Return |
| 24 | J1 | 02 | CIRCUIT CLASS |
| 25 | J2 | 11 | LRU Plug/Pin |

Table D-12 RI MMDB Data Segment J

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 168

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | KA | 12 | Signal Destination |
| 2 | KB | 12 | GSE Actual Assignment |
| 3 | KC | 12 | Unit 3 Plug and Pin Out Return |
| 4 | KD | 12 | Unit 1A Plug and Pin In |
| 5 | KE | 12 | Unit 1A Plug and Pin In Return |
| 6 | KF | 12 | Unit 1A Part Number |
| 7 | KG | 12 | Unit 1A Plug and Pin Out, GSE |
| 8 | KH | 12 | Unit 1A Plug and Pin Return |
| 9 | KJ | 12 | Unit 2A Plug and Pin In |
| 10 | KL | 12 | Unit 2A Plug and Pin Return |
| 11 | KM | 12 | Unit 2A Part Number |
| 12 | KN | 12 | Unit 2A Plug and Pin Out |
| 13 | KP | 12 | Unit 2A Plug and Pin Out Return |
| 14 | KR | 12 | Alternate Signal Source |

Table D-13 RI MMDB Data Segment K

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 121

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | LB | 05 | DTCS Address |
| 2 | LC | 12 | Arming Source |
| 3 | LD | 01 | Relay Type |
| 4 | LF | 12 | Plug and Pin in Control |
| 5 | LG | 09 | Control Unit |
| 6 | LH | 12 | Plug and Pin Out Control |
| 7 | LJ | 01 | Control In Relay State |
| 8 | LL | 06 | Instrumentation Test Acceptance Method Code |
| 9 | LM | 01 | Control Out Relay State |
| 10 | LN | 01 | Link Number - GSE |
| 11 | LP | 04 | Instrumentation Verification Requirements Code |
| 12 | LR | 02 | Socket Number - GSE |
| 13 | LS | 07 | Ascent Major Mode Validation - BFS |
| 14 | LT | 21 | GSE Accessibility |
| 15 | LU | 02 | GSE Location - Site |
| 16 | LV | 03 | GSE CRT |
| 17 | LW | 04 | RCDR(MPTA) |
| 18 | LX | 05 | GSE Dedicated Display |
| 19 | LY | 03 | DFI PCM MU MDM Fetch Rate - Actual |
| 20 | LZ | 10 | Ace Program Select |

Table D-14 RI MMDB Data Segment L

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 230

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | MA | 10 | Flight Test Requirement 1 |
| 2 | MB | 10 | Flight Test Requirement 2 |
| 3 | MC | 10 | Flight Test Requirement 3 |
| 4 | MD | 10 | Flight Test Requirement 4 |
| 5 | ME | 10 | Flight Test Requirement 5 |
| 6 | MF | 10 | Flight Test Requirement 6 |
| 7 | MG | 10 | Flight Test Requirement 7 |
| 8 | MH | 10 | Flight Test Requirement 8 |
| 9 | MJ | 10 | Flight Test Requirement 9 |
| 10 | MK | 10 | Flight Test Requirement 10 |
| 11 | ML | 10 | Flight Test Requirement 11 |
| 12 | MM | 10 | Flight Test Requirement 12 |
| 13 | MN | 10 | Flight Test Requirement 13 |
| 14 | MP | 10 | Flight Test Requirement 14 |
| 15 | MR | 10 | Flight Test Requirement 15 |
| 16 | MS | 10 | Flight Test Requirement 16 |
| 17 | MT | 10 | Flight Test Requirement 17 |
| 18 | MU | 10 | Flight Test Requirement 18 |
| 19 | MV | 10 | Flight Test Requirement 19 |
| 20 | MW | 10 | Flight Test Requirement 20 |
| 21 | MX | 10 | Flight Test Requirement 21 |
| 22 | MY | 10 | Flight Test Requirement 22 |
| 23 | MZ | 10 | Flight Test Requirement 23 |

Table D-15 RI MMDB Data Segment M

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 262

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | NA | 08 | Dependent Composite Data Pt. 01 |
| 2 | NB | 08 | Independent Composite Data Pt. 01 |
| 3 | NC | 08 | Dependent Composite Data Pt. 02 |
| 4 | ND | 08 | Independent Composite Data Pt. 02 |
| 5 | NE | 08 | Dependent Composite Data Pt. 03 |
| 6 | NF | 08 | Independent Composite Data Pt. 03 |
| 7 | NG | 08 | Dependent Composite Data Pt. 04 |
| 8 | NH | 08 | Independent Composite Data Pt. 04 |
| 9 | NJ | 08 | Dependent Composite Data Pt. 05 |
| 10 | NK | 08 | Independent Composite Data Pt. 05 |
| 11 | NL | 08 | Dependent Composite Data Pt. 06 |
| 12 | NM | 08 | Independent Composite Data Pt. 06 |
| 13 | NN | 08 | Dependent Composite Data Pt. 07 |
| 14 | NP | 08 | Independent Composite Data Pt. 07 |
| 15 | NR | 08 | Dependent Composite Data Pt. 08 |
| 16 | NS | 08 | Idependent Composite Data Pt. 08 |
| 17 | NT | 08 | Dependent Composite Data Pt. 09 |
| 18 | NU | 08 | Independent Composite Data Pt. 09 |
| 19 | NV | 08 | Dependent Composite Data Pt. 10 |
| 20 | NW | 08 | Independent Composite Data Pt. 10 |
| 21 | NX | 08 | Dependent Composite Data Pt. 11 |
| 22 | NY | 08 | Independent Composite Data Pt. 11 |
| 23 | N1 | 10 | SCM Lower/Upper Limits PH2 |
| 24 | N2 | 10 | SCM Lower/Upper Limits PH3 |
| 25 | N3 | 10 | SCM Lower/Upper Limits PH4 |
| 26 | N4 | 10 | SCM Lower/Upper Limits PH5 |
| 27 | N8 | 26 | Unassigned |
| 28 | N9 | 20 | Unassigned |

Table D-16 RI MMDB Data Segment N

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 194

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | PA | 10 | State or Lower/Upper Limits 01 |
| 2 | PB | 10 | State or Lower/Upper Limits 02 |
| 3 | PC | 10 | State or Lower/Upper Limits 03 |
| 4 | PD | 10 | State or Lower/Upper Limits C1 |
| 5 | PE | 10 | State or Lower/Upper Limits P1 |
| 6 | PF | 10 | SCM Lower/Upper Limit PH1 |
| 7 | PG | 02 | Group ID |
| 8 | PH | 03 | Turn On/Off Delay |
| 9 | PJ | 02 | Noise Filter |
| 10 | PK | 01 | Operational Alarm Class |
| 11 | PL | 01 | Critical Alarm Class |
| 12 | PM | 02 | Alarm Indicator |
| 13 | PN | 05 | Fault Summary Page Message ID. |
| 14 | PP | 28 | Fault Summary Page (FSP) Message Text |
| 15 | PR | 01 | Message Routing Class |
| 16 | PS | 01 | Message Priority |
| 17 | PT | 16 | Pre Condition Measurement 011 |
| 18 | PU | 02 | Pre Condition 1/2 Logic 01 |
| 19 | PV | 16 | Pre Condition Measurement 012 |
| 20 | PW | 02 | Pre Condition 2/3 Logic OPR 01 |
| 21 | PX | 16 | Pre Condition Measurement 013 |
| 22 | PY | 02 | Pre Condition 3/4 Logic CPR, 01 |
| 23 | PZ | 16 | Pre Condition Measurement 014 |
| 24 | P1 | 02 | SM Process Rate - FDA |
| 25 | P2 | 02 | SM Process Rate - Preconditions |
| 26 | P3 | 02 | SM Process Rate - SMM |
| 27 | P4 | 02 | SM Process Rate - SM Output |
| 28 | P5 | 02 | SM Process Rate - SM Downlist |
| 29 | P6 | 02 | SM Process Rate - SCM |
| 30 | P7 | 02 | SM Process Rate - Special Computation Input |
| 31 | P8 | 02 | SM Process Rate - Special Computation Output |
| 32 | P9 | 02 | Subsystem Table Identified |

Table D-17 RI MMDB Data Segment P

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 260

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | RA | 16 | Precondition Measurement 021 |
| 2 | RB | 02 | Precondition 1/2 Logic OPR. 02 |
| 3 | RC | 16 | Repcondition Measurement 022 |
| 4 | RD | 02 | Precondition 2/3 Logic OPR. 02 |
| 5 | RE | 16 | Precondition Measurement 023 |
| 6 | RF | 02 | Precondition 3/4 Logic OPR. 02 |
| 7 | RG | 16 | Precondition Measurement 024 |
| 8 | RH | 16 | Precondition Measurement 031 |
| 9 | RJ | 02 | Precondition 1/2 Logic OPR. 03 |
| 10 | RK | 16 | Precondition Measurement 032 |
| 11 | RL | 02 | Precondition 2/3 Logic OPR. 03 |
| 12 | RM | 16 | Precondition Measurement 033 |
| 13 | RN | 02 | Precondition 3/4 Logic OPR. 03 |
| 14 | RP | 16 | Precondition Measurement 034 |
| 15 | RR | 16 | Precondition Measurement C11 |
| 16 | RS | 02 | Precondition 1/2 Logic C1 |
| 17 | RT | 16 | Precondition Measurement C12 |
| 18 | RU | 02 | Precondition 2/3 Logic OPR C1 |
| 19 | RV | 16 | Precondition Measurement C13 |
| 20 | RW | 02 | Precondition 3/4 Logic OPR. C1 |
| 21 | RX | 16 | Precondition Measurement C14 |
| 22 | RY | 12 | SCM Discrepancy |
| 23 | RZ | 16 | SM Constant Initial Value |
| 24 | R1 | 03 | CRT Display Page #1 ID |
| 25 | R2 | 03 | CRT Display Page #2 ID |
| 26 | R3 | 03 | CRT Display Page #3 ID |
| 27 | R4 | 02 | SCM Mission Phase One |
| 28 | R5 | 02 | SCM Mission Phase Two |
| 29 | R6 | 02 | SCM Mission Phase Three |
| 30 | R7 | 02 | SCM Mission Phase Four |
| 31 | R8 | 02 | SCM Mission Phase Five |
| 32 | R9 | 03 | Level C Error Message Source |

Table D-18 RI MMDB Data Segment R

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 324

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | SA | 04 | Number of Half Words |
| 2 | SB | 02 | GPC Software Data Type - IBM |
| 3 | SC | 02 | GPC Software Data Start Bit - IBM |
| 4 | SD | 02 | GPC Software Data Number of Bits - IBM |
| 5 | SE | 08 | GPC Software Data Units - IBM |
| 6 | SF | 10 | GPC Software Data MSB Value - IBM |
| 7 | SG | 32 | GPC Software Data Compool Name - IBM |
| 8 | SH | 32 | GPC Software Data HAL Name - IBM/BFS |
| 9 | SJ | 01 | GPC Software Data - No. of Coefficients - IBM |
| 10 | SK | 10 | D&C Mnemonic |
| 11 | SL | 20 | CRT Name |
| 12 | SM | 04 | OI PCM MU Data RAM Address No. 1 - Actual |
| 13 | SN | 03 | OI PCM MU MDM Fetch Rate No. 1 - Actual |
| 14 | SP | 04 | PCM MU Data RAM Address Required |
| 15 | SR | 03 | PCM MU MDM Fetch Rate Required |
| 16 | SS | 14 | GPC Software Data-A0 Coefficient Value - IBM |
| 17 | ST | 14 | GPC Software Data - A1 Coefficient Value - IBM |
| 18 | SU | 14 | GPC Software Data - A2 Coefficient Value - IBM |
| 19 | SV | 14 | GPC Software Data - A3 Coefficient Value - IBM |
| 20 | SW | 16 | Data Half Word 1 Bit Format - NON-OI |
| 21 | SX | 16 | Data Half Word 2 Bit Format - NON-OI |
| 22 | SY | 16 | Data Half Word 1 Bit Format OI |
| 23 | SZ | 04 | PDI Address - Actual |
| 24 | S1 | 01 | I-Load Indicator |
| 25 | S2 | 02 | OI MDM PROM Sequence Length Required |
| 26 | 53 | 02 | OI MDM Response Data Word Position Required |
| 27 | S4 | 02 | Multi-Scale Indicator |
| 28 | S5 | 34 | Software Name |
| 29 | S6 | 20 | Display Destination |
| 30 | S7 | 08 | Switch Position |
| 31 | S8 | 10 | D&C Parent Word |

Table D-19 RI MMDB Data Segment S

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 177

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | TA | 08 | Downlink Byte Bit Format |
| 2 | TB | 04 | Data Type |
| 3 | TC | 02 | Downlink Start Bit |
| 4 | TD | 02 | Downlink No. of Bits |
| 5 | TE | 10 | Most Significant Bit Value |
| 6 | TF | 10 | Offset Value |
| 7 | TH | 02 | Redundant GPC Source Functional Element ID |
| 8 | TJ | 04 | OI PCM MU Data RAM Address No. 2 - Actual |
| 9 | TK | 20 | Redundant GPC Destin. Functional Element ID |
| 10 | TL | 02 | Single GPC Source Functional Element ID |
| 11 | TM | 04 | DFI PCM MU Data RAM Address - Actual |
| 12 | TN | 20 | Single GPC Destination Functional Element ID |
| 13 | TP | 02 | Downlist Homogeneous Set Number Required |
| 14 | TR | 02 | Downlist Homogeneous Set Number Actual - IBM/BFS |
| 15 | TS | 06 | Scale Factor (Volts/Unit) |
| 16 | TT | 10 | Downlink Compiler Reference M/S ID |
| 17 | TU | 04 | GPC Software Data Update Rate Required |
| 18 | TV | 04 | PCM MU Fetch PROM First Command Required |
| 19 | TW | 04 | PCM MU Fetch PROM First Command Actual |
| 20 | TX | 06 | GPC Software Mnemonic |
| 21 | TY | 01 | GPC Input/Output Compute (I/O/C) |
| 22 | TZ | 04 | PDI Address Required |
| 23 | T1 | 10 | Hardware M/S ID |
| 24 | T2 | 10 | Mass Memory Address |
| 25 | T3 | 06 | Calibration Number |
| 26 | T4 | 06 | FSSR Control Number |
| 27 | T5 | 04 | OI MDM PROM Sequence Start Address Required |
| 28 | T6 | 04 | OI MDM PROM Sequence Start Address Actual |
| 29 | T7 | 02 | OI MDM PROM Sequence Length Actual |
| 30 | T8 | 02 | OI MDM Response Data Word Position Actual |
| 31 | T9 | 02 | PCM MU Indicator |

Table D-20 RI MMDB Data Segment T

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 673

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | UA | 05 | GPC Input/Output Rate Required - MC0 |
| 2 | UB | 05 | GPC Update Rate Required - MC0 |
| 3 | UC | 08 | GPC Source Software Function - MC0 |
| 4 | UD | 55 | GPC Destination Software FNCT - MC0 |
| 5 | UE | 13 | GPC Software Data Description - MC0 |
| 6 | UF | 32 | GPC Software HAL Name - MC0 |
| 7 | UG | 32 | GPC Software COMPOOL Name - MC0 |
| 8 | UH | 05 | GPC Input/Output Rate Required - MC1 |
| 9 | UJ | 05 | GPC Update Rate Required - MC1 |
| 10 | UK | 08 | GPC Source Software Function - MC1 |
| 11 | UL | 55 | GPC Destination Software FNCT - MC1 |
| 12 | UM | 13 | GPC Software Data Description - MC1 |
| 13 | UN | 32 | GPC Software HAL Name - MC1 |
| 14 | UP | 32 | GPC Software COMPOOL Name - MC1 |
| 15 | UR | 05 | GPC Input/Output Rate Required - MC2 |
| 16 | US | 05 | GPC Update Rate Required - MC2 |
| 17 | UT | 08 | GPC Source Software Function - MC2 |
| 18 | UU | 55 | GPC Destination Software FNCT - MC2 |
| 19 | UV | 13 | GPC Software Data Description - MC2 |
| 20 | UW | 32 | GPC Software HAL Name - MC2 |
| 21 | UX | 32 | GPC Software COMPOOL Name - MC2 |
| 22 | UY | 05 | GPC Input/Output Rate Required - MC3 |
| 23 | UZ | 05 | GPC Update Rate Required - MC3 |
| 24 | U1 | 08 | GPC Source Software Function - MC3 |
| 25 | U2 | 55 | GPC Destination Software FNCT - MC3 |
| 26 | U3 | 13 | GPC Software Data Description - MC3 |
| 27 | U4 | 32 | GPC Software HAL Name - MC3 |
| 28 | U5 | 32 | GPC Software COMPOOL Name - MC3 |
| 29 | U6 | 05 | GPC Input/Output Rate Required - MC4 |
| 30 | U7 | 05 | GPC Update Rate Required - MC4 |
| 31 | U8 | 08 | GPC Source Software Function - MC4 |
| 32 | U9 | 55 | GPC Destination Software FNCT - MC4 |

Table D-21 RI MMDB Data Segment U

Total characters: 677

ORIGINAL PAGE IS
OF POOR QUALITY

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | VA | 13 | GPC Software Data Description - MC4 |
| 2 | VB | 32 | GPC Software HAL Name - MC4 |
| 3 | VC | 32 | GPC Software COMPOOL Name - MC4 |
| 4 | VD | 05 | GPC Input/Output Rate Required - MC6 |
| 5 | VE | 05 | GPC Update Rate Required - MC6 |
| 6 | VF | 08 | GPC Source Software Function - MC6 |
| 7 | VG | 55 | GPC Destination Software FNCT - MC6 |
| 8 | VH | 13 | GPC Software Data Description - MC6 |
| 9 | VJ | 32 | GPC Software HAL Name - MC6 |
| 10 | VK | 32 | GPC Software COMPOOL Name - MC6 |
| 11 | VL | 05 | GPC Input/Output Rate Required - MC7 |
| 12 | VM | 05 | GPC Update Rate Required - MC7 |
| 13 | VN | 08 | GPC Source Software Function - MC7 |
| 14 | VP | 55 | GPC Destination Software FNCT - MC7 |
| 15 | VR | 13 | GPC Software Data Description - MC7 |
| 16 | VS | 32 | GPC Software HAL Name - MC7 |
| 17 | VT | 32 | GPC Software COMPOOL Name - MC7 |
| 18 | VU | 05 | GPC Input/Output Rate Required - MC8 |
| 19 | VV | 05 | GPC Update Rate Required - MC8 |
| 20 | VW | 08 | GPC Source Software Function - MC8 |
| 21 | VX | 55 | GPC Destination Software FNCT - MC8 |
| 22 | VY | 13 | GPC Software Data Description - MC8 |
| 23 | VZ | 32 | GPC Software HAL Name - MC8 |
| 24 | V1 | 32 | GPC Software COMPOOL Name - MC8 |
| 25 | V2 | 05 | GPC Input/Output Rate Required - MC9 |
| 26 | V3 | 05 | GPC Update Rate Required - MC9 |
| 27 | V4 | 08 | GPC Source Software Function - MC9 |
| 28 | V5 | 55 | GPC Destination Software FNCT - MC9 |
| 29 | V6 | 13 | GPC Software Data Description - MC9 |
| 30 | V7 | 32 | GPC Software HAL Name - MC9 |
| 31 | V8 | 32 | GPC Software COMPOOL Name - MC9 |

Table D-22 RI MMDB Data Segment V

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 354

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | WA | 10 | P/L Intfc M/SID Xref |
| 2 | WB | 04 | Dnlst Req Rate Format -Spare- |
| 3 | WC | 18 | Dnlst Act Asgmt Format -Spare- |
| 4 | WD | 04 | Dnlst Req Rate Format -Spare- |
| 5 | WE | 18 | Dnlst Act Asgmt Format -Spare- |
| 6 | WF | 04 | Dnlst Req Rate Format -Spare- |
| 7 | WG | 18 | Dnlst Act Asgmt Format -Spare- |
| 8 | WH | 04 | Dnlst Req Rate Format -Spare- |
| 9 | WJ | 18 | Dnlst Act Asgmt Format -Spare- |
| 10 | WK | 04 | Dnlst Req Rate Format -Spare- |
| 11 | WL | 18 | Dnlst Act Asgmt Format -Spare- |
| 12 | WM | 04 | Dnlst Req Rate Format -Spare- |
| 13 | WN | 18 | Dnlst Act Asgmt Format -Spare- |
| 14 | WP | 04 | Dnlst Req Rate Format -Spare- |
| 15 | WR | 18 | Dnlst Act Asgmt Format -Spare- |
| 16 | WS | 04 | Dnlst Req Rate Format -Spare- |
| 17 | WT | 18 | Dnlst Act Asgmt Format -Spare- |
| 18 | WU | 04 | Dnlst Req Rate Format -Spare- |
| 19 | WV | 18 | Dnlst Act Asgmt Format -Spare- |
| 20 | WW | 04 | Dnlst Req Rate Format -Spare- |
| 21 | WX | 18 | Dnlst Act Asgmt Format -Spare- |
| 22 | WY | 04 | Dnlst Req Rate Format -Spare- |
| 23 | WZ | 18 | Dnlst Act Asgmt Format -Spare- |
| 24 | W1 | 04 | Dnlst Req Rate Format -Spare- |
| 25 | W2 | 18 | Dnlst Act Asgmt Format -Spare- |
| 26 | W3 | 04 | Dnlst Req Rate Format -Spare- |
| 27 | W4 | 18 | Dnlst Act Asgmt Format -Spare- |
| 28 | W5 | 04 | Dnlst Req Rate Format -Spare- |
| 29 | W6 | 18 | Dnlst Act Asgmt Format -Spare- |
| 30 | W7 | 04 | Dnlst Req Rate Format -Spare- |
| 31 | W8 | 18 | Dnlst Act Asgmt Format -Spare- |
| 32 | W9 | 14 | Sig. Cond. Serial No. 2 |

Table D-23 RI MMDB Data Segment W

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 447

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | XA | 03 | CRT Message Source |
| 2 | XB | 04 | PCM Fetch Command No. 2 - Actual |
| 3 | XC | 26 | Unassigned |
| 4 | XD | 20 | Unassigned |
| 5 | XE | 04 | Dnlnk Req Rate Format -Spare- |
| 6 | XF | 26 | Dnlnk Req Asgmt Format -Spare- |
| 7 | XG | 20 | Dnlnk Act Asgmt Format -Spare- |
| 8 | XH | 04 | Dnlnk Req Rate Format -Spare- |
| 9 | XJ | 26 | Dnlnk Req Asgmt Format -Spare- |
| 10 | XK | 20 | Dnlnk Act Asgmt Format -Spare- |
| 11 | XL | 04 | Dnlnk Req Rate Format -Spare- |
| 12 | XM | 26 | Dnlnk Req Asgmt Format -Spare- |
| 13 | XN | 20 | Dnlnk Act Asgmt Format -Spare- |
| 14 | XP | 04 | Dnlnk Req Rate Format -Spare- |
| 15 | XR | 26 | Dnlnk Req Asgmt Format -Spare- |
| 16 | XS | 20 | Dnlnk Act Asgmt Format -Spare- |
| 17 | XT | 04 | Dnlnk Req Rate Format -Spare- |
| 18 | XU | 26 | Dnlnk Req Asgmt Format -Spare- |
| 19 | XV | 20 | Dnlnk Act Asgmt Format -Spare- |
| 20 | XW | 04 | Data Compression Bit Aperture (MPTA) |
| 21 | XX | 26 | Unassigned |
| 22 | XY | 20 | Unassigned |
| 23 | XZ | 02 | Unassigned |
| 24 | X1 | 04 | Dnlst Req Rate Format -Spare- |
| 25 | X2 | 18 | Dnlst Act Asgmt Format -Spare- |
| 26 | X3 | 04 | Dnlst Req Rate Format -Spare- |
| 27 | X4 | 18 | Dnlst Act Asgmt Format -Spare- |
| 28 | X5 | 04 | Dnlst Req Rate Format -Spare- |
| 29 | X6 | 18 | Dnlst Act Asgmt Format -Spare- |
| 30 | X7 | 04 | Dnlst Req Rate Format -Spare- |
| 31 | X8 | 18 | Dnlst Act Asgmt Format -Spare- |
| 32 | X9 | 04 | Dnlst Req Rate Format -Spare- |

Table D-24 RI MMDB Data Segment X

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 341

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | ZA | 18 | Dnlst Act Asgmt Format -Spare- |
| 2 | ZB | 04 | Dnlst Req Rate Format -Spare- |
| 3 | ZC | 18 | Dnlst Act Asgmt Format -Spare- |
| 4 | ZD | 04 | Dnlst Req Rate Format -Spare- |
| 5 | ZE | 18 | Dnlst Act Asgmt Format -Spare- |
| 6 | ZF | 14 | Transducer Serial Number |
| 7 | ZG | 14 | Signal Conditioner Serial Number |
| 8 | ZH | 04 | Dnlst Req Rate Format -Spare- |
| 9 | ZJ | 18 | Dnlst Act Asgmt Format -Spare- |
| 10 | ZM | 02 | Unassigned |
| 11 | ZN | 02 | Unassigned |
| 12 | ZP | 00 | Unassigned |
| 13 | ZR | 04 | Dnlnk Req Rate Format -Spare- |
| 14 | ZS | 26 | Dnlnk Req Asgmt Format -Spare- |
| 15 | ZT | 20 | Dnlnk Act Asgmt Format -Spare- |
| 16 | ZU | 04 | Dnlnk Req Rate Format -Spare- |
| 17 | ZV | 26 | Dnlnk Req Asgmt Format -Spare- |
| 18 | ZW | 20 | Dnlnk Act Asgmt Format -Spare- |
| 19 | ZX | 04 | Dnlnk Req Rate Format -Spare- |
| 20 | ZY | 26 | Dnlnk Req Asgmt Format -Spare- |
| 21 | ZZ | 20 | Dnlnk Act Asgmt Format -Spare- |
| 22 | Z1 | 03 | Effectivity Code |
| 23 | Z2 | 07 | Vehicle Number |
| 24 | Z3 | 03 | Pending Sequence Number |
| 25 | Z4 | 01 | Pending Action Code |
| 26 | Z5 | 01 | Action Code |
| 27 | Z6 | 10 | OLD M/SID |
| 28 | Z7 | 04 | Dnlnk Req Rate Format -Spare- |
| 29 | Z8 | 26 | Dnlnk Req Asgmt Format -Spare- |
| 30 | Z9 | 20 | Dnlnk Act Asgmt Format -Spare- |

Table D-25 RI MMDB Data Segment Z

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 380

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 1A | 04 | Dnlnk Req Rate Format 129 Ascent |
| 2 | 1B | 26 | Dnlnk Req Asgmt Format 129 Ascent |
| 3 | 1C | 20 | Dnlnk Act Asgmt Format 129 Ascent |
| 4 | 1D | 04 | Dnlnk Req Rate Format 161 Orbit |
| 5 | 1E | 26 | Dnlnk Req Asgmt Format 161 Orbit |
| 6 | 1F | 20 | Dnlnk Act Asgmt Format 161 Orbit |
| 7 | 1G | 04 | Dnlnk Req Rate Format 164 Entry |
| 8 | 1H | 26 | Dnlnk Req Asgmt Format 164 Entry |
| 9 | 1J | 20 | Dnlnk Act Asgmt Format 164 Entry |
| 10 | 1K | 04 | Unassigned |
| 11 | 1L | 26 | Unassigned |
| 12 | 1M | 20 | KSC Data Range State Description |
| 13 | 1N | 04 | Dnlnk Req Rate Format 166 Subsys C/O B |
| 14 | 1P | 26 | Dnlnk Req Asgmt Format 166 Subsys C/O B |
| 15 | 1R | 20 | Dnlnk Act Asgmt Format 166 Subsys C/O B |
| 16 | 1S | 04 | Dnlnk Req Rate Format 171 - FRT |
| 17 | 1T | 26 | Dnlnk Req Asgmt Format 171 - FRT |
| 18 | 1U | 20 | Dnlnk Act Asgmt Format 171 - FRT |
| 19 | 1V | 04 | Dnlnk Req. Rate Format 162 Entry C/O |
| 20 | 1W | 26 | Dnlnk Req. Asgmt Format 162 Entry C/O |
| 21 | 1X | 20 | Dnlnk Actual Asgmt Format 162 Entry C/O |
| 22 | 1Y | 04 | Dnlnk Req. Rate Format 163 GPC/MM C/O |
| 23 | 1Z | 26 | Dnlnk Req. Asgmt Format 163 GPC/MM C/O |

Table D-26 RI MMDB Data Segment 1

ORIGINAL PAGE IS
OF POOR QUALITY

Total Characters: 374

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 2A | 20 | Dnlnk Actual Asgmt Format 163 GPC/MM C/O |
| 2 | 2B | 04 | Dnlnk Req. Rate Format 160 Prelaunch |
| 3 | 2C | 26 | Dnlnk Req. Asgmt Format 160 Prelaunch |
| 4 | 2D | 20 | Dnlnk Actual Asgmt Format 160 Prelaunch |
| 5 | 2E | 04 | Dnlnk Req. Rate Format -Spare- |
| 6 | 2F | 26 | Dnlnk Req. Asgmt Format -Spare- |
| 7 | 2G | 20 | Dnlnk Actual Asgmt Format -Spare- |
| 8 | 2H | 04 | Dnlnk Req. Rate Format 167 Prelaunch |
| 9 | 2J | 26 | Dnlnk Req. Asgmt Format 167 Prelaunch |
| 10 | 2K | 20 | Dnlnk Actual Asgmt Format 167 Prelaunch |
| 11 | 2L | 04 | Dnlnk Req. Rate Format 169 Orbit 3/4 |
| 12 | 2M | 26 | Dnlnk Req. Asgmt Format 169 Orbit 3/4 |
| 13 | 2N | 20 | Dnlnk Actual Asgmt Format 169 Orbit 3/4 |
| 14 | 2P | 04 | Dnlnk Req. Rate Format 172 Entry C/O 3/4 |
| 15 | 2R | 26 | Dnlnk Req. Asgmt Format 172 Entry C/O 3/4 |
| 16 | 2S | 20 | Dnlnk Actual Asgmt Format 172 Entry C/O 3/4 |
| 17 | 2T | 04 | Dnlnk Req. Rate Format 002 Ascent |
| 18 | 2U | 26 | Dnlnk Req. Asgmt Format 002 Ascent |
| 19 | 2V | 20 | Dnlnk Actual Asgmt Format 002 Ascent |
| 20 | 2W | 04 | Dnlnk Req. Rate Format 003 Orbit |
| 21 | 2X | 26 | Dnlnk Req. Asgmt Format 003 Orbit |
| 22 | 2Y | 20 | Dnlnk Actual Asgmt Format 003 Orbit |
| 23 | 2Z | 04 | Dnlnk Req. Rate Format 004 Entry C/O |

Table D-27 RI MMDB Data Segment 2

ORIGINAL PAGE IS
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Total Characters: 396

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 3A | 26 | Dnlnk Req. Asgmt Format 004 Entry C/O |
| 2 | 3B | 20 | Dnlnk Actual Asgmt Format 004 Entry C/O |
| 3 | 3C | 04 | Dnlnk Req. Rate Format 005 Entry |
| 4 | 3D | 26 | Dnlnk Req. Asgmt Format 005 Entry |
| 5 | 3E | 20 | Dnlnk Actual Asgmt Format 005 Entry |
| 6 | 3F | 04 | Dnlnk Req. Rate Format 006 GPC/MM C/O |
| 7 | 3G | 26 | Dnlnk Req. Asgmt Format 006 GPC/MM C/O |
| 8 | 3H | 20 | Dnlnk Actual Asgmt Format 006 GPC/MM C/O |
| 9 | 3J | 04 | Dnlnk Req. Rate Format 007 Subsys C/O A |
| 10 | 3K | 26 | Dnlnk Req. Asgmt Format 007 Subsys C/O A |
| 11 | 3L | 20 | Dnlnk Actual Asgmt Format 007 Subsys C/O A |
| 12 | 3M | 04 | Dnlnk Req. Rate Format 008 Orbit 3/4 |
| 13 | 3N | 26 | Dnlnk Req. Asgmt Format 008 Orbit 3/4 |
| 14 | 3P | 20 | Dnlnk Actual Asgmt Format 008 Orbit 3/4 |
| 15 | 3R | 04 | Dnlnk Req. Rate Format 009 Entry C/O 3/4 |
| 16 | 3S | 26 | Dnlnk Req. Asgmt Format 009 Entry C/O 3/4 |
| 17 | 3T | 20 | Dnlnk Actual Asgmt Format 009 Entry C/O 3/4 |
| 18 | 3U | 04 | Dnlnk Req. Rate Format 010 GPC/MM 3/4 |
| 19 | 3V | 26 | Dnlnk Req. Asgmt Format 010 GPC/MM 3/4 |
| 20 | 3W | 20 | Dnlnk Actual Asgmt Format 010 GPC/MM 3/4 |
| 21 | 3X | 04 | Dnlnk Req. Rate Format 011 Orbit 5/6 |
| 22 | 3Y | 26 | Dnlnk Req. Asgmt Format 011 Orbit 5/6 |
| 23 | 3Z | 20 | Dnlnk Actual Asgmt Format 011 Orbit 5/6 |

Table D-28 RI MMDB Data Segment 3

ORIGINAL PAGE IS
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Total Characters: 360

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 4A | 04 | Dnlnk Req Rate Format 140 DFI |
| 2 | 4B | 26 | Dnlnk Req Asgmt Format 140 DFI |
| 3 | 4C | 20 | Dnlnk Act Asgmt Format 140 DFI |
| 4 | 4D | 04 | Dnlnk Req Rate Format 199 MPTA |
| 5 | 4E | 26 | Dnlnk Req Asgmt Format 199 MPTA |
| 6 | 4F | 20 | Dnlnk Act Asgmt Format 199 MPTA |
| 7 | 4G | 04 | Dnlnk Req Rate Format -Spare- |
| 8 | 4H | 26 | Dnlnk Req Asgmt Format -Spare- |
| 9 | 4J | 20 | Dnlnk Act Asgmt Format -Spare- |
| 10 | 4K | 04 | Dnlnk Req Rate Format 017 ENTRY C/O 5/6 |
| 11 | 4L | 26 | Dnlnk Req Asgmt Format 017 ENTRY C/O 5/6 |
| 12 | 4M | 20 | Dnlnk Act Asgmt Format 017 ENTRY C/O 5/6 |
| 13 | 4N | 04 | Dnlnk Req Rate Format 018 GPC/MM 5/6 |
| 14 | 4P | 26 | Dnlnk Req Asgmt Format 018 GPC/MM 5/6 |
| 15 | 4R | 20 | Dnlnk Act Asgmt Format 018 GPC/MM 5/6 |
| 16 | 4S | 04 | Dnlnk Req Rate Format 014 KSC PRELAUNCH CO |
| 17 | 4T | 26 | Dnlnk Req Asgmt Format 014 KSC PRELAUNCH CO |
| 18 | 4U | 20 | Dnlnk Act Asgmt Format 014 KSC PRELAUNCH CO |
| 19 | 4V | 04 | Dnlnk Req Rate Format 015 SUBSYS C/O B |
| 20 | 4W | 26 | Dnlnk Req Asgmt Format 015 SUBSYS C/O B |
| 21 | 4X | 20 | Dnlnk Act Asgmt Format 015 SUBSYS C/O B |
| 22 | 4Y | 04 | Dnlnk Req Rate Format 016 FRT |
| 23 | 4Z | 26 | Dnlnk Req Asgmt Format 016 FRT |

Table D-29 RI MMDB Data Segment 4

ORIGINAL PAGE IS
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Total Characters: 374

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 5A | 20 | Dnlnk Act Asgmt Format 016 FRT |
| 2 | 5B | 04 | Dnlnk Req Rate Format -Spare- |
| 3 | 5C | 26 | Dnlnk Req Asgmt Format -Spare- |
| 4 | 5D | 20 | Dnlnk Act Asgmt Format -Spare- |
| 5 | 5E | 04 | Dnlnk Req Rate Format 173 GPC/MM 3/4 |
| 6 | 5F | 26 | Dnlnk Req Asgmt Format 173 GPC/MM 3/4 |
| 7 | 5G | 20 | Dnlnk Act Asgmt Format 173 GPC/MM 3/4 |
| 8 | 5H | 04 | Dnlnk Req Rate Format 174 ORBIT 5/6 |
| 9 | 5J | 26 | Dnlnk Req Asgmt Format 174 ORBIT 5/6 |
| 10 | 5K | 20 | Dnlnk Act Asgmt Format 174 ORBIT 5/6 |
| 11 | 5L | 04 | Dnlnk Req Rate Format 175 ENTRY C/O 5/6 |
| 12 | 5M | 26 | Dnlnk Req Asgmt Format 175 ENTRY C/O 5/6 |
| 13 | 5N | 20 | Dnlnk Act Asgmt Format 175 ENTRY C/O 5/6 |
| 14 | 5P | 04 | Dnlnk Req Rate Format 176 GPC/MM 5/6 |
| 15 | 5R | 26 | Dnlnk Req Asgmt Format 176 GPC/MM 5/6 |
| 16 | 5S | 20 | Dnlnk Act Asgmt Format 176 GPC/MM 5/6 |
| 17 | 5T | 04 | Dnlnk Req Rate Format 085 NSP |
| 18 | 5U | 26 | Dnlnk Req Asgmt Format 085 NSP |
| 19 | 5V | 20 | Dnlnk Act Asgmt Format 085 NSP |
| 20 | 5W | 04 | Dnlnk Req Rate Format 170 NSP |
| 21 | 5X | 26 | Dnlnk Req Asgmt Format 170 NSP |
| 22 | 5Y | 20 | Dnlnk Act Asgmt Format 170 NSP |
| 23 | 5Z | 04 | Dnlnk Req Rate Format -Spare- |

Table D-30 RI MMDB Data Segment 5

ORIGINAL PAGE IS
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Total Characters: 270

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 6A | 26 | Dnlnk Req Asgmt Format -Spare- |
| 2 | 6B | 20 | Dnlnk Act Asgmt Format -Spare- |
| 3 | 6C | 04 | MDM #1 Reset |
| 4 | 6D | 04 | Dnlst Req Rate Format 052 MM (51.2) KSC |
| 5 | 6E | 18 | Dnlst Act Asgmt Format 052 MM (51.2) KSC |
| 6 | 6F | 04 | Dnlst Req Rate Format 034 MM UTILITY (SS1) |
| 7 | 6G | 18 | Dnlst Act Asgmt Format 034 MM UTILITY (SS1) |
| 8 | 6H | 04 | Dnlst Req Rate Format 047 MM Utility (SS2) |
| 9 | 6J | 18 | Dnlst Act Asgmt Format 047 MM Utility (SS2) |
| 10 | 6K | 04 | Dnlst Req Rate Format 048 MM (12.8) KSC |
| 11 | 6L | 18 | Dnlst Act Asgmt Format 048 MM (12.8) KSC |
| 12 | 6M | 04 | Dnlst Req Rate Format 039 OPS O (SS1) |
| 13 | 6N | 18 | Dnlst Act Asgmt Format 039 OPS O (SS1) |
| 14 | 6P | 04 | Dnlst Req Rate Format 040 OPS O (SS2) |
| 15 | 6R | 18 | Dnlst Act Asgmt Format 040 OPS O (SS2) |
| 16 | 6S | 04 | Dnlst Req Rate Format 020 OPS O (KSC) |
| 17 | 6T | 18 | Dnlst Act Asgmt Format 020 OPS O (KSC) |
| 18 | 6U | 04 | Dnlst Req Rate Format 041 SM9 I C/O (SS2) |
| 19 | 6V | 18 | Dnlst Act Asgmt Format 041 SM9 I C/O (SS2) |
| 20 | 6W | 04 | Dnlst Req Rate Format 043 GNC9 Precnt (SS2) |
| 21 | 6X | 18 | Dnlst Act Asgmt Format 043 GNC9 Precnt (SS2) |
| 22 | 6Y | 04 | Dnlst Req Rate Format 045 SM9 FRT (SS2) |
| 23 | 6Z | 18 | Dnlst Act Asgmt Format 045 SM9 FRT (SS2) |

Table D-31 RI MMDB Data Segment 6

ORIGINAL PAGE IS
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Total Characters: 246

| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 7A | 04 | Dnlst Req Rate Format -Spare- |
| 2 | 7B | 18 | Dnlst Act Asgmt Format -Spare- |
| 3 | 7C | 04 | Dnlst Req Rate Format 021 Ascent |
| 4 | 7D | 18 | Dnlst Act Asgmt Format 021 Ascent |
| 5 | 7E | 04 | Dnlst Req Rate Format 022 Orbit |
| 6 | 7F | 18 | Dnlst Act Asgmt Format 022 Orbit |
| 7 | 7G | 04 | Dnlst Req Rate Format 023 Entry |
| 8 | 7H | 18 | Dnlst Act Asgmt Format 023 Entry |
| 9 | 7J | 04 | Dnlst Req Rate Format 024 SM2 SM ORB |
| 10 | 7K | 18 | Dnlst Act Asgmt Format 024 SM2 SM ORB |
| 11 | 7L | 04 | Dnlst Req Rate Format -Spare- |
| 12 | 7M | 18 | Dnlst Act Asgmt Format -Spare- |
| 13 | 7N | 04 | Dnlst Req Rate Format 030 SM9 I C/O (SS1) |
| 14 | 7P | 18 | Dnlst Act Asgmt Format 030 SM9 I C/O (SS1) |
| 15 | 7R | 04 | Dnlst Req Rate Format 031 GNC9 Precount (SS1) |
| 16 | 7S | 18 | Dnlst Act Asgmt Format 031 GNC9 Precount (SS1) |
| 17 | 7T | 04 | Dnlst Req Rate Format 032 GNC8 Orbit C/O |
| 18 | 7U | 18 | Dnlst Act Asgmt Format 032 GNC8 Orbit C/O |
| 19 | 7V | 04 | Dnlst Req Rate Format 033 SM9 FRT PLM (SS1) |
| 20 | 7W | 18 | Dnlst Act Asgmt Format 033 SM9 FRT PLM (SS1) |
| 21 | 7X | 04 | Dnlst Req Rate Format 042 SM9 KSC I C/O |
| 22 | 7Y | 18 | Dnlst Act Asgmt Format 042 SM9 KSC I C/O |
| 23 | 7Z | 04 | Dnlst Req Rate Format 044 GNC9 PRE KSC |

Table D-32 RI MMDB Data Segment 7

Total characters: 260

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| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 8A | 18 | Dnlst Act Asgmt Format 044 GNC9 PRE KSC |
| 2 | 8B | 04 | Dnlst Req Rate Format 046 SM9 FRT KSC |
| 3 | 8C | 18 | Dnlst Act Asgmt Format 046 SM9 FRT KSC |
| 4 | 8D | 04 | Dnlst Req Rate Format 012 BFCS Ascent |
| 5 | 8E | 18 | Dnlst Act Asgmt Format 012 BFCS Ascent |
| 6 | 8F | 04 | Dnlst Req Rate Format 013 BFCS Entry |
| 7 | 8G | 18 | Dnlst Act Asgmt Format 013 BFCS Entry |
| 8 | 8H | 04 | Dnlst Req Rate Format BFCS |
| 9 | 8J | 18 | Dnlst Act Asgmt Format BFCS |
| 10 | 8K | 04 | DNHST REQ RATE FORMAT BFCS |
| 11 | 8L | 18 | Dnlst Act Asgmt Format BFCS |
| 12 | 8M | 04 | Dnlst Req Rate Format BFCS |
| 13 | 8N | 18 | Dnlst Act Asgmt Format BFCS |
| 14 | 8P | 04 | Dnlst Req Rate Format 053 GNC9 FC SYS KSC |
| 15 | 8R | 18 | Dnlst Act Asgmt Format 053 GNC9 FC SYS KSC |
| 16 | 8S | 04 | Dnlst Req Rate Format -Spare- |
| 17 | 8T | 18 | Dnlst Act Asgmt Format -Spare- |
| 18 | 8U | 04 | Dnlst Req Rate Format 051 MPTA |
| 19 | 8V | 18 | Dnlst Act Asgmt Format 051 MPTA |
| 20 | 8W | 04 | Dnlst Req Rate Format 050 Toggle Buffer 5 |
| 21 | 8X | 18 | Dnlst Act Asgmt Format 050 Toggle Buffer 5 |
| 22 | 8Y | 04 | Dnlst Req Rate Format 049 GPC Self Test |
| 23 | 8Z | 18 | Dnlst Act Asgmt Format 049 GPC Self Test |

Table D-33 RI MMDB Data Segment 8

Total Characters: 77

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| Field No. | RI ID | Field Length | RI Element Name |
|---|---|---|---|
| 1 | 9A | 06 | Downlist MSCR Number |
| 2 | 9B | 06 | Downlink MSCR Number |
| 3 | 9C | 06 | IPCL Control Number |
| 4 | 9D | 05 | GPC Address |
| 5 | 9E | 05 | DSM |
| 6 | 9F | 05 | Shuttle Element Serial Number |
| 7 | 9G | 05 | Unassigned |
| 8 | 9H | 04 | Required Fetch Rate |
| 9 | 9J | 04 | MDM #1 Set |
| 10 | 9K | 04 | MDM #2 Reset |
| 11 | 9L | 04 | MDM #2 Set |
| 12 | 9M | 04 | Reset Discrete Mask |
| 13 | 9N | 04 | Set Discrete Mask |
| 14 | 9P | 02 | MEC Mode Indicator |
| 15 | 9R | 02 | BFS Entry Homogeneous Data Set |
| 16 | 9S | 02 | Unassigned |
| 17 | 9T | 02 | Unassigned |
| 18 | 9U | 02 | Unassigned |
| 19 | 9V | 01 | Multiplex DFI Measurement |
| 20 | 9W | 01 | LDR 21 ASCENT |
| 21 | 9X | 01 | LDR 22 ORBIT |
| 22 | 9Y | 01 | LDR 24 SM2 |
| 23 | 9Z | 01 | LDR 23 ENTRY |

Table D-34 RI MMDB Data Segment 9

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# APPENDIX E

# PAYLOADS DATA BASE SUBSYSTEM

## E.1 INTRODUCTION

Appendix E defines the initial requirements for interactive and batch processing capabilities for the Payloads Data Base Subsystem (P/L DBS) to the Master Measurements Data Base System (MMDBS).

The P/L DBS described here is an interim system, designed specifically to provide a quick response to a perceived need. As such, it has limited capabilities and safeguards. The user must be aware of these limitations and exercise caution in performing updates or specifying output procedures. Cautionary notes are included where required.

The Master Payloads Data Base (MPDB) will accommodate an estimated 50 payload data sets, averaging 1500 storable parameters each. Forecasts indicate that this capacity may be exceeded by 25%.

A set of payload data is identified by a Payload Name and Payload Number. Since the same set of data may be used on several vehicle configurations and a unique identification is required for each data set within the data base, the external identifiers are insufficient. Therefore, in this document, the external identifier will be known as the "Payload Number" and the "Payload ID" will be a unique number given to the data set at the time it is loaded to the data base.

When selected data are required to be sorted by M/S ID, the result shall appear in ascending sequence by Major Element

ID, Subsystem ID, Subsystem Location, Signal Type and Characteristic Flag.

Because of the interim nature of the system design, the response time of the online subsystem will be directly proportional to the number of payloads in the data base. Every effort must be made to expedite the implementation of the follow-on phases.

## E.2 PAYLOADS DATA BASE LOAD TAPE

Input Requirements:

An unlabeled 9-track tape, 1600 BPI, odd parity, ASCII encoded, will be provided. The data will be unblocked, 80-character records in the card image format illustrated in this section. Each tape or set of tapes will provide data for any number of payloads. If more than one (1) payload is contained on an input tape, the Payload Name and Payload Number combination of each must be unique. The Payload Number selected to be loaded into the data base will be specified at execution time, giving the Payload Name and Payload Number. The associated Vehicle Configuration Number (VCN) and the Payload ID will also be input at this time. A required capability is to create this tape from punched cards.

In addition to the load capability, an update capability, with input from tape, is required. For this capability, data elements to be changed will be entered and all other data, excepting required identification, will be blank. The capability is also required to delete a particular field or qualifier (set of related cards). If a field is to be deleted, the "@" will appear in the first column (left-justified) of the field to be deleted. If a set of cards is to be deleted, the "@" will appear left-justified in the card number field of the "CC", "TA", or "TI" card. If data for new qualifiers is entered, it will be complete and will conform to tape load rules.

Constraints:

The maximum number of CX cards per M/S ID in file 3 is ninety-nine (99).

The maximum number of TT cards per M/S ID in file 4 is thirty (30), which limits an M/S ID to be related to sixty (60) Telemetry Format Numbers. The maximum number of TC cards per Format Number in file 4 is seventy-four (74).

If an attempt is made to reload a payload that already exists in the data base before the Payload ID has been deleted, the Tape Header Card (Type AA) and any records, not previously in the data base will be loaded. Previously entered data will not be updated. Care must be exercised to delete the previous Tape Header data after loading.

If a card number is not valid, i.e., blank or greater than the maximum permitted for that card type, it will not be used to update the data base, and an error message will be output, indicating the card type and number.

Input data will not be validated or edited except as follows:

- Prime M/S IDs (serve as qualifiers) will be validated as follows:

| Character | Edit |
|---|---|
| 1 | User-maintained edit table |
| 2-3 | Numeric, value between 00 and 99 |
| 4 | User-maintained edit table |
| 5-8 | Numeric, value between 0000 and 9999 |
| 9 | User-maintained edit table |
| 10 | None |

If an M/S ID is determined to be invalid, an error message, identifying the invalid M/S ID, will be printed, but processing will continue as if it were valid, and the data base will be updated.

- Card Types "TA" and "TC" contain data which must be validated as specified in the descriptions. These elements are identified in the appropriate subsections. If data is determined to be invalid, an error message will be printed, giving the invalid data and identifying information, but the data will be used to update the data base.

Payloads Data Base Subsystem edit tables will be maintained by the MMDBS Edit Table capability (see Section 3.2.41). Update and retrieval of these tables will be restricted to users in possession of the valid Payloads password.

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TABLE E-1.- TAPE ORGANIZATION

| FILE/CARD IMAGE NUMBER | CARD TYPES | DESCRIPTION OF CARD CONTENT |
|---|---|---|
| 1/1 | AA | Tape Header Card |
| 1/2 | CA | Command Header cards for file 1. Contents of this file will be Predefined Onboard Command Requirements. This file will always be present. If there are no Onboard Command Requirements, only one header card will be present. |
| 1/3 thru 1/N1 | CC,CD,CE, CL,CR,CV | Command Data Cards sorted by M/S ID and Card type. A CA card followed by the appropriate CC,CD,CL,CR or CV cards will be provided for each command interface. The CE card is optional for each command. |
| 2/1 | CA | Command Header cards for file 2. Contents of this file will be Predefined Ground Uplink Commands. This file will always be present. If there are no Ground Uplink requirements only one header card will be present. |

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TABLE E-1.- Continued

| FILE/CARD IMAGE NUMBER | CARD TYPES | DESCRIPTION OF CARD CONTENT |
|---|---|---|
| 2/2 thru 2/N2 | CC,CD,CE, CL,CM,CR, | Command Data Cards sorted by M/S ID and Card type. A CA card followed by the appropriate CC,CD,CL,CM or CR, will command interface. A CE card is optional for each command. |
| 3/1 | CA | Command Header Cards for file 3. Contents of this file will contain Ground Uplink Buildable Command Loads. This file will always be present. If there are no Ground Uplink Buildable Commands, only one header card will be present. |
| 3/2 thru 3/N3 | CC,CD,CE, CX | Command Data Cards sorted by M/S ID and card type. A CA card followed by the appropriate CC, CD or CX cards will be provided for each command interface. A CE card is optional for each command. |
| 4/1 thru 4/N4 | TA,TB,TC, TD | Telemetry Data Stream Structure Cards for Independent and PDI TLM formats. This file will always be present. If there |

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TABLE F-I.- Concluded

| FILE/CARD IMAGE NUMBER | CARD TYPES | DESCRIPTION OF CARD CONTENT |
|---|---|---|
| | | are no requirements for telemetry data, only a type "TA" card will be present. A TA & TB card will be required for each format followed by a TC & TD card for PDI formats. The cards will be sorted by Format Number, Format Type and Card Type. |
| 4/N5 thru 4/N6 | TI,TJ,TK,TL TM,TP,TQ,TR TS,TT, | Telemetry data cards for all TLM measurements, both onboard and ground requirements. Each measurement will have a TI and TJ card followed by any combination of TL, TM, TP, TQ, TR, TS and TT cards. The TK card is optional for each measurement. |

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## E.2.3 CARD FORMATS

This section describes the layout of each card type.

### E.2.3.1 Tape Header Card

The tape header card contains basic information pertinent to payload definition.

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-2 | BLANK | Always blank. |
| 3-12 | PAYLOAD NAME | A unique alphanumeric abbreviation for the payload. Can be repeated for separate flights. Must be unique on a single flight. (LJ) EXAMPLE: PAM-A1, TRDSS-A, etc. Refer to table E-5. |
| 13-15 | PAYLOAD NUMBER | A 3-digit numeric assigned to the payload by JSC (001-999). (RJ with leading zeros). |
| 16-21 | REV. NUMBER | REV-XX, where XX is defined as follows: P1,P2,P3, etc. for Preliminary issues. B1,B2,B3, etc. for Baseline issues. |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | F1,F2,F3, etc. for Final issues. |
| 22-27 | DATE | Date of the release of this tape version in the format MMDDYY. |
| 28-43 | CONTACT | The name of a payload contact in case of any questions or problems. (LJ) |
| 44-53 | PHONE | The phone number of the above contact. Area code followed by 7-digit number. |
| 54-60 | TOTAL CARD COUNT | The total number of cards on tape, including this card. (RJ) |
| 61-69 | JSC PIP DOCUMENT NO. | The JSC PIP Document number of the Payload Command and Data Annex to be generated. |
| 70 | NO. OF FILES | The total number of files on this tape. Must be "4". |
| 71-76 | SPARE | |
| 77-78 | CARD TYPE | "AA" |

| COLUMN | ELEMENT | DESCRIPTION |
| --- | --- | --- |
| 79-80 | CARD NUMBER | "01" |

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E.2.3.2 Command Cards

The card types on this tape for command data are CA, CC, CD, CE, CL, CM, CR, CV and CX.

One "CA" card is required for each command file on the tape. There will be one file for onboard command interface, one file for ground uplink command interface, and one file for buildable/shell ground command interface.

Each command will have one "CC" and one "CD" card followed by card(s) defining data content. Card type "CC" describes the MML data for that command. Card type "CD" card defines requirements. The categories of cards to follow the CC and CD are as follows:

| CMD TYPE | CARD TYPE |
|---|---|
| Analog (Onboard) | CV-01 |
| Discrete | CR-01 |
| Digital Loads | CL-01 up to 07 |
| MRTC (Ground) | CM-01 |
| Buildable (Ground) | CX-01 up to 99 |

Each command can have a "CE" card for user identification and related M/S ID's.

Up to 7 "CL" cards can be required to define prestored command words via Standard Serial I/O (SSI), Spacelab Serial I/O (SIO), or Payload Signal Processor (PSP).

The "CX" card defines command loads under the following conditions for ground uplink only:

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a. Shell format defined prior to knowledge of predefined content.
b. Shell format where part of command is predefined and part variable data or all variable.
c. Shell format for commands buildable in Real-Time.

A command can require a number of "CX" cards, but must equate to an even number of 16-bit segments. A "CX" card will be required to describe each single parameter within the load.

E.2.3.2.1 CARD TYPE "CA" - COMMAND FILE HEADER CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | Always blank. |
| 2-3 | WORDS/RECORDS | The maximum number of 16-bit words that can be prestored for a single command for this payload. The number is 31 for Spacelab, 32 for Standard Serial I/O and 64 for PSP. |
| 4-5 | WORD LENGTH | The number of bits per command word for this payload. The number is 16 for Orbiter and Spacelab, 40 for IUS and TDRSS, etc. Basic length should be 16, 32, or 64. |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 6-7 | CMD DATA RATE | Payload command link data rate (RJ)<br>4 = 125/16 bps<br>5 = 125/8 bps<br>6 = 125/4 bps<br>7 = 125/2 bps<br>8 = 125 bps<br>9 = 250 bps<br>10 = 500 bps<br>11 = 1 kbps<br>12 = 2 kbps |
| 8 | DATA CODE | Payload command data type.<br>1 = NRZ-L<br>2 = NRZ-M<br>3 = NRZ-S |
| 9 | SUBCARRIER IDLE | Command subcarrier idle pattern.<br>0 = unmodulated<br>1 = modulated with alternate one-zero pattern |
| 10 | UMBILICAL SELECTION | Payload command output, JSC supplied.<br>1 = umbilical 1<br>2 = umbilical 2<br>3 = umbilical 3<br>4 = umbilical 4<br>5 = umbilical 5 |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 11 | ONBOARD/GROUND | O = Onboard commands<br>G = Ground uplink commands<br>B = Ground buildable commands |
| 12-14 | DESTINATION | The destination to output the data to the payload.<br>PSP = Payload Signal Processor<br>SSI = Standard Serial I/O<br>SSC = Spacelab Subsystem Computer<br>EXC = Spacelab Experiment Computer<br>MDM = Multiplexer Demultiplexer |
| 15-30 | SPARE | |
| 31-34 | GN&C REQUIREMENT | These columns identify the requirement of standard GN&C data transfer from the GPC to the payload. |
| (31) | A | A = GTOD state vector required |
| (32) | B | B = GTOD attitude data required |
| (33) | C | C = M50 state vector required |
| (34) | D | D = M50 attitude data required |
| 35 | GN&C TRANSFER RATE | 0 = Transfer GN&C data on demand<br>5 = Transfer GN&C data every two seconds |
| 36-71 | SPARE | |
| 72-75 | NO. OF CMDS | Number of commands defined in |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | this file. (RJ) |
| 76 | FILE NO. | File number on this tape.<br>1 = Onboard<br>2 = Predefined Ground<br>3 = Buildable Ground |
| 77-78 | CARD TYPE | "CA" |
| 79-80 | CARD NUMBER | "01" |

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E.2.3.2.2 CARD TYPE "CC" - COMMAND MML DATA

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |
| 11-12 | NO. OF WORDS | The number of 16-bit words required to define the data for this command. A blank in this field is acceptable. |
| 13-20 | ENG. UNITS | Denotes the standard engineering units acceptable to describe the command. Required for analog onboard commands only. Otherwise, this field will be blank. Refer to table E-2. |
| 21-54 | SYSTEMS NOMENCLATURE | A unique alphanumeric name for the command, not to exceed 34 characters. |
| 55 | GPC I/O TRANSACTION | GPC Input/Output transaction flag for a SSI address<br>O = Output<br>B = Both - Input & Output |
| 56-76 | SPARE | |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 77-78 | CARD TYPE | "CC" |
| 79-80 | CARD NUMBER | "01" |

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E.2.3.2.2 CARD TYPE "CC" - COMMAND MML DATA

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |
| 11-12 | NO. OF WORDS | The number of 16-bit words required to define the data for this command. A blank in this field is acceptable. |
| 13-20 | ENG. UNITS | Denotes the standard engineering units acceptable to describe the command. Required for analog onboard commands only. Otherwise, this field will be blank. Refer to table E-2. |
| 21-54 | SYSTEMS NOMENCLATURE | A unique alphanumeric name for the command, not to exceed 34 characters. |
| 55 | GPC I/O TRANSACTION | GPC Input/Output transaction flag for a SSI address<br>O = Output<br>B = Both - Input & Output |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 56-76 | DSM TITLE | Defines the M/S ID in the ground procedure documents and displays (JSC use only) |
| 77-78 | CARD TYPE | "CC" |
| 79-80 | CARD NUMBER | "01" |

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TABLE E-2.- ENGINEERING UNITS

| Abbreviation | Description |
|---|---|
| AMP | Ampere |
| MAMP | Milliampere |
| ARCMIN | Arc minute |
| ARCS | Arc second |
| AU | Astronomical units |
| B/F/S | British thermal unit (BTU) per square foot per second |
| C | Cycle |
| CDT | Count down time |
| CNT | Count |
| D | Day |
| D/H | Days plus hours |
| D/H/M/S | Days plus hours plus minutes plus seconds |
| DB | Decibel |
| DBM | Decibel referred to one milliwatt |
| DEG | Degree |
| DEGC | Degree Celsius |
| DEGF | Degree Fahrenheit |
| DEGK | Degree Kelvin |
| DEGR | Degree Rankine |
| DEG/HR | Degree per hour |
| DEG/S | Degree per second |
| DEG/DEG2 | Degree per degree squared |
| DEG/HR/G | Degree per hour per G |
| EVENT | Discrete/event |
| FT | Feet |
| KF | Kilofeet |
| FT/S | Feet per second |

TABLE E-2.- Continued

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| Abbreviation | Description |
|---|---|
| P | Pulse |
| PPS | Pulse per second |
| PCT | Percent |
| PPM | Parts per million |
| PSI | Pounds per square inch |
| PSIA | Pounds per square inch absolute |
| PSID | Pounds per square inch differential |
| PSIG | Pounds per square inch gage |
| PSI/MIN | Pounds per square inch per minute |
| RAD | Radian |
| RAD/S | Radian per second |
| RAD/S/G | Radian per second per G |
| MRAD/S | Milliradian per second |
| RAD/S2 | Radian per second squared |
| R/S/R/S | Radian per second per radian per second |
| RPM | Revolution per minute |
| KRPM | Kilorevolution per minute |
| S | Second |
| MS | Millisecond |
| US | Microsecond |
| SPECIAL | Special parameter decom |
| SLUG | Slug |
| S/RAD | Seconds per radian |
| VAC | Volts AC |
| MVAC | Millivolts AC |
| VDC | Volts DV |
| MVDC | Millivolts DC |
| VP-P | Volts peak to peak |

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TABLE E-2.- Concluded

| Abbreviation | Description |
|---|---|
| MV | Millivolts |
| VRMS | Volts RMS |
| W | Watts |
| KW | Kilowatts |
| KW/M2 | Kilowatts per meter squared |
| TCFR | 1/760 atmosphere |
| UNITS | Units |

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E.2.3.2.3 CARD TYPE "CD" - COMMAND REQUIREMENTS CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | Same as card "CC" |
| 11-18 | FLIGHT PHASES | Flight phases the command is required in. Up to eight flight phases may be requested, 1 col. per phase.<br>L = ground checkout prelaunch<br>A = ascent<br>R = orbit (payload quiescent)<br>O = orbit (contingency)<br>D = orbit (payload active)<br>E = entry<br>F = post land<br>S = detached |
| 19-23 | STATE/RANGE LOW | Low value of data range available for analog commands compatible with the scaling coefficients. For discrete commands, it defines the condition for binary 0. Refer to table E-3. |
| 24-28 | STATE/RANGE HIGH | High value of data range available for analog commands compatible with the scaling coefficients. For discrete commands, it defines the condition for binary 1. Refer to |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | table E-3. |
| 29-38 | SPARE | |
| 39-57 | BTU CHANNELIZATION | |
| (39-42) | BTU NAME | The name of the BUS Terminal Unit.<br>PF1, PF2<br>LF1, LA1<br>FLX1 thru FLX6<br>SCA1 thru SCA4<br>EXC and SSC |
| (43-45) | BTU MOD TYPE | An alpha code identifying the input/output module types of a BTU.<br>AOD - Analog Output Differential<br>SIO - Serial Input/Output<br>DOL - Discrete Output Low (5 volts)<br>DOH - Discrete Output High (28 volts)<br>PUL - Pulsed Discrete Output Low |
| (46-47) | BTU MIA ADDRESS | The Multiplex Interface Adapter (MIA) address assigned to a BTU. 01-31. |
| (48-49) | BTU MODULE ADDRESS | A number (00-15) defining the location that is assigned to a given input/output module |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | (card) in a BTU. |
| (50-51) | BTU CHANNEL NUMBER | A number (00-31) identifying the channel on the corresponding BTU module that is assigned to the signal. |
| (52-53) | BTU START BIT NUMBER | The start bit of a signal within the data bus word. 00-63. |
| (54-55) | BTU NUMBER OF BITS | A number, 01-64, defining the number of bits in the signal. |
| (56-57) | BTU WORD NUMBER | A number (normally from 01-32) defining the specific word in a serial digital stream of data words going to a BTU channel. |
| 58-60 | COMMAND TYPE | Alphanumeric indicating the type of command, LJ.<br>SP - Software Pulsed Discrete<br>MR - Multi-Real Time Command<br>QQ - PSP Load<br>SS - Standard Serial I/O Load<br>AC - Analog Command<br>D - Discrete Command<br>HP - Hardware pulsed Commands<br>CN - GPC Constants Update Command<br>GP - Command generated by GPC |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | SG - Standard GNSC<br>SSC - Spacelab Subsystem Computer<br>EXC - Spacelab Experiment Computer |
| 61 | RF UPLINK | An "X" indicates that the command is originated on the ground and received by the Shuttle through the RF uplink. |
| 62 | ROUTING INDICATOR | An alpha character to specify the signal type.<br>A = Analog (MDM)<br>P = Payload signal processor (PSP output)<br>C = Serial I/O command only<br>R = Serial I/O read request<br>E = Encoded<br>D = Discrete (MDM) |
| 63 | HAZARDOUS FLAG | Payload commands which generate a hazardous condition to the orbiter must be flagged and the commands reside in a prestored table at JSC. When the command is received from a Remote or JSC POCC and agrees with data in the table, the command is rejected until the flag is |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | removed by an approved source at JSC.<br>H = Hazardous<br>N = Nonhazardous |
| 64 | SAFING FLAG | For JSC local, prestored commands, this flag when set prevents the commands from being executed until the flag is removed by an approved source.<br>S = Safing flag set<br>N = Safing flag not set |
| 65-69 | DSM NUMBER | Four-digit number for discrete commands and a 5-digit number for loads. DSM numbers are assigned to ground uplink commands only. The DSM number is used as key-in for command execution. For loads, the 5-digit number has the following format and restriction: XXXYY - where YY can have a value of 01-50. Blocks of DSM numbers are assigned to a payload by JSC. |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 70 | DSM TYPE | A code which indicates the type of DSM (Ground Command).<br>F = single function, RTC<br>M = multi-function, MRTC<br>S = Salvo<br>L = Load<br>B = Buildable |
| 71 | PAYLOAD MANAGEMENT | A "P" indicates the command is required to be used for Payload Management. A "B" indicates that the command is required for both Orbiter Systems Management and Payload Management. |
| 72-74 | SPARE | |
| 75-76 | BTU NUMBER OF WORDS | Number of 16-bit words defined in the serial BTU Channel. |
| 77-78 | CARD TYPE | "CD" |
| 79-80 | CARD NUMBER | "01" |

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TABLE E-3.- EVENT STATE INDICATORS

| | |
|---|---|
| OFF | ON |
| CLOSE | OPEN |
| DRY | WET |
| ERROR | GOOD |
| FAIL | VALID |
| RESET | SET |
| SAFE | ARM |
| STOW | DPLY (DEPLOY) |
| LOCK | ENBL (ENABLE) |
| INHIB | FIRE |
| STBY | SEL |
| NO GO | GO |

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NOTE: The preferred event status indicator pair is "OFF-ON". If this indicator pair is not appropriate per the measurement/stimulus title or current design, one of the above may be used as a pair or with a "blank" indicator in the opposite data range "LOW" or "HIGH". A "blank" indicates the absence of the required status indication.

E.2.3.2.4 CARD TYPE "CE" - COMMAND USER IDENTIFICATION CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |
| 11-20 | USER ID | User identification number if different from M/S ID. For M/S ID's assigned by the user that JSC must change, the user supplied M/S ID will appear here. |
| 21-30 | PARENT M/S ID | The identification of the associated parent word where the command is located. |
| 31-40 | WIRE M/S ID | A 10 character alphanumeric assigned to each digital or SIO Channel whose description defines the BTU Address and total number of 16-bit words within the channel. |
| 41-50 | RELATED M/S ID | For a dual serial I/O channel, this will contain the corresponding wire M/S ID for the input or output depending on the M/S ID in columns 1-10. |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 51-76 | SPARE | |
| 77-78 | CARD TYPE | "CE" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.2.5 CARD TYPE "CL" - PRESTORED COMMAND DATA LOADS

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |
| 11-14 | MAJOR FUNCTION | Major function/GPC; four bit code that identifies the GPC or major function to which the command is addressed, ground uplink only. Input of "0000" indicates to be specified in Real-Time by PBI Console selection. |
| 15-16 | OP CODE | Seven-bit binary code converted to HEX that identifies type of command.<br>HEX-1A - Two Stage<br>HEX-3D - Single stage<br>Used for ground uplink only. |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | Optional, Can be a Real-Time Key-in. |
| 17-20 | DEST/DEST DEP | Four-bit binary code for uplink commands to identify destination.<br>0000 - PSP CONFIG ID 0<br>0001 - PSP CONFIG ID 1<br>0010 - PSP CONFIG ID 2<br>0011 - PSP CONFIG ID 3<br>0100 - PSP CONFIG ID 4<br>0101 - PSP CONFIG ID 5<br>0111 - SSI 1<br>1000 - SSI 2<br>1001 - SSI 3<br>1010 - SSI 4<br>1011 - SSI 5<br>1100 - SSI 6<br>1101 - SSI 7<br>1110 - SSI 8<br>1100 - SL SUBSYSTEM COMPUTER<br>0100 - SL EXPERIMENT COMPUTER |
| 21-24 | CHW | Hex representation of the command header word. |
| 25-28 | CDW 1 | Hex representation of prestored data value of the command word. |
| 29-32 | CDW 2 | Same as CDW 1. |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 33-36 | CDW 3 | Same as CDW 1. |
| 37-40 | CDW 4 | Same as CDW 1. |
| 41-44 | CDW 5 | Same as CDW 1. |
| 45-48 | CDW 6 | Same as CDW 1. |
| 49-52 | CDW 7 | Same as CDW 1. |
| 53-56 | CDW 8 | Same as CDW 1. |
| 57-60 | CDW 9 | Same as CDW 1. |
| 61-76 | SPARE | |
| 77-78 | CARD TYPE | "CL" |
| 79-80 | CARD NUMBER | "01" |

(Cards 02-07 = CDW 10-63 data values, columns 11-20 will be blank and CHW required on "01" card only).

E.2.3.2.6 CARD TYPE "CM" - MULTIPLE REAL-TIME COMMAND (MRTC) DATA CARD (GROUND ONLY)

Card type "CM" defines a MRTC. This is for ground uplink commands only. Up to 10 RTC's can be contained in a MRTC.

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in appendix A. |
| 11-15 | RTC #1 | The 4-digit DSM number for the first RTC defined in the MRTC. |
| 16-20 | RTC #2 | Same as for RTC 1. |
| 21-25 | RTC #3 | Same as for RTC 1. |
| 26-30 | RTC #4 | Same as for RTC 1. |
| 31-35 | RTC #5 | Same as for RTC 1. |
| 36-40 | RTC #6 | Same as for RTC 1. |
| 41-45 | RTC #7 | Same as for RTC 1. |
| 46-50 | RTC #8 | Same as for RTC 1. |
| 51-55 | RTC #9 | Same as for RTC 1. |
| 56-60 | RTC #10 | Same as for RTC 1. |
| 61-76 | SPARE | |
| 77-78 | CARD TYPE | "CM" |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 79-80 | CARD NUMBER | "01" |

E.2.3.2.7 CARD TYPE "CR" - DISCRETE COMMAND DATA CARD

One "CR" card is required for each discrete command with predefined data values.

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |
| 11-14 | BTU 1 RESET ADDRESS | Sixteen-bit binary as shown below (converted to HEX). |
| | BTU MODULE ADDRESS | Four-bit binary code that identifies the I/O module where the selected channels are located. Bits 0-3 = 00-15, Bit 3= LSB |
| | BTU CHANNEL ADDRESS | Five-bit binary code.<br>Bit<br>4 1 = set channel discretes<br>0 = reset channel discretes<br>5 0<br>6 0<br>7-8 channel address |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | 00 = 0<br>01 = 1<br>10 = 2<br>11 = illegal |
| | BTU NUMBER | Seven bit binary code, 9-15, LSB = bit 15. |

| BTU NUMBER | BTU |
|---|---|
| 0001001 | PF1 |
| 0001010 | PF2 |
| 0001011 | LF1 |
| 0001100 | LA1 |
| 0001101 | FLX1 |
| 0001110 | FLX2 |
| 0001111 | FLX3 |
| 0010000 | FLX4 |
| 0010001 | FLX5 |
| 0010010 | FLX6 |

| | | |
|---|---|---|
| 15-18 | BTU 1 RESET DISCRETE MASK 1 | Sixteen bits (converted to HEX) directly related to the channel out bits (LSB = 15). A one in any one of the bits indicates that channel bit is to be reset. |
| 19-22 | BTU 1 SET ADDRESS | Sixteen-bit binary word as shown below (converted to HEX). |
| | BTU MODULE ADDRESS | Four-bit binary code which |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | 0011 - PSP CONFIG ID 3<br>0100 - PSP CONFIG ID 4<br>0101 - PSP CONFIG ID 5<br>0111 - SSI 1<br>1000 - SSI 2<br>1001 - SSI 3<br>1010 - SSI 4<br>1011 - SSI 5<br>1100 - SSI 6<br>1101 - SSI 7<br>1110 - SSI 8<br>1100 - SL SUBSYSTEM COMPUTER<br>0100 - SL EXPERIMENT COMPUTER |
| 21-24 | CHW | Hex representation of the command header word. |
| 25-28 | CDW 1 | Hex representation of prestored data value of the command word. |
| 29-32 | CDW 2 | Same as CDW 1. |
| 33-36 | CDW 3 | Same as CDW 1. |
| 37-40 | CDW 4 | Same as CDW 1. |
| 41-44 | CDW 5 | Same as CDW 1. |
| 45-48 | CDW 6 | Same as CDW 1. |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 49-52 | CDW 7 | Same as CDW 1. |
| 53-56 | CDW 8 | Same as CDW 1. |
| 57-60 | CDW 9 | Same as CDW 1. |
| 61-65 | DESTINATION | legal codes are:<br>10000 = PSP Function<br>01000 = Standard Serial I/O Function (SSI)<br>00111 = Spacelab Serial Date Interface (SLSIO) |
| 66-76 | SPARE | |
| 77-78 | CARD TYPE | "CL" |
| 79-80 | CARD NUMBER | "01" |

(Cards 02-07 = CDW 10-63 data values, columns 11-20 will be blank and CHW required on "01" card only).

| COLUMN | ELEMENT | DESCRIPTION | |
|---|---|---|---|
| | | 0001010 | PF2 |
| | | 0001011 | LF1 |
| | | 0001100 | LA1 |
| | | 0001101 | FLX1 |
| | | 0001110 | FLX2 |
| | | 0001110 | FLX3 |
| | | 0010000 | FLX4 |
| | | 0010001 | FLX5 |
| | | 0010010 | FLX6 |

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| | | |
|---|---|---|
| 31-34 | BTU 2 RESET DISCRETE MASK 1 | Sixteen bits (converted to HEX) directly related to the channel out bits (LSB=15) A one in any one of the bits indicates that channel bit is to be reset. |
| 35-38 | BTU 2 SET ADDRESS | Sixteen-bit binary word as shown below (converted to HEX). |
| | BTU MODULE ADDRESS | Four-bit binary code which identifies the I/O module where the selected channels are located. Bits 0-3 = 00-15, Bit 3=LSB. |
| | BTU CHANNEL ADDRESS | Five-bit binary code. |

| Bit | |
|---|---|
| 4 | 1 = Set channel discrete |
| | 0 = Reset channel discrete |
| 5 | 0 |
| 6 | 0 |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | 7-8 Channel address<br>00 = 0<br>01 = 1<br>10 = 2<br>11 = illegal |
| 39-42 | BTU 2 SET DISCRETE MASK 2 | Sixteen bits (converted to HEX) directly related to the channel out bits (LSB=15). A one in any one of the bits indicates that channel bit is to be set. |
| 43-76 | SPARE | |
| 77-78 | CARD TYPE | "CR" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.2.8 CARD TYPE "CV" - ANALOG COMMAND DATA CARD (ONBOARD ONLY)

One "CV" card is required for analog commands.

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the command, configured as defined in Appendix A. |

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| | | |
|---|---|---|
| 11-12 | CAL TYPE | Calibration type.<br>11 = Payload calibration type |
| 13-26 | CAL. POLY. COEFF. $A_0$ | $A_0$ calibration coefficient in format +X.XXXXXXE+YY where X is the mantissa and Y is the exponent. |
| 27-40 | CAL. POLY. COEFF. $A_1$ | $A_1$ calibration coefficient in same format as col. 13-26. |
| 41-76 | SPARE | |
| 77-78 | CARD TYPE | "CV" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.2.9 CARD TYPE "CX" - BUILDABLE/SHELL COMMAND DATA CARD (GROUND ONLY)

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | Same as "CC" card |
| 11-15 | DSM NUMBER | Five-digit DSM number as defined in the "CD" card |
| 16 | DSM TYPE | B = Buildable Load |
| 17-18 | DATA LENGTH | A 2-bit numeric describing the number of bits for the parameter, 64 bits - maximum. |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 19-20 | START WORD NUMBER | This field defines the word in which the parameter being defined starts. |
| 21-22 | START BIT NUMBER | Command data words are contained in bits 17-48 of the 48 bit words. This field is the start bit number associated with the start word number. |
| 23-32 | PARAMETER M/S ID | Same format as col. 1-10. Required only for orbiter commands. |
| 33-42 | PARAMETER TITLE | Name of parameter limited to 10 spaces. (LJ) |
| 43 | PARAMETER TYPE | A single letter indication for uplink data word format.<br>A = ASCII<br>S = Integer, signed (two's complement)<br>D = Discrete<br>H = Hexadecimal<br>E = EBCDIC<br>F = IBM Floating Point<br>L = Spacelab Floating Point<br>U = Integer, unsigned (Binary)<br>R = Integer, signed (not twos |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | complement)<br>B = Binary |
| 44-51 | PARAMETER UNITS | Engineering units for the parameter. (LJ) See table E-2. |
| 52 | DATA EXPRESSED | A single letter to designate how the data for this parameter is to be expressed on tape.<br>A = ASCII<br>B = Binary<br>O = Octal<br>H = Hexadecimal<br>D = Decimal<br>S = Scientific Notation<br>C = BCD |
| 53-68 | PARAMETER DATA | Up to 16 columns to predefine data of the type specified in column 52. If data cannot be predefined and is variable, this field will be left blank. |
| 69-76 | SPARE | |
| 77-78 | CARD TYPE | "CX" |
| 79-80 | CARD NUMBER | "01" thru "14" |

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### E.2.3.3 TELEMETRY CARD FORMATS

The card formats on this tape for telemetry data are card types TA, TB, TC, TD, TE, TI, TJ, TK, TL, TP, TQ, TR, TS, TT.

One "TA" card is required for each payload data stream and PDI format.

One "TB" card is required along with each "TA" card.

At least one "TC" card is required for each PDI format along with the "TA" and "TB" cards. There can be multiple "TC" cards, to a maximum of 64, for a payload with 1024 words per frame and wanted to decom every other word.

At least one "TD" Card is required for each PDI format to identify in which OD formats it is to be output. One "TD" card can define up to 7 OD formats.

One "TI" card is required for each telemetry measurement to cover the following requirements.

a. ONBOARD DISPLAY (VIA MDM OR PDI)
b. DOWNLIST
c. DOWNLINK IN OI
d. PDI TOGGLE BUFFERS (ONLY IF JSC/KSC PROCESSING REQUIRED)
e. INDEPENDENT DATA STREAMS

One "TJ" card is always required for each 'TI" card.

One "TK" card can be required for a telemetry measurement.

One "TL" card is required for each measurement containing payload management requirements if the caution and warning limits are defined. The fault detection and annunciation (FDA) process permits limit sense of parameters from PDI/PMU, payload BTU's, and software to provide alert and backup caution and warning (C/W) annunciation (tones, lights, and fault messages) indicative of payload health and status.

One "TM" card is required for each measurement with alert limits. Up to three sets of limits are defined on this card.

One "TP" Card is required for preconditions for each limit set. There could be 3 "TP" cards, one for each limit set. There must be at least two alert limit sets to have alert preconditions.

Precondition steering is a decision-making function which determines the fault detection testing required and the conditions which must be met to initiate fault detection for each individual parameter. Precondition steering is executed (once per second rate) using the current values of the precondition input parameters. The capability shall exist when FDA is enabled to use a single parameter as a precondition discrete or to logically combine several parameters to obtain a single precondition discrete.

One "TQ" card is required for preconditions for each limit set when there are 4 measurements in the expression. There can be up to 3 "TQ" cards.



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Scaling coefficients, contained on card type "TP", must be present for all analog measurements for conversion from PCM counts to EU.

The calibration coefficients apply to the following polynomial:

<u>POLYNOMIAL</u> $(A_0 + A_1 X + A_2 X^2 + A_3 X^3 + A_4 + X^4 + A_5 X^5)$

Each coefficient shall be formatted as follows:

_+ X. X X X X X X X E ± X X

The sign (±) of the mantissa will be the in the first column of the mantissa group. The exponent will follow the last digit of the mantissa group, if applicable. The grouping will be left-justified using a maximum of 14 columns. Unused columns are spare.

A "TS" is used only for 3rd order flight/ground calibration, and for 4th and 5th Order ground calibration.

Card "TT" defines format requirements for the following:

a. Downlist
b. PDI
c. Independent Data Streams
d. CI

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Up to two format definitions will be contained on one "TT" card. Multicards can exist. JSC will supply all format numbers prior to tape formation.

E.2.3.3.1 CARD "TA" - TELEMETRY DATA STREAM STRUCTURE
CARD 1

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | |
| 2-5 | FORMAT NUMBER | A 4-digit numeric indicating the payload data stream format or PDI format. Payload independent link format numbers should be greater than "1000", PDI format numbers are 01-11 and 14-19. All numbers are RJ. |
| 6 | TLM FORMAT TYPE | This field is used to indicate data base storage for the telemetry format.<br>1 = GPC (Downlist)<br>2 = OI/128 KBPS<br>3 = OI/64 KBPS<br>5 = Payload Independent Stream<br>8 = PDI Format |
| 7 | PDI MODE | A numeric (1, 2, 3, 4) indicating which of the four PDI format types is to be |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | used in processing the input data stream. |
| 8 | PDI DECOM CONTROL MEMORY | A numeric (1, 2, 3, 4) indicating which of the four PDI decoms is assigned to this PDI format. This is assigned by JSC. |
| 9 | SPARE | |
| 10 | PDI PORT | A numeric (1, 2, 3, 4, 5, 6) indicating the PDI port assignment. Ports 1-5 are attached mode and 6 is via the PI/PSP, detached. |
| 11-18 | FLIGHT PHASES | Indicates which phases of the flight the format is required. |
| (11) | | L = Ground Checkout (Prelaunch) |
| (12) | | A = Ascent |
| (13) | | R = Orbit (Payload Quiescent) |
| (14) | | O = Orbit (Orbiter Contingency) |
| (15) | | D = Orbit (Payload Active) |
| (16) | | E = Entry |
| (17) | | F = Post Landing |
| (18) | | S = Detached |
| 19-29 | FORMAT IDENTIFIER | A measurement included within the payload data stream to |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | identify varying bit rates or different formats. |
| (19-22) | FIRST WORD | The first word location of the above ID in the data stream. First word numbering starts with "1". (RJ) |
| (23-25) | FIRST FRAME | The first frame location of the format ID measurement. First frame numbering starts with "0". (RJ) |
| (26-29) | HEX VALUE | The hex value of the binary bit configuration identifying data stream (RJ). |
| 30-37 | BIT RATE | An 8-character numeric will identify the bit rate of the PCM stream. The allowable values shall be all positive, real numbers from 10 bps bits per second through 64000 bps. All other values shall be illegal. The form of the bit rate shall be XXXXX.YY bps (RJ) |
| 38-41 | BIT RATE TOLERANCE | A 4-character numeric of the form X.YY identifying the |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | percentage of bit rate tolerance allowable for the corresponding PCM input stream. X = the integer percentage value of tolerance and YY = two place decimal percentage value of tolerance. (RJ) |
| 42-45 | DATA CODE | A 4-character alpha identifying the data code type of the PCM bit stream. The allowable values are:<br>NRZL - Non-Return to Zero Level<br>NRZM - Non-Return to Zero Mark<br>NRZS - Non-Return to Zero Space<br>BIPL - Bi-Phase Level<br>BIPM - Bi-Phase Mark<br>BIPS - Bi-Phase Space |
| 46-47 | BITS PER WORD | A 2-character numeric indicating the size in bits of the data words. Bits will be numbered starting with "0". (RJ) |
| 48-51 | WORD PER FRAME/DATA BLOCK | Up to four numeric (8-1024) indicating the number of words per minor frame, major frame, or data block. The first word |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | number will be "1". (RJ) |
| 52-54 | FRAMES PER MAJOR FRAME/DATA BLOCK PER SEC | Up to three numeric (2-256) indicating the number of minor frames per major frame, or data block per second. The first frame should be designated as "0". (RJ) |
| 55-59 | MAJOR FRAME PERIOD | The number of seconds required to output one major frame. In the format XXXYY where YY indicates the hundredth of a second. (RJ) |
| 60-64 | DATA CYCLE PERIOD | The number of seconds required to output at least one sample of each measurement. In the format XXXYY where YY indicates the hundredth of a second. (RJ) |
| 65-76 | SPARE | |
| 77-78 | CARD TYPE | "TA" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.2 CARD TYPE "TB" - TELEMETRY DATA STREAM STRUCTURE CARD 2

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | |
| 2-5 | FORMAT NUMBER | Same as "TA" card |
| 6 | TLM FORMAT TYPE | Same as "TA" card |
| 7 | SYNC LENGTH | Indicates the number of bits defined in cols. 9-16.<br>1 = 8 bits<br>2 = 16 Bits<br>3 = 24 Bits<br>4 = 32 Bits |
| 8 | SYNC TYPE | Indicates which sync pattern is defined in cols. 9-21.<br>F = Minor Frame Sync<br>M = Major Frame Sync<br>B = Block Mode Sync |
| 9-16 | SYNC HEX VALUE | The HEX value of the sync bit pattern. Sync can be 8, 16, 24, or 32 binary bits. |
| 17 | SYNC F/L INDICATOR | This field will contain an "F" if the sync is located in the first words of a frame or an "L" if it appears in the last words of a frame. |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 18-21 | SYNC START WORD | The start word number that the sync appears in the frame. Word One = 0001. |
| 22 | MAJOR FRAME SYNC F/L INDICATOR | This field applies to the format that has an 8 bit major frame sync in addition to the minor frame sync.<br>F = Major frame sync appears in the first minor frame.<br>L = Major frame sync appears in last minor frame. |
| 23-24 | MAJOR FRAME SYNC HEX VALUE | The HEX representation of the 8-bit sync word. |
| 25-28 | MAJOR FRAME SYNC WORD NUMBER | The word location of major sync in the minor frame. |
| 29 | MFC U/D INDICATOR | An alpha indication that the minor frame counter (MFC) increments up or down. (e.g., 0, 1, 2 etc or 50, 49, 48, etc.) |
| 30-32 | MFC INITIAL VALUE | a 3-digit decimal value equivalent to the first minor frame, frame 0. Initial value should be "0". Must be |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | consistent with frame numbers. |
| 33-36 | MFC WORD NUMBER | The word number in the minor frame that contains the minor frame counter. (RJ) |
| 37 | SFC U/D INDICATOR | An alpha character indicating if the Subframe Counter (SFC) increments up or down. |
| 38-39 | SFC INITIAL VALUE | The initial decimal value of the SFC equivalent to minor frame 0. The value should be zero. (RJ) |
| 40-43 | SFC WORD NUMBER | The word location in the minor frame that contains the subframe counter. (RJ) |
| 44-45 | PSP CONFIGURATION ID | The Configuration ID of the message to initialize the PSP. JSC supplied (1-5). |
| 46-66 | AVAIL. SAMPLE RATES | Up to three digits (FJ) to indicate the legal sample rates available for measurements in the telemetry stream. Up to seven sample rates can be indicated and they must be expressed |
| | RATES | |
| (46-48) | Sample Rate 1 | |
| (49-51) | Sample Rate 2 | |
| (52-54) | Sample Rate 3 | |
| (55-57) | Sample Rate 4 | |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (58-60) | Sample Rate 5 | in samples per major frame. |
| (61-63) | Sample Rate 6 | |
| (64-66) | Sample Rate 7 | |
| 67-70 | SPARE | |
| 71-73 | SUBCOM DEPTH | The number of minor frames that data is commutated in a major frame. |
| 74-76 | SUB-SUBCOM DEPTH | The number of subframes that data is sub-commutated in a major frame or data cycle. |
| 77-78 | CARD TYPE | "TB" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.3 CARD TYPE "TC" - PDI FORMAT REQUIREMENT CARD 1

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | |
| 2-5 | FMT NUMBER | Same as "TA" card |
| 6 | FMT TYPE | Same as "TA" card |
| 7-8 | NO. OF DOWNLINK WDS. | The number of 8-bit words in the downlink required for the |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | PDI format window. Must be an even number of 8-bit words. (RJ) |
| 9-12 | TOGGLE BUFFER SIZE | The number of 8-bit payload data stream minor frame words to be decommed into the PDI Toggle Buffer. Max size of 1024. (RJ) |
| 13-16 | START WORD NUMBER | The start word number from the payload data stream to be decommed. (RJ) |
| 17-20 | NO. OF CONSEC. WDS. | The number of consecutive words to be decommed including the first word number. (RJ) |
| 21-24 | START WORD NUMBER | Same as 13-16 |
| 25-28 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 29-32 | START WORD NUMBER | Same as 13-16 |
| 33-36 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 37-40 | START WORD NUMBER | Same as 13-16 |
| 41-44 | NO. OF CONSEC. WDS. | Same as 17-20 |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 45-48 | START WORD NUMBER | Same as 13-16 |
| 49-52 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 53-56 | START WORD NUMBER | Same as 13-16 |
| 57-60 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 61-64 | START WORD NUMBER | Same as 13-16 |
| 65-68 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 69-72 | START WORD NUMBER | Same as 13-16 |
| 73-76 | NO. OF CONSEC. WDS. | Same as 17-20 |
| 77-78 | CARD TYPE | "TC" |
| 79-80 | CARD NUMBER | "01" .... "64" |

E.2.3.3.4 CARD TYPE "TD" - PDI FORMAT REQUIREMENTS CARD 02

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | |
| 2-5 | FMT NUMBER | Same as "TA" card |
| 6 | FMT TYPE | Same as "TA" card |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 7-10 | OD FMT NUMBER | The operational downlink format number that the PDI format will be output. (RJ) |
| 11 | PDI WINDOW NUMBER | There can be up to 4 PDI windows contained in the downlink format. A 1, 2, 3, 4 indicating if the PDI format is in the 1st, 2nd, 3rd or 4th PDI window. |
| 12-14 | OD START WORD | The start word number in the OD format where the PDI window starts. (RJ) |
| 15-22 | 2nd OD FORMAT | Same as Columns 7-14. |
| 23-30 | 3rd OD FORMAT | Same as Columns 7-14. |
| 31-38 | 4th OD FORMAT | Same as Columns 7-14. |
| 39-46 | 5th OD FORMAT | Same as Columns 7-14. |
| 47-54 | 6th OD FORMAT | Same as Columns 7-14. |
| 55-62 | 7th OD FORMAT | Same as Columns 7-14. |
| 63-76 | SPARE | |
| 77-78 | CARD TYPE | "TD" |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.5 CARD TYPE "TI" - TELEMETRY MML CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix A. |
| 11-12 | DATA LENGTH | The number of bits required to define the measurement, 01-64. (RJ) |
| 13-20 | ENGINEERING UNITS | Denotes the standard engineering units acceptable to describe the measurement. See table E-2. (LJ) |
| 21-54 | SYSTEMS NOMENCLATURE | Up to 34 alphanumeric characters to define the name of measurement. (LJ) |
| 55-70 | SM CONSTANT INITIAL VALUE | The value of the constant in engineering units. |
| 71 | PAYLOAD MANAGEMENT | A "P" indicates the measurement is required to be used for Payload Management. A "B" |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | indicates that the measurement is required for both Orbiter Systems Management and Payload Management. |
| 72-73 | SSI ID 1 | Standard Serial I/O interface ID from (01-08). |
| 74-75 | SSI ID 2 | The second SSI interface ID if data is from a Dual channel. |
| 76 | GPC I/O TRANSACTION | GPC Input/Output transaction flag for a SSI address<br>I = Input<br>O = Output<br>C = Compute<br>B = Both-Input & Output |
| 77-78 | CARD TYPE | "TI" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.6 CARD TYPE "TJ" - TELEMETRY DATA REQUIREMENTS CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix A. |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 18-21 | SYNC START WORD | The start word number that the sync appears in the frame. Word One = 0001. |
| 22 | MAJOR FRAME SYNC F/L INDICATOR | This field applies to the format that has an 8 bit major frame sync in addition to the minor frame sync.<br>F = Major frame sync appears in the first minor frame.<br>L = Major frame sync appears in last minor frame. |
| 23-24 | MAJOR FRAME SYNC HEX VALUE | The HEX representation of the 8-bit sync word. |
| 25-28 | MAJOR FRAME SYNC WORD NUMBER | The word location of major sync in the minor frame. |
| 29 | MFC U/D INDICATOR | An alpha indication that the minor frame counter (MFC) increments up or down. (e.g., 0, 1, 2 etc or 50, 49, 48, etc.) |
| 30-32 | MFC INITIAL VALUE | A 3-digit decimal value equivalent to the first minor frame, frame 0. Initial value should be "0". Must be |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | consistent with frame numbers. |
| 33-36 | MFC WORD NUMBER | The word number in the minor frame that contains the minor frame counter. (RJ) |
| 37 | SFC U/D INDICATOR | An alpha character indicating if the Subframe Counter (SFC) increments up or down. |
| 38-39 | SFC INITIAL VALUE | The initial decimal value of the SFC equivalent to minor frame 0. The value should be zero. (RJ) |
| 40-43 | SFC WORD NUMBER | The word location in the minor frame that contains the subframe counter. (RJ) |
| 44 | SECOND PDI PORT | A numeric (1,2,3,4,5,6) indicating the PDI Port assignment. Ports 1-5 are attached mode and 6 is via the PI/PSP, detached. |
| 45 | THIRD PDI PORT | Same as above |
| 46-66 | AVAIL. SAMPLE RATES RATES | Up to three digits (RJ) to indicate the legal sample rates |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (46-48) | Sample Rate 1 | available for measurements in the telemetry stream. Up to seven sample rates can be indicated and they must be expressed in samples per major frame. |
| (49-51) | Sample Rate 2 | |
| (52-54) | Sample Rate 3 | |
| (55-57) | Sample Rate 4 | |
| (58-60) | Sample Rate 5 | |
| (61-63) | Sample Rate 6 | |
| (64-66) | Sample Rate 7 | |
| 67-70 | SPARE | |
| 71-73 | SUBCOM DEPTH | The number of minor frames that data is commutated in a major frame. |
| 74-76 | SUB-SUBCOM DEPTH | The number of subframes that data is sub-commutated in a major frame or data cycle. |
| 77-78 | CARD TYPE | "TB" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.3 CARD TYPE "TC" - PDI FORMAT REQUIREMENT CARD 1

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1 | BLANK | |
| 2-5 | FMT NUMBER | Same as "TA" card |
| 6 | FMT TYPE | Same as "TA" card |
| 7-8 | SPARE | |
| 9-12 | TOGGLE BUFFER SIZE | A four-digit integer specifying the number of 8-bit payload data stream minor frame words to be decommed into the PDI Toggle Buffer. Max size of 1024. (RJ). Must be validated. |
| 13-18 | PAYLOAD DOWNLINKED FRAME SIZE | A six-digit integer specifying the number of 8-bit words in the downlinked Payload Data Stream Frame. (RJ) This is the minor or major frame size. Must be validated. |
| 19-20 | SPARE | |
| 21-24 | START WORD NUMBER | The start word number from the payload data stream to be decommed. (RJ) |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 62-63 | BTU CHANNEL NUMBER | A number (00-31) identifying the channel on the corresponding BTU module that is assigned to the signal of the MDM. |
| 64-65 | BTU START BIT NUMBER | The start bit of the actual signal within the 16-bit data field (data bus word 00-63). |
| 66-67 | BTU NUMBER OF BITS | A number, 01-64, defining the number of bits in the signal within the MDM word number. |
| 68-69 | BTU WORD NUMBER | A number normally from 01-32 defining the specific 16-bit data word in a serial digital stream of data words coming from a BTU channel number. |
| 70 | CONCUR FLAG | C = Both C&W and Alert limits<br>P = Used for precondition only |
| 71-74 | SOURCE | GNC = GN&C Parameter<br>SS = System Software<br>SM = Payload Management Measurement generated internally to GPC system.<br>B = PCMMU Bite<br>PLM = BTU on PI Bus<br>PLB4 = Payload Bite Test 4 |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 75-76 | BTU NUMBER OF WORDS | Number of 16-bit words defined in the serial BTU channel. |
| 77-78 | CARD TYPE | "TJ" |
| 79-80 | CARD NUMBER | "01" |

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TABLE E-4.- TELEMETRY DATA TYPES
(STS-10 AND SUBSEQUENT)*

BCD - Binary Coded Decimal

BSS - Packed Bit String Signed (Two Complement) 2 to 64 bits in length. The first bit of the parameter is the sign bit (0 = positive, 1 = negative). The rest of the bits contain the absolute value for the positive sign and two's complement of the absolute value for the negative sign.

BMS - Packed Bit String Signed 2 to 64 bits in length. The first bit is the sign bit (0 = positive, 1 = negative). The rest of the bits contain the absolute value regardless of sign (e.g., not two's complement).

BSU - Packed Bit String Unsigned 2 to 64 bits in length.

BOS - Packed Bit String Signed with overflow bit. Same as BSS except bit 2 is an overflow indication (1 = overflow) and bit 3 is the MSB.

AMB - Signed Analog. An 8 or 10-bit signal where the first bit of the parameter is the sign bit (0 = positive, 1 = negative), and the second bit is the most significant bit (MSB). If the sign is negative the magnitude is in two's complement form.

AMU - Unsigned Analog. An 8-bit signal with the first bit equal to the MSB or a 10-bit signal with the first bit always set to "0" and the second bit equal to the MSB.

TABLE E-4.- Concluded

FPI - IBM 370 Floating Point. Single precision 32 bits or truncated to 16 bits and double precision 64 bits or truncated to 48 bits.

FPC - Spacelab Floating Point. Same as IBM 370 floating point except negative values are in two's complement.

BD - Binary Discrete. Parameter is a one bit binary 1 or 0.

PAR - Parent. An 8, 16, 24, 32, 48 or 64 bit word that contains one or more submeasurements.

BMD - Digital Signal. A miscellaneous data type which covers 2 to 64 bits of logical data. Normally requires special processing to handle.

VAR - Variable Data. A 16 bit parameter that is utilized to downlink multiple data or data with variable content.

CHR - Character String with 8 bits per character and a maximum of 80 characters per string.

DUC - Digital Uplink Command

FM - Frequency Modulation

*Prior to STS-10, the data types defined in JSC-14093, Appendix B, should be utilized.



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E.2.3.3.7 CARD TYPE "TK" - TELEMETRY USER IDENTIFICATION CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix a. |
| 11-20 | USER ID | User identification number if different from the M/S ID. For M/S ID's assigned by users that JSC must change, the user supplied M/S ID will appear here. |
| 21-30 | PARENT M/S ID | The identification of the associated parent word where the measurement is located. The parent M/S ID is given to the 8, 16, 24, 32 or 64-bit words containing events or mixed data. |
| 31-40 | WIRE M/S ID | A 10 character alphanumeric assigned to each digital or SIO channel whose description defines the BTU address and total number of 16-bit words within the channel. |
| 41-50 | RELATED M/S ID | For a dual serial I/O channel, |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | this will contain the corresponding wire M/S ID for the input or output depending on M/S ID in columns 1-10. |
| 51-76 | SPARE | |
| 77-78 | CARD TYPE | "TK" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.8 CARD TYPE "TL" - TELEMETRY PAYLOAD MANAGEMENT CARD 01

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix a. |
| 11-12 | GPC PROC. RATE | Rate at which limit testing by the GPC is accomplished for this parameter. Rates available are .5,1,5 processes per second. (RJ) |
| 13-27 | C&W LIMITS | |
| (13) | SM ALARM CLASS | Specifies which type of alarm |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | is to be turned on when a M/S ID has exceeded its limits.<br><br>2 - C&W - payload C&W indicator alarm outputs and fault messages |
| (14-15) | SM ALARM CLASS IND. | Indicates the particular C&W light to be turned on by software (RJ).<br>0 - Backup C&W<br>15 - Payload Caution & Backup C&W |
| (16-17) | SM NOISE FILTER VAL. | The maximum number of consecutive samples an M/S ID is allowed to be outside the values of its limits set before a message is displayed (0-15). (RJ) |
| (18-26) | SM CAUTION & WARNING LIMIT SET LOW VALUE OR STATE | Specifies the lower limit for caution and warning for analog parameter values, fixed point parameters (referred to as engineering unit (EU) parameters) or the undesired state for discrete parameters. The limit sense test shall compare the parameter value with one set |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | of the two limit set types - simple or multiple, defined as follows: |
| | | a. A simple limit set for an analog or EU parameter is one high-limit and one low-limit constant value. A simple limit set for a discrete parameter is a single discrete value. |
| | | b. A multiple limit set contains either two or three simple limit sets, from which one set shall be selected by preconditions. |
| | | Alarm class 2 limit sets shall be simple limit sets only, whereas alarm class 0 or 3 limit sets may be simple or multiple. |
| | | Absence of an entry indicates the value corresponding to the equivalent of the minimum negative value PCM count for signed analog parameters or |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 23-30 | FLIGHT PHASES | Indicates which phases of the flight the measurement is required.<br>L - Ground Checkout (Prelaunch)<br>A - Ascent<br>R - Orbit (Payload Quiescent)<br>C - Orbit (Orbiter Contingency)<br>D - Orbit (Payload Active)<br>E - Entry<br>F - Post Landing<br>S - Detached |
| 31-35 | DATA RANGE LOW | Low value of data range for this measurement compatible with the scaling coefficients. For discrete measurements, it defines the condition equivalent to binary 0. For "event status" indicators, see table E-3. (RJ) |
| 36-40 | DATA RANGE HIGH | High value of data range for this measurement compatible with the scaling coefficients. For discrete measurements, it defines the condition equivalent to binary 1. For "event status" indicators, see table E-3. (RJ) |
| 41 | INVERTED MEASUREMENT INDICATOR | Indicates measurement is transmitted least significant bit |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | first. |
| 42 | TLM LOW BIT RATE INDICATOR | Indicates if M/S ID is required for GPC Low Data Rate Downlist |
| 43-50 | SPARE | |
| 51-54 | BTU NAME | The name of the BUS Terminal Unit.<br>PF1, PF2<br>FLX1 thru FLX6<br>SCA1 thru SCA4<br><br>SSC = Spacelab Subsystem Computer<br>EXC = Spacelab Experiment Computer<br>PDI = Payload Data Interleaver<br><br>Note: For measurements generated internally within GPC System, this will be blank. |
| 55-57 | BTU MOD TYPE | An alpha code identifying the input/output module types of a BTU.<br>AID - Analog Input Differential<br>SIO - Serial Input/Output<br>DIL - Discrete Input Low (5 volts)<br>DIH - Discrete Input High (28 Volts)<br>AIS - Analog Input Single Ended |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 58-59 | BTU MIA ADDRESS | The Multiplex Interface Adapter (MIA) address assigned a BTU. 01-31. |
| 60-61 | BTU MODULE ADDRESS | A number (00-15) defining the location that is assigned to given input/output module (card) in the MDM. This is sometimes referred to as "card number" or "I/O Module number." |
| 62-63 | BTU CHANNEL NUMBER | A number (00-31) identifying the channel on the corresponding BTU module that is assigned to the signal of the MDM. |
| 64-65 | BTU START BIT NUMBER | The start bit of the actual signal within the 16-bit data field (data bus word 00-63). |
| 66-67 | BTU NUMBER OF BITS | A number, 01-64, defining the number of bits in the signal within the MDM word number. |
| 68-69 | BTU WORD NUMBER | A number normally from 01-32 defining the specific 16-bit data word in a serial digital stream of data words coming from a BTU channel number. |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 70 | CONCUR FLAG | C = Both C&W and Alert limits<br>P = Used for precondition only |
| 71-74 | SOURCE | GNC = GN&C Parameter<br>SS = System Software<br>SM = Payload Management Measurement generated internally to GPC system.<br>B = PCMMU Bite<br>PLM = BTU on PL Bus<br>PLB4 = Payload Bite Test 4 |
| 75-76 | BTU NUMBER OF WORDS | Number of 16-bit words defined in the serial BTU channel. |
| 77-78 | CARD TYPE | "TJ" |
| 79-80 | CARD NUMBER | "01" |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | undesired state for discrete parameters. The limit sense test shall compare the parameter value with one set of the two limit set types - simple or multiple, as defined as follows: |
| | | A simple limit set for an analog or EU parameter is one high-limit and one low-limit constant value. A simple limit set for a discrete parameter is a single discrete value. |
| | | A multiple limit set contains either two or three simple limit sets, from which one set shall be selected by preconditions. |
| | | Alarm class 2 limit sets shall be simple limit sets only, whereas alarm class 0 or 3 limit sets may be simple or multiple. |
| | | Absence of an entry indicates the value corresponding to the equivalent of the minimum |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | negative value PCM count for signed analog parameters or the value corresponding to the equivalent of zero PCM counts for unsigned analog parameters, or -99999.99 for EU parameters. (RJ) |
| (41-49) | SM LIMIT SET #2 HIGH VALUE OR STATE | Specifies the upper limit for analog, fixed point, or engineering unit parameter. Absence of an entry indicates the value corresponding g to the equivalent of the maximum positive value PCM count for analog parameters or +99999.99 for EU and FP parameters. (RJ) |
| (50-58) | SM LIMIT SET #3 LOW VALUE OR STATE | Specifies the lower limit for analog parameter values, fixed point parameters, single-precision floating point parameters (referred to as engineering unit (EU) parameters) or the undesired state for discrete parameters. The limit sense test shall compare the parameter value with one set of the two limit set types - simple or multiple, as defined as follows: |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | A simple limit set for an analog or EU parameter is one high-limit and one low-limit constant value. A simple limit set for a discrete parameter is a single discrete value. |
| | | A multiple limit set contains either two or three simple limit sets, from which one set shall be selected by preconditions. |
| | | Alarm class 2 limit sets shall be simple limit sets only, whereas alarm class 0 or 3 limit sets may be simple or multiple. |
| | | Absence of an entry indicates the value corresponding to the equivalent of the minimum negative value PCM count for signed analog parameters or the value corresponding to the equivalent of zero PCM counts for unsigned analog parameters, or -99999.99 for EU parameters. (RJ) |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (59-67) | SM LIMIT SET #3 HIGH VALUE OR STATE | Specifies the upper limit for analog, fixed point, or engineering unit parameter. Absence of an entry indicates the value corresponding to the equivalent of the maximum positive value PCM count for analog parameters or +99999.99 for EU and FP parameters. |
| 68-76 | SPARE | |
| 77-78 | CARD TYPE | "TM" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.10 CARD TYPE "TP" - TELEMETRY PRECONDITION CARD 1

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix A. |
| 11 | SM LIMIT SET NUMBER | The number assigned to a particular set of limit values.<br>1 = Set 1<br>2 = Set 2<br>3 = Set 3 |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 12-16 | DELAY OF LIMIT CHECK | Specifies the limit sense time delay (1-32767 sec.) from the time that a precondition has been met (initially) to the time that fault detection is to begin, to allow for warm up, valve travel, etc. A blank means no time delay is required. (RJ) |
| 17-20 | SPARE | |
| 21-36 | MEASUREMENT 1 OF PRECONDITION EXPRESSION | |
| (21) | OPEN PARENTHESIS | Blank or an open parenthesis used to allow grouping of the elements in the expression. |
| (22-31) | M/S ID 1 | Measurement #1 in the precondition expression. |
| (32-33) | STATE | The required state for the precondition measurement: for discretes, 1 or 0; for analog or digital, IL or OL (in-limit or out-of-limit). (LJ) |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (34) | CLOSED PARENTHESIS | Blank or closed parenthesis to allow grouping of elements in the expressions as required. |
| (35-36) | LOGICAL OPERATION | The logical operation between the corresponding precondition parameters required to satisfy the precondition solution.<br>AN - AND Operation<br>OR - OR Operation |
| 37-52 | MEASUREMENT 2 OF PRECONDITION EXPRESSION | |
| (37) | OPEN PARENTHESIS | Blank or an open parenthesis used to allow grouping of the elements in the expression. |
| (38-47) | M/S ID 2 | Measurement #2 in the precondition expression. |
| (48-49) | STATE | The required state for the precondition measurement: for discretes, 1 or 0; for analog or digital, IL or OL (in-limit or out-of-limit). (LJ) |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (50) | CLOSED PARENTHESIS | Blank or closed parenthesis to allow grouping of elements in the expressions as required. |
| (51-52) | LOGICAL OPERATION | The logical operation between the corresponding precondition parameters required to satisfy the precondition solution.<br>AN - AND Operation<br>OR - OR Operation |
| 53-68 | MEASUREMENT 3 OF PRECONDITION EXPRESSION | |
| (53) | OPEN PARENTHESIS | Blank or an open parenthesis used to allow grouping of the elements in the expression. |
| (54-63) | M/S ID 3 | Measurement #3 in the precondition expression. |
| (64-65) | STATE | The required state for the precondition measurement: for discretes, 1 or 0; for analog or digital, IL or OL (in-limit or out-of-limit). (LJ) |

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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (66) | CLOSED PARENTHESIS | Blank or closed parenthesis to allow grouping of elements in the expressions as required. |
| (67-68) | LOGICAL OPERATION | The logical operation between the corresponding precondition parameters required to satisfy the precondition solution.<br>AN - AND Operation<br>OR - OR Operation<br>Required only if a "4" appears in column 69. |
| 69 | NO. OF MEASUREMENTS IN PRECONDITION EXPRESSION | The number of measurements in the Precondition Expression (1-4). If this is 4, a "TQ" Card is required. |
| 70-76 | SPARE | |
| 77-78 | CARD TYPE | "TP" |
| 79-80 | CARD NUMBER | "01" ... "03" as required |



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E.2.3.3.11 CARD TYPE "TQ" - TELEMETRY PRECONDITION CARD 2

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric, uniquely identifying the parameter, configured as defined in Appendix A. |
| 11 | SM LIMIT SET NUMBER | The number assigned to a particular set of limit values. This number must have a matching "TP" card.<br>1 = set 1<br>2 = Set 2<br>3 = Set 3 |
| 12-20 | BLANK | |
| 21-36 | MEASUREMENT 4 OF PRECONDITION EXPRESSION | |
| (21) | OPEN PARENTHESIS | Blank or an open parenthesis used to allow grouping of the elements in the expression. |
| (22-31) | M/S ID 4 | Measurement #4 in the precondition expression. |
| (32-33) | STATE | The required state for the precondition measurement: for |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | discretes, 1 or 0; for analog or digital, IL or OL (in-limit or out-of-limit). (LJ) |
| (34) | CLOSED PARENTHESIS | Blank or closed parenthesis to allow grouping of elements in the expressions as required. |
| (35-36) | BLANK | |
| 37-76 | SPARE | |
| 77-78 | CARD TYPE | "TQ" |
| 79-80 | CARD NUMBER | "01" ... "03" as required |

E.2.3.3.12 CARD TYPE "TR" - TELEMETRY CALIBRATION CARD #1

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric uniquely identifying the parameter, configured as defined in Appendix A. |
| 11-12 | CALIBRATION TYPE | 11 - Payload Calibration Type |
| 13 | CAL. EFF., CURVE SERIES | The number of the curve in a set of multi-scale calibrations. |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | Only "0" is allowed. |
| 14 | CAL. DEG. OF CURVE DEGREE | States the degree of curve fit.<br>0 = Piecewise fit curve, no coefficients<br>1 = First Order<br>2 = Second Order<br>3 = Third Order*<br>4 = Fourth Order *<br>5 = Fifth Order *<br>NOTE: Fourth and Fifth Order not provided as a standard service. * - Will require a "TS" card. |
| 15 | CAL. NO. OF SETS | The total number of sets of multiscale calibration. Only "1" permitted. |
| 16-21 | LOW RANGE COUNT VAL. | PCM count value corresponding to the low value of data range. |
| 22-27 | HIGH RANGE COUNT VAL. | PCM count value corresponding to the high value of data range. |
| 28-41 | $A_0$ COEFFICIENT | $A_0$ coefficient value in scientific notation. |
| 42-55 | $A_1$ COEFFICIENT | $A_1$ coefficient value in scientific notation. |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 56-69 | $A_2$ COEFFICIENT | $A_2$ coefficient value in scientific notation. |
| 70-76 | SPARE | |
| 77-78 | CARD TYPE | "TR" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.13 CARD TYPE "TS" - TELEMETRY CALIBRATION CARD 2

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric uniquely identifying the parameter, configured as defined in Appendix A. |
| 11-15 | BLANK | |
| 16-29 | $A_3$ coefficient | $A_3$ coefficient in scientific notation. |
| 30-43 | $A_4$ coefficient | $A_4$ coefficient in scientific notation. |
| 44-57 | $A_5$ coefficient | $A_5$ coefficient in scientific notation. |
| 58-76 | SPARE | |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 77-78 | CARD TYPE | "TS" |
| 79-80 | CARD NUMBER | "01" |

E.2.3.3.14 CARD TYPE "TT" - TELEMETRY FORMAT REQUIREMENTS CARD

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| 1-10 | M/S ID | A 10 character alphanumeric uniquely identifying the parameters, configured as defined in Appendix A. |
| 11-33 | FIRST FORMAT DATA | |
| (11-14) | FORMAT NUMBER | A 4-digit numeric indicating the downlist, OI or PDI, format in which the parameter is required. Defines the independent data stream in which the parameter is located:<br>01-11 and 14-19 (RJ) - PDI<br>12-13 and 20-99 (RJ) - Downlist<br>100-127 (RJ) = 64 kbps<br>128-255 (RJ) = 128 kbps<br>1001-9999 (RJ) = Independent |
| (15) | FMT TYPE | This field is used to indicate data base storage for the telemetry format. |

| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | 1 = GPC (Downlist)<br>2 = OI/128 kbps<br>3 = OI/64 kbps<br>5 = Payload Independent<br>8 = PDI Format |
| (16-19) | REQ. TLM RATE | The required sample rate the parameter is required in the format. This is in samples per major frame for PDI and samples per second for all other formats. Decimal may appear in any column. (RJ) |
| (20-23) | ACTUAL TLM RATE | The actual sample rate that the parameter is assigned in the format. (RJ) |
| (24-27) | ACTUAL START WORD | The start word location of the parameter in the format. The first word in a frame should be "0001". Multisyllable parameters should be in contiguous words in the same frame. (RJ) |
| (28-30) | TLM START FRAME | The start frame that the first sample of the parameter appears. The frame number for the first frame should be "0". Successive samples must be evenly |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | spaced in time and can be calculated from the start frame and actual TLM rate. Must be consistent with minor frame counter. (RJ) |
| (31-33) | TLM START SUBFRAME | The start subframe that the first sample of the parameter appears. The subframe number for the first subframe should be "0". Must be evenly spaced in time and can be calculated from the start subframe and actual TLM rate. Do not use this field unless requesting optional services. (RJ) |
| 34-56 | SECOND FORMAT DATA | |
| (34-37) | FORMAT NUMBER | A 4-digit numeric indicating the downlist, OI or PDI, format in which the parameter is required. Defines the independent data stream in which the parameter is located: in.<br>01-11 and 14-19 (RJ) - PDI<br>32-13 and 20-99 (RJ) - Downlist<br>100-127 (RJ) = 64 kbps |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| | | 128-255 (RJ) = 128 kbps<br>1001-9999 (RJ) = Independent |
| (38) | FMT TYPE | This field is used to indicate data base storage for the telemetry format.<br>1 = GPC (downlist)<br>2 = OI/128 kbps<br>3 = OI/64 kbps<br>5 = Payload Independent<br>8 = PDI Format |
| (39-42) | REQUIRED TLM RATE | The required sample rate the parameter is required in the format. This is in samples per major frame for PDI and samples per second for all other formats. Decimal may appear in any column. (RJ) |
| (43-46) | ACTUAL TLM RATE | The actual sample rate that the parameter is assigned in the format. (RJ) |
| (47-50) | TLM START WORD | The start word location of the parameter in the format. The first word in a frame should be "0001". Multisyllable parameters should be in contiguous words in the same frame. (RJ) |



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| COLUMN | ELEMENT | DESCRIPTION |
|---|---|---|
| (51-53) | TLM START FRAME | The start frame that the first sample of the parameter appears. The frame number for the first frame should be "0". Successive samples must be evenly spaced in time and can be calculated from the start subframe and actual TLM rate. Do not use this field unless requesting optional services. (RJ) |
| 57-76 | SPARE | |
| 77-78 | CARD TYPE | "TT" |
| 79-80 | CARD NUMBER | "01" , "02" , .... |

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Multiple cards are required if more than two formats are required.

TABLE E-5.- PAYLOAD NAMES AND NUMBERS

| PAYLOAD NUMBER | PAYLOAD NAME | PAYLOAD NUMBER | PAYLOAD NAME |
|---|---|---|---|
| 001 | BTU SPARE | 032 | RCA |
| 002 | IECM | 033 | INSAT |
| 003 | OSTA-1 | 034 | SPACE T |
| 004 | OSTA-1 | 035 | MPS |
| 005 | OSTA-1 | 036 | PALAPA |
| 006 | OSTA-1 | 037 | SYNCOM |
| 007 | UNASSIGN (DOD) | 038 | GALILEO (ORB) |
| 008 | PALLET | 039 | GALILEO (Probe) |
| 009 | PAM GEN | 040 | OSTA-2 |
| 010 | OSS-1 | 041 | NOAA-6 |
| 011 | OSS-1 | 042 | ERBS |
| 012 | OSS-1 | 043 | OSS-2 |
| 013 | OSS-1 | 044 | ARABSAT |
| 014 | OSS-1 | 045 | AT&T |
| 015 | OSS-1 | 046 | OSTA-3 |
| 016 | OSS-1 | 047 | AMPTE |
| 017 | OSS-1 | 048 | LDEF |
| 018 | IUS | 049 | OSS-3 |
| 019 | TDRS | 050 | SOLAR POLAR (NASA) |
| 020 | SPACELAB | 051 | SOLAR POLAR (ESA) |
| 021 | MMS | 052 | GRO |
| 022 | RMS | 053 | CODE |
| 023 | PAM-A | 054 | OSS-4 |
| 024 | PAM-D | 055 | GSAT |
| 025 | SPAS-01 | 056 | OSTA-4 |
| 026 | SBS | 057 | PRC |
| 027 | TELESAT | 058 | OSS-5 |



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| | | | |
|---|---|---|---|
| 028 | INTELSAT | 059 | EUVE |
| 029 | OSTM-2 | 060 | PRC |
| 030 | OEX | 061 | OSS-6 |
| 031 | MEA-1 | | |

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## E.3 INTERACTIVE INPUT/OUTPUT

### E.3.1 GENERAL

The type of interactive displays required within this subsystem are those supporting the retrieval and update of approved data.

Online data entry will be provided, but actual system updates will be deferred to batch runs. Retrievals of approved data will reflect data entries as of the last batch update.

Messages to the user will appear on the last line of the display.

Each of the displays require certain data element qualifiers to be input by the user. If these qualifiers are not entered, an error message will result and no action will be taken.

All displays will contain an Action Code (A/C) to direct processing of the data being input or retrieved. These will indicate the function to be performed: add, change, delete, and retrieve.

The requirements for each of the displays in the following sections are given in terms of input requirements needed for retrieval and/or updates, output requirements, and the display layout.



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A retrieval from the data base will be the first action taken for each set of qualifiers before any other action. The input M/S ID will be edited for compliance with format requirements.

It is suggested that retrieval from the payload data base should be made in ascending order of file number (1-4), Payload Number, and within Payload Number, M/S ID or Telemetry Format Number, depending upon the file.

If this order is followed, online response time will be at a minimum.

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E.3.2 SIGN ON

The days date, and time are displayed in background. A pocket is supplied for the USER to enter the desired FORM Number. Valid form numbers are 01-05.

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```
        MMDBS PAYLOADS
     DATE            TIME
<              >  <              >
     FORM       <  >
```

Figure E-1.- P/L DBS Sign On.

## E.3.3 FORM 01 - PAYLOAD ASSIGNMENTS

The payload name is always a qualifier for the Payload Assignments form (fig. E-2). The Payload Number is an additional qualifier that may be used in referencing a specific number and its associated VCN.

| Heading | Data Element |
|---|---|
| P/L Name | Payload Name |
| P/L Number | Payload Number |
| P/L | P/L Number |
| VCN | Vehicle Configuration Number |

Retrieval of all Payload Numbers assigned to a Payload Name may be accomplished by entering the Payload Name in the P/L Name field and blanks in the Payload Number qualifier field. Should more than 60 numbers be assigned, an informative message will be written below the data retrieved and a second retrieval will resume following the last record accessed.

The Payload Number qualifier must match the first Payload Number in the data fields for the add and change actions. The change action is used to change the VCN assigned to a Payload Number.

A "delete" action code is inclusive of all Payload Numbers remaining on the form and transmitted.

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| P/L | A/C NO | P/L NAME VCN | P/L I | P/L NO | P/L NUMBER VCN | P/L I | P/L NO | VCN | P/L I |
|---|---|---|---|---|---|---|---|---|---|
| < | > < | > < | > | < | > < | > < | > | < | > < | > < | > |
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Figure E-2.- Payload Assignments.

## E.3.4 FORM 02 - PAYLOAD FILE HEADER CARDS

The Payload Number is always a qualifier for the Payload File Header Cards form (fig. E-3).

This form is used to retrieve, change, add or delete the four file header cards associated with a specific Payload Number.

| Header | Data Element |
|---|---|
| P/L | Payload Number |
| Line 1 & 2 | Payload Header Card AA |
| Line 3 & 4 | File 1 Header Card CA |
| Line 5 & 6 | File 2 Header Card CA |
| Line 7 & 8 | File 3 Header Card CA |

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PAYLOAD FILE HEADER CARDS

```
A/C< > P/L<    >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
```

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Figure E-3.- Payload File Header Card

### E.3.5 Form 03 - MSID Information

The MSID Information form (fig. E-4) is used to retrieve, change, add or delete cards from any of the four M/S ID files.

The Payload Number, M/S ID and File Numbers are always qualifiers for this form.

| Heading | Data Element |
|---|---|
| P/L | Payload Number |
| M/S ID | Measurement/Stimulus Identifier |
| File | File Number (1-4) |
| File 1; | Cards; |
| Lines 1-12 | CC, CD, CE, CL (1-7), CP, CV |
| File 2; | |
| Lines 1-12 | CC, CD, CE, CL (1-7), CM, CR |
| File 3; | |
| Lines 1-17 | CC, CD, CE, CX (1-14) |
| File 4; | |
| Lines 1-13 | TI, TJ, TK, TL, TM, TP1, TQ1, TP2, TQ2, TP3, TQ3, TR, TS |

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MSID INFORMATION

```
A/C< > P/L<    > MSID<            > FILE< >
          2         3         4         5         6         7         8
 12345678901234567890123456789012345678901234567890123456789012345678901234567890
 1                                                                                1
 2                                                                                2
 3                                                                                3
 4                                                                                4
 5                                                                                5
 6                                                                                6
 7                                                                                7
 8                                                                                8
 9                                                                                9
10                                                                               10
11                                                                               11
12                                                                               12
13                                                                               13
14                                                                               14
15                                                                               15
16                                                                               16
17                                                                               17
```

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Figure E-4.- M/S ID Information.

### E.3.6 Form 04 - TLM Format Information

The TLM Format Information form (fig. E-5) is used to retrieve, change, add or delete cards from the TLM file.

The Payload Number, TLM Format and Card Number are always qualifiers for this form.

| Heading | Data Elements |
|---|---|
| P/L | Payload Number |
| TLM | Telemetry Format |
| Card | TLM Format Card Number |

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TLM FORMAT INFORMATION

```
A/C< > P/L<    > TLM<     > CARD<    >
     1         2         3         4         5         6         7
67890123456789012345678901234567890123456789012345678901234567890123456789012345678
```

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Figure E-5.- TLM Format Information.

### E.3.7 Form 05 - MSID/TLM Format Relation

Payload Number and MSID are always qualifiers for the MSID/TLM Format Relation form (fig. E-6).

| Heading | Data Elements |
|---|---|
| P/L | Payload Number |
| MSID | Measurement/Stimulus Identifier |
| Lines 1-20 | Format data from TT Cards |

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## E.3 INTERACTIVE INPUT/OUTPUT

### E.3.1 GENERAL

The type of interactive displays required within this subsystem are those supporting the retrieval and update of data.

Online data entry will be provided, but actual system updates will be deferred to batch runs. Retrievals of approved data will reflect data entries as of the last batch update.

The requirements for each of the displays in the following sections are given in terms of input requirements for retrieval and/or updates, output requirements, and the display layout. Each of the displays require certain qualifiers (data elements) to be input by the user. If these are not entered, an error message will result and no action will be taken. Messages to the user will appear on the last line of the display.

All displays will contain an Action Code (A/C) to direct processing of the data being input or retrieved. These will indicate the function to be performed, i.e., add, change, delete, retrieve, and M/S ID change. A retrieval from the data base will be performed for each set of qualifiers before any other action. No editing or validation will be performed during this retrieval.

If an M/S ID is to be added to the data base as a result of an add action or a M/S ID change action, it is first validated using the same criteria described in Section E.2 above. An invalid M/S ID will not be accepted for data base update from the interactive system. In addition, a check will be made to insure that the new M/S ID does not duplicate an already existing M/S ID for the set of qualifiers.

Specified data elements from the "TA" and "TC" card types will be validated to insure that they are numeric. If not numeric or asterisks, an error message will be displayed and the update refused.

It is suggested that retrieval from the payload data base should be made in ascending order of File Number (1-4), Payload Identifier, and within Payload Identifier, M/S ID or Telemetry Format Number, depending upon the file. If this order is followed, online response time will be at a minimum.

## E.4.2 OC&DA TABLE 1

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This report, figure E-7, is required to specify Payload Data Requirements.

**Input Requirements:**

- Payload Name
- VCN (blank for all)

**Output Requirements:**

- Sort by VCN, M/S ID
- Section by VCN
- Page Numbering restarts with each section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | AA | 3-12 |
| | VCN | | |
| 1-10 | M/S ID | TI | 1-10 |
| 12-45 | Systems Nomenclature | TI | 21-54 |
| 47-57 | Range: Low, High | TJ | 31-40 |
| 59-66 | Engineering Units | TI | 13-20 |
| 68-70 | Data Type | TJ | 15-17 |
| 73-74 | Data Length | TI | 11-12 |
| 78-80 | Response Rate | TJ | 20-22 |
| 83 | Flight/Ground | TJ | 12 |
| 87 | Telemetry Link ID | TJ | 11 |
| 90 | Payload Management | TI | 71 |
| 93 | CRT Applicability | TJ | 14 |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 96 | Caution and Warning Display | TJ | 13 |
| 99 | GPC I/O Transaction | TI | 76 |
| 104 | Concur Flag | TJ | 70 |
| 109-112 | Source | TJ | 71-74 |
| 114-121 | Flight Phases | TJ | 23-30 |
| 123-132 | Parent M/S ID | TK | 21-30 |

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### E.3.3 FORM 01 - PAYLOAD ASSIGNMENTS

The Payload Name is always a qualifier for the Payload Assignments form (fig. E-2). The Payload Identifier is an additional qualifier that may be used in referencing a specific number and its associated VCN.

| Heading | Data Element |
|---|---|
| P/L Name | Payload Name |
| P/L ID | P/L Identifier |
| VCN | Vehicle Configuration Number |
| P/L No. | Payload Number |
| Status | Payload Status |

Retrieval of all Payload Identifiers assigned to a Payload Name may be accomplished by entering the Payload Name in the P/L Name field and blanks in the Payload Identifier qualifier field. Should more than 40 numbers be assigned, an informative message will be written below the data retrieved and a second retrieval will resume following the last record accessed.

The Payload Identifier qualifier must match the first Payload Identifier in the data fields for the add and change actions. The change action is used to change the VCN assigned to a Payload Identifier.

A "delete" action code is inclusive of all Payload Identifiers remaining on the form and transmitted.

| P/L | A/C ID | P/L NAME VCN | P/L NO | STATUS | P/L ID | VCN | P/L NO | STATUS |
|---|---|---|---|---|---|---|---|---|
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |
| < | > | < > | < > | < > | < > | < > | < > | < > |

Figure E-2 Payloads Assignments

## E.3.4 FORM 02 - PAYLOAD FIIE HEADER CARDS

The Payload Identifier is always a qualifier for the Payload File Header Cards form (fig. E-3).

This form is used to retrieve, change, add or delete the four file header cards associated with a specific Payload Identifier.

| Header | Data Element |
|---|---|
| P/I | Payload Identifier |
| Line 1 & 2 | Payload Header Card AA |
| Line 3 & 4 | File 1 Header Card CA |
| Line 5 & 6 | File 2 Header Card CA |
| Line 7 & 8 | File 3 Header Card CA |

PAYLOAD FILE HEADER CARDS

```
A/C< > P/L<    >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
          1         2         3         4         5         6         7
 123456789012345678901234567890123456789012345678901234567890123456789012
<                                                                        >
  <         >
```

Figure E-3.- Payload File Header Card

### E.3.5 Form 03 - MSID Information

The MSID Information form (fig. E-4) is used to retrieve, change, add or delete cards from any of the four M/S ID files. It may also be used to change the M/S ID (qualifiers).

The Payload Identifier, M/S ID and File Numbers are always qualifiers for this form.

| Heading | Data Element |
|---|---|
| P/I | Payload Identifier |
| M/S ID | Measurement/Stimulus Identifier |
| File | File Number (1-4) |
| File 1; | Cards: |
| Lines 1-13 | CC, CD, CE, CF, CL (1-7), CR, CV |
| File 2; | Cards: |
| Lines 1-12 | CC, CD, CE, CL (1-7), CM, CR |
| File 3; | Cards: |
| Lines 1-13 | CC, CD, CE |
| File 4; | Cards: |
| Lines 1-13 | TI, TJ, TK, TL, TM, TP1, TQ1, TP2, TQ2, TP3, TQ3, TR, TS |

MSID INFORMATION

```
A/C< > P/L<    > MSID<           > FILE< >
          2         3         4         5         6         7         8
  12345678901234567890123456789012345678901234567890123456789012345678901234567890
 1                                                                                1
 2                                                                                2
 3                                                                                3
 4                                                                                4
 5                                                                                5
 6                                                                                6
 7                                                                                7
 8                                                                                8
 9                                                                                9
10                                                                               10
11                                                                               11
12                                                                               12
13                                                                               13
```

Figure E-4.- M/S ID Information.

### E.3.6 Form 04 - TLM Format Information

The TLM Format Information form (fig. E-5) is used to retrieve, change, add or delete cards from the TLM file.

The Payload Identifier, TLM Format Number and card number are always qualifiers for this form.

| Heading | Data Elements |
|---|---|
| P/L | Payload Identifier |
| TLM | Telemetry Format |
| Card | TLM Format Card Number<br>Valid entries:<br>1) For TA, TB, and TD cards -<br>Blank or "TA00"<br>2) For TC cards -<br>Cards 1-16 - "TC01"<br>Cards 17-32 - "TC17"<br>Cards 33-48 - "TC33"<br>Cards 49-64 - "TC49"<br>Cards 64-74 - "TC65"<br>Maximum of 74 cards |

TLM FORMAT INFORMATION

```
A/C< > P/L<    > TLM<     > CARD<     >
     1         2         3         4         5         6         7
678901234567890123456789012345678901234567890123456789012345678901234567890123456789
```

Figure E-5.- TLM Format Information.

### E.3.7 Form 05 - MSID/TLM Format Relation

Payload Identifier and M/S ID are always qualifiers for the MSID/TLM Format Relation form (fig. E-6). The qualifier M/S ID may be changed through this form.

| Heading | Data Elements |
|---|---|
| P/L | Payload Identifier |
| MSID | Measurement/Stimulus Identifier |
| Lines 1-20 | TLM Format Data from TT Cards |

Three sets of format data appear on each line. The input tape records have two sets per record. Thus, on line 1 format data from "TT 01" and "TT 02" appears, line 2 has "TT 02" and "TT 03", line 3 has "TT 04" and "TT 05", etc. The column numbers at the top of the form indicate the fields as follows:

| Column | Data Element |
|---|---|
| 1-4 | Format Number |
| 5 | FMT Type |
| 6-9 | Req. TLM Rate |
| 10-13 | Actual TLM Rate |
| 14-17 | Actual Start Word |
| 18-20 | TLM Start Frame |
| 21-23 | TLM Start Subframe |
| 24 | TLM Low Bit Rate Indicator |

```
   A/C   P/L     MSID
1234567890123456789012 34 1234567890123456789012 34 1234567890123456789012 34
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
                          X                          X
```

Figure E-6.- MSID/TLM Format Relations.

## E.3.8 Form 06 - MSID DATA

The M/S ID Data form (fig. E-7) is used to retrieve, change, add or delete cards from the M/S ID data file.

The Payload Identifier, M/S ID and Card Number are always qualifiers for this form.

| Heading | Data Elements |
|---|---|
| P/L | Payload Identifier |
| M/S ID | Measurement/Stimulus Identifier |
| Card | MSID Card Number for CX cards<br>Valid entries are:<br>"CX01" - Cards 1-17<br>"CX18" - Cards 18-34<br>"CX35" - Cards 35-51<br>"CX52" - Cards 52-68<br>"CX69" - Cards 69-85<br>"CX86" - Cards 86-99<br>Maximum of 99 cards. |

MSID DATA

```
A/C< > P/L<    > MSID<            > CARD<      >
            2         3         4         5         6         7         8
  12345678901234567890123456789012345678901234567890123456789012345678901234567890
 1                                                                                1
 2                                                                                2
 3                                                                                3
 4                                                                                4
 5                                                                                5
 6                                                                                6
 7                                                                                7
 8                                                                                8
 9                                                                                9
10                                                                               10
11                                                                               11
12                                                                               12
13                                                                               13
```

Figure E-7.- M/S ID Data

## E.4 OUTPUT REPORTS

### E.4.1 General

The following sections list the reports that are produced by the Payloads Data Base Subsystem. Each report is described in terms of report input requirements that are to be entered by the user, and report output requirements. A format for each report is given, preceded by a list of each data element to be output. The figures depicting report headings are to show relative positioning and content only. The narrative description of the report shall be used to define inclusive column positions for the data. The report columns, where each value is to be output, is given and the associated payload card and columns from which the value is extracted is indicated.

All batch reports will reflect the date the report was produced and will have page numbers. The report formats indicate the report headings required.

The first page of each batch output listing will be a summary of user input data. The second page of each batch output listing will be error messages.

In describing input requirements, the term "blank for all" means, if the user does not enter a value, the field is to remain blank and all values which exist for the data element will be used for data selection. The sort order of the data is given by listing the primary sort data element followed by the secondary sorts, processed in the order listed. Where MS/ID is included in the sort, Measurement Type

(character 4) is not used. Where needed for clarity, the format of a data element or a report element may be shown in the following requirements. This format will consist of a pattern of Xs, Ys, and punctuation (slashes, decimals, etc.), where X = integer and Y = decimal fraction.

A required capability is to produce these tables in a reduced format on 8-1/2 X 11 paper through the use of a Xerox 9700 or some similar system capable of the same results. Where all tables are produced by a single run, the output should appear as a single report (contiguous). Where one or more tables are requested, each should appear as an individual report. The option to exercise this capability will be specified by the user as a part of the production request. If not specified, only standard output will be produced.

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| REPORT LENGTH | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 4 | Bit Rate Tolerance | TA | 38-41 |
| 4 | Data Code | TA | 42-45 |
| 2 | Bits Per Word | TA | 46-47 |
| 4 | Minor Frame Length | TA | 48-51 |
| 6 | Minor Frame Rate | Other (Calculate: TA 52-54, TA 55-59) | |
| 3 | Major Frame Length | TA - if TB col. 8≠'B' | 52-54 |
| 5 | Major Frame Period | TA | 55-59 |
| 5 | Data Cycle Period | TA | 60-64 |
| 8 | Major Frame Sync Pattern | TB | 9-16 |
| 6 | Major Frame Sync Location | TB | 22/25-28 |
| 8 | Minor Frame Sync Pattern | TB | 9-16 |
| 6 | Minor Frame Sync Location | TB | 17/18-21 |
| 6 | Minor Frame Counter Location | TB | 29/33-36 |
| 3 | Minor Frame Counter Value | TB | 30-32 |
| 6 | Subframe Counter Location | TB | 37/40-43 |
| 2 | Subframe Counter Value | TB | 38-39 |
| 24 | Samples Per Major Frame | TB | 46-69 |
| 8 | Format Identifier | TA | 19-25 |
| 4 | Format Identifier Value | TA | 26-29 |
| 4 | Data Block Length | TA | 48-51 |
| 3 | Data Block Rate | TA - if TB | |

| REPORT LENGTH | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | | col. 8='B' | 52-54 |
| 8 | Data Block Sync Pattern | TB | 9-16 |
| 3 | Subcom Depth | TB | 71-73 |
| 3 | Sub-Subcom Depth | TB | 74-76 |
| 8 | Flight Phases | TA | 11-18 |
| 4 | Toggle Buffer Size | TC | 9-12 |
| 2 | PDI Window Size OD Words | TC | 7-8 |
| 5 | Downlink Bandwidth | Other (Calculate) | |
| | T = Toggle Buffer Size | TC | 9-12 |
| | B = Bit Rate Tolerance | TA | 38-41 |
| | F = PDI Window Size OD Words | TC | 7-8 |
| | R = Input Stream Data Rate | TA | 30-37 |

$$\frac{(T+6) \times (1+B)R}{F} = \text{BPS (bits per second)}$$

| | | | |
|---|---|---|---|
| 9 | Decom Word Columns | TC | 13-16/17-20 |

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MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 6 FORMAT DECOMMUTATION CHARACTERISTIC



| PARAMETER | VALUE |
|---|---|
| PAYLOAD NAME | ---------- |
| PAYLOAD NUMBER | --- |
| FORMAT NUMBER | ---- |
| FORMAT TYPE | - |
| PDI FORMAT MODE | - |
| PDI PORT ASSIGNMENT | - |
| DECOM CONTROL MEMORY | - |
| INPUT STREAM DATA RATE (10-64000BPS) | -------- |
| BIT RATE TOLERANCE (UP TO 9.99%) | ---- |
| DATA CODE (NRZL,NRZM,NRZS,BIPL,BIPM,BIPS) | ---- |
| WORD SIZE (BITS) | -- |
| MINOR FRAME LENGTH (WORDS) | ---- |
| MINOR FRAME RATE (NO./SEC XXX.XX) | ------ |
| MAJOR FRAME LENGTH | --- |
| MAJOR FRAME PERIOD | ----- |
| DATA CYCLE PERIOD (XXXXX-SECONDS) | ----- |
| MAJOR FRAME SYNC PATTERN (HEX) | -------- |
| MAJOR FRAME SYNC LOCATION (X/YYYY) | -/---- |
| MINOR FRAME SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| MINOR FRAME SYNC LOCATION (X/YYYY) | -/---- |
| MINOR FRAME COUNTER LOCATION (X/YYYY) | -/---- |
| MINOR FRAME COUNTER VALUE (INITIAL) | --- |
| SUBFRAME COUNTER LOCATION (X/YYYY) | -/---- |
| SUBFRAME COUNTER VALUE (INITIAL) (DECIMAL) | -- |
| SAMPLES PER MAJOR FRAME | ---------- |
| FORMAT IDENTIFIER (XXXX/YYY) | ----/--- |
| FORMAT IDENTIFIER VALUE (XXXX) (HEX) | ---- |
| DATA BLOCK LENGTH (16-1024 WORDS) | ---- |
| DATA BLOCK RATE (200/SEC MAX) | --- |
| DATA BLOCK SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| SUBCOM DEPTH (NO. MINOR FRAMES) | --- |
| SUB-SUBCOM DEPTH (NO.MINOR FRAMES OR SUBFRAMES) | --- |
| FLIGHT PHASES | -------- |
| TOGGLE BUFFER SIZE (DATA WORDS ONLY) | ------ |
| PDI WINDOW SIZE (OD WORDS) | -- |
| DOWNLINK BANDWIDTH (KBS XXX.Y) | ----- |
| DECOM WORD COLUMNS (XXXX/YYYY) | ----/----,----/----,----/----,----/----,----/----,----/---- (repeat as required) |

Figure E-12 - OC&DA Table 6

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## E.4.8 OC&DA Table 7

This report, figure E-13, is required to specify the Payload Telemetry Format Requirements.

**Input Requirements:**

- Payload Name
- VCN (blanks for all)

**Selection Criteria:**

- Only M/S IDs with TT record will appear on this report.

**Output Requirements:**

- Sort by VCN, M/S ID, Format No.
- Section by VCN
- Page numbering restarts with each VCN change
- Columns M/S ID through Data Type printed once for M/S ID as multi-Telemetry Formats may exist for each M/S ID. Columns FMT ID through Data Length repeat as necessary.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | AA | 3-12 |
| | VCN | | |
| 1-10 | M/S ID | TI | 1-10 |
| 13-16 | BTU Name | TJ | 51-54 |
| 19-20 | BTU MIA Address | TJ | 58-59 |

| | | | |
|---|---|---|---|
| 24-26 | BTU MOD Type | TJ | 55-57 |
| 30-31 | BTU Module Address | TJ | 60-61 |
| 36-37 | BTU Channel Number | TJ | 62-63 |
| 42-43 | BTU Word Number | TJ | 68-69 |
| 48-49 | BTU Number of Bits | TJ | 66-67 |
| 54-55 | BTU Start Bit Number | TJ | 64-65 |
| 61-62 | BTU Number of Words | TJ | 75-76 |
| 68-69 | Data Type | TJ | 15-17 |
| 72-75 | Format Number | TT | 34-37 |
| 78 | Format Type | TT | 38 |
| 83-86 | Required TLM Rate | TT | 39-42 |
| 89-92 | Actual TLM Rate | TT | 43-46 |
| 96-98 | TLM Start Frame | TT | 51-53 |
| 103-105 | TLM Start Subframe | TT | 54-56 |
| 110-114 | TLM Start Word | TT | 47-50 |
| 119-120 | Start Bit | TJ | 18-19 |
| 126-127 | Data Length | TI | 11-12 |

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PAYLOAD NAME
VCN
DATE

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 7 PAYLOAD TELEMETRY FORMAT REQUIREMENTS

JSC-
PAGE 07-

| | * BTU CHANNELIZATION | | | | | | | | * | | * | | | | TLM FORMAT | | | | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/S ID | BTU NAME | MIA ADD | MOD TYPE | MOD ADD | MOD ADD | WORD NO | NO BITS | START BIT | NO WORDS | DATA TYPE | PMT ID | PMT TYPE | REQ RATE | ACT RATE | START FRAME | START SUBFR | START WORD | START BIT | DATA LENGTH |
| --- | --- | -- | --- | -- | -- | -- | -- | -- | -- | --- | --- | - | --- | --- | --- | --- | --- | -- | -- |

Figure E-13 - OC&DA Table 7

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E.4.9 OC&DA Table 8

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This report, figure E-14, is required to specify Format Decommutation parameters.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs with TI and TT records will appear on this report.

Output Requirements:

- Sort by VCN, Format Number, Format Type, M/S ID.
- Section by VCN, Format Number.
- Page numbering restarts with each VCN change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | AA | 3-12 |
| | VCN | | |
| 1-10 | M/S ID | TI | 1-10 |
| 13-46 | Systems Nomenclature | TI | 21-54 |
| 50-52 | Data Type | TJ | 15-17 |
| 56-59 | Required TLM Rate | TJ | 16-19 |
| 64-67 | Actual TLM Rate | TT | 20-23 |
| 72-74 | TLM Start Frame | TT | 28-30 |

| | | | |
|---|---|---|---|
| 79-81 | TLM Start Subframe | TT | 31-33 |
| 86-89 | TLM Start Word | TT | 24-27 |
| 94-95 | Start Bit | TJ | 18-19 |
| 101-102 | BTU Number of Bits | TJ | 66-67 |
| 106-115 | Parent M/S ID | TK | 21-30 |

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PAYLOAD NAME
VCN
DATE

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 8 FMT DECOMMUTATION

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| M/S ID | SYSTEMS NOMENCLATURE | DATA TYPE | REQ RATE | ACT RATE | START FRAME | START SUBFR | START WORD | START BIT | NO BITS | PARENT M/S ID |
|---|---|---|---|---|---|---|---|---|---|---|

Figure E-14 - OC&DA Table 8

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E.4.10 OC&DA Table 9

This report, figure E-15, is required to specify Payload Command Data Requirements.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs with CC and CD records will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID
- Section by VCN
- Page numbering restarts with each section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | AA | 3-12 |
| | VCN | | |
| 1-10 | M/S ID | CC | 1-10 |
| 12-45 | Systems Nomenclature | CC | 21-54 |
| 47-51 | Data Range: Low | CD | 19-23 |
| 53-57 | Data Range: High | CD | 24-28 |
| 59-66 | Engineering Units | CC | 13-20 |
| 68-70 | Command Type | CD | 58-60 |

| | | | |
|---|---|---|---|
| 73-74 | No. of Words | CC | 11-12 |
| 78 | RF Uplink | CD | 61 |
| 82 | Payload Management | CD | 71 |
| 86 | GPC I/O Transaction | CC | 55 |
| 91 | Routing Indicator | CD | 62 |
| 96 | Hazardous Flag | CD | 63 |
| 100 | Safing Flag | CD | 64 |
| 104-107 | Dest/Dest Dep | CL01 | 17-20 |
| 109-116 | Flight Phases | CD | 11-18 |
| 118-127 | Parent M/S ID | CE | 21-30 |

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PAYLOAD NAME
VCN
DATE

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 9 PAYLOAD COMMAND DATA REQUIREMENTS

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| M/S ID | SYSTEMS NOMENCLATURE | RANGE LOW | RANGE HIGH | ENG UNITS | CMD TYPE | NO WDS | RF UPLK | PM | GPC I/O | ROUTE | HAZ | SAFE | CMD DEST | FLT PHASE | PARENT M/S ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure E-15 - OC&DA Table 9



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E.4.6 CC&DA Table 5

This report, figure E-12, is required to specify the PDI Decom Format Summary.

Input Requirements:

- VCN(s) or Payload Number(s)

Selection Criteria:

- Only Format Numbers in which column six (6) of the TA record equals eight (8) will appear on this report.

Output Requirements:

- Sort by VCN, Format Number.
- Do not section by VCN.
- Page Numbering does not restart with section change.
- If any data, specified for use in a calculation, is not numeric, print asterisks in the calculated report element. If the data element containing invalid data is also to be printed, show the data as is.
- If the input VCNs have differing Payload Names, the Payload Name to be printed in the report heading will be retrieved from the 1st input VCN.
- The Second PDI Port will not exist unless the First PDI Port exists and the Third PDI Port will not exist unless both the First and Second PDI Ports exist.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| 2-5 | DECOM Format Number | TA | 2-5 |
| 9-16 | VCN | Other | |
| 23-25 | Payload Number | AA | 13-15 |
| 31 | PDI Port | TA | 10 |
| 33 | Second PDI Port | TB | 44 |
| 35 | Third PDI Port | TB | 45 |
| 45 | DECOM Control Memory | TA | 8 |
| 51-62 | Input Stream Data Rate (BPS) | TA | 65-76 |
| 66-69 | Toggle Buffer Size | TC | 9-12 |
| 75-80 | Payload Downlinked Frame Size | TC | 13-18 |
| 85-87 | Window Size | TA | 30-32 |
| 93-97 | Downlink Bandwidth (Calculated) (XXX.Y) | KBPS = PWS X .8 | |
| | where: PWS = ((T+6)(1+(B/100))R)/F(800) (rounded up to the nearest <u>even</u> integer) | | |
| | where: | | |
| | T = Toggle Buffer Size - (XXXXX) | TC | 9-12 |
| | F = P/L Downlink Frame Size (XXXXXX) | TC | 13-18 |
| | R = Input Stream Data Rate (XXXXX.YYYYYY) ** | TA | 65-76 |
| | B = Bit Rate Tolerance - (X.YY) ** | TA | 38-41 |
| 102-109 | Flight Phases | TA | 11-18 |

** = Decimals are embedded in data.

PAYLOAD NAME
DATE

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 5 PDI DECOM FORMAT SUMMARY

| DECOM FORMAT NUMBER | VCN | PAYLOAD NUMBER | PDI PORT | DECOM CONTROL MEMORY | INPUT STREAM DATA RATE (BPS) | TOGGLE BUFFER SIZE | PAYLOAD DOWNLINKED FRAME SIZE | WINDOW SIZE | DOWNLINK BANDWIDTH (KBPS) | FLIGHT PHASES |
|---|---|---|---|---|---|---|---|---|---|---|

Figure E-12.- OC&DA Table 5

E.4.7 CC&DA Table 6

This report, figure E-13, is required to specify the Decommutation Characteristics Format.

Input Requirements:

- VCN(s)

Selection Criteria:

- Only Format Numbers in which column six (6) of the TA record equals five (5) or eight (8).

Output Requirements:

- Sort by VCN, Payload Name, Payload Identifier
- Section by VCN, Format Number
- Page Numbering does not restart with section change.
- If any data, specified for use in a calculation, is not numeric, print asterisks in the calculated report element. If the data element containing invalid data is also to be printed, show the data as is.
- Where logic is specified and the analysis results in a "false" condition, leave the report element blank.
- Edit characters (e.g. "/" or ",") are not to appear in a report element if there is no data to be printed.
- If the input VCNs have differing Payload Names, the Payload Name to be printed in the report heading will be retrieved from the 1st input VCN.
- Major frame length will be printed right justified.
- The Second PDI Port will not exist unless the first

PDI Port exists and the Third PDI Port will not exist unless both the First and Second PDI Ports exist.

| NO. OF CHARS. | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| 8 | VCN | Other | |
| 3 | Payload Identifier | AA | 13-15 |
| 4 | Format Number | TA | 2-5 |
| 1 | TLM Format Type | TA | 6 |
| 1 | PDI Mode | TA | 7 |
| 1 | PDI Port Assignment | TA | 10 |
| 1 | Second PDI Port | TB | 44 |
| 1 | Third PDI Port | TB | 45 |
| 1 | PDI Decom Control Memory | TA | 8 |
| 12 | Input Stream Data Rate | TA | 65-76 |
| 4 | Bit Rate Tolerance (X.YY) ** | TA | 38-41 |
| 4 | Data Code | TA | 42-45 |
| 2 | Bits Per Word | TA | 46-47 |
| 4 | Minor Frame Length | Other | |
| | If TA, col. 7, = 2 or 3 | TA | 48-51 |
| 6 | Minor Frame Rate | Calculate | |
| | XXX | TA | 52-54 |
| | XXXYY | TA | 55-59 |
| 4 | Major Frame Length | Other | |
| | If TA, col. 7, = 1 | TA | 48-51 |
| | TA, col. 7, = 2 or 3 | TA | 52-54 |
| 6 | Major Frame Period | TA | 55-59 |
| 6 | Data Cycle Period (XXX.YY) | TA | 60-64 |
| 8 | Major Frame Sync Pattern | Other | |

| NO. OF CHARS. | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | If TB, col. 8, = "M" | TB | 9-16 |
| | else | TB | 23-24 |
| 6 | Major Frame Sync Location | Other | |
| | If TB, col. 8, = "M" | TB | 17/18-21 |
| | else | TB | 22/25-28 |
| 8 | Minor Frame Sync Pattern | Other | |
| | If TB, col. 8, = "F" | TB | 9-16 |
| 6 | Minor Frame Sync Location | Other | |
| | If TB, col. 8, = "F" | TB | 17/18-21 |
| 6 | Minor Frame Counter Location | TB | 29/33-36 |
| 3 | Minor Frame Counter Value | TB | 30-32 |
| 6 | Subframe Counter Location | TB | 37/40-43 |
| 2 | Subframe Counter Value | TB | 38-39 |
| 21 | Samples Per Major Frame | TB | 46-66 |
| 8 | Format Identifier | TA | 19-25 |
| 4 | Format Identifier Value | TA | 26-29 |
| 4 | Data Block Length | Other | |
| | If TA, col. 7, = 4 | TA | 48-51 |
| 3 | Data Block Rate | Other | |
| | If TA, col. 7, = 4 | TA | 52-54 |
| 8 | Data Block Sync Pattern | Other | |
| | If TB, col. 8, = "B" | TB | 9-16 |
| 3 | Subcom Depth | TB | 71-73 |
| 3 | Sub-Subcom Depth | TB | 74-76 |
| 8 | Flight Phases | TA | 11-18 |
| 4 | Toggle Buffer Size | TC | 9-12 |
| 6 | Payload Downlinked Frame Size | TC | 13-18 |

| REPORT LENGTH | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 3 | Window Size | TA | 30-32 |
| 5 | Downlink Bandwidth (KBPS) | Calculate | |
| | where: | KBPS = PWS X .8 | |
| | T = Toggle Buffer Size (XXXX) | TC | 9-12 |
| | B = Bit Rate Tolerance (X.YY) ** | TA | 38-41 |
| | F = Payload Downlinked Frame Size (XXXXXX) | TC | 13-18 |
| | R = Input Stream Data Rate (XXXXX.YYYYYY) ** | TA | 65-76 |
| | Calculation: PWS = ((T+6)(1+(B/100))R)/F(800) (round PWS up to nearest <u>even</u> integer) | | |
| 9 | Decom Word Columns | TC | 21-24/25-28 |
| | NOTE: Up to 7 sets per TC Card. Print a comma between sets. Print 7 sets per line. | | |

** = Decimals are embedded in data.

| PARAMETER | VALUE |
|---|---|
| VCN | -------- |
| PAYLOAD NUMBER | --- |
| FORMAT NUMBER | ---- |
| FORMAT TYPE | - |
| PDI FORMAT MODE | - |
| PDI PORT ASSIGNMENT | -,-,- |
| DECOM CONTROL MEMORY | - |
| INPUT STREAM DATA RATE (10-64000BPS) | ---------- |
| BIT RATE TOLERANCE (UP TO 9.99%) | ---- |
| DATA CODE (NRZL,NRZM,NRZS,BIPL,BIPM,BIPS) | ---- |
| WORD SIZE (BITS) | -- |
| MINOR FRAME LENGTH (WORDS) | ---- |
| MINOR FRAME RATE (NO./SEC) (XXX.XX) | ------ |
| MAJOR FRAME LENGTH | ---- |
| MAJOR FRAME PERIOD (XXX.YY) | ---.-- |
| DATA CYCLE PERIOD (SECONDS) (XXX.YY) | ---.-- |
| MAJOR FRAME SYNC PATTERN (HEX) | -------- |
| MAJOR FRAME SYNC LOCATION (X/YYYY) | -/---- |
| MINOR FRAME SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| MINOR FRAME SYNC LOCATION (X/YYYY) | -/---- |
| MINOR FRAME COUNTER LOCATION (X/YYYY) | -/---- |
| MINOR FRAME COUNTER VALUE (INITIAL) | --- |
| SUBFRAME COUNTER LOCATION (X/YYYY) | -/---- |
| SUBFRAME COUNTER VALUE (INITIAL) (DECIMAL) | -- |
| SAMPLES PER MAJOR FRAME | ---------- |
| FORMAT IDENTIFIER (XXXX/YYY) | ----/--- |
| FORMAT IDENTIFER VALUE (XXXX) (HEX) | ---- |
| DATA BLOCK LENGTH (16-1024 WORDS) | ---- |
| DATA BLOCK RATE (200/SEC MAX) | --- |
| DATA BLOCK SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| SUBCOM DEPTH (NO. MINOR FRAMES) | --- |
| SUB-SUBCOM DEPTH (NO. MINOR FRAMES OR SUBFRAMES) | --- |
| FLIGHT PHASES | -------- |
| TOGGLE BUFFER SIZE (DATA WORDS ONLY) | ---- |
| DOWNLINKED FRAME SIZE | ------ |
| WINDOW SIZE | --- |
| DOWNLINK BANDWIDTH (KBPS) (XXX.Y) | ----- |
| DECOM WORD COLUMNS (XXXX/YYYY) | ----/----,----/----,----/----,----/----,----/----,----/----,----/---- (repeat as required) |

Figure E-13.- OC&DA Table 6

E.4.8 CC&DA Table 7

This report, figure E-14, is required to specify the Payload Telemetry Format Requirements.

Input Requirements:

- Payload Name
- VCN (blanks for all)

Selection Criteria:

- Only M/S IDs with TT record, or any BTU Channelization data (card type "TJ", cols. 51-69), will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID, Format No.
- Section by VCN
- Page Numbering does not restart with section change.
- Columns M/S ID through Data Type printed once for M/S ID as multi-Telemetry Formats may exist for each M/S ID. Columns FMT ID through Data Length repeat as necessary. Fields will be left blank for any data elements which have no data in the data base.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 1-10 | M/S ID | TI | 1-10 |
| 12-15 | BTU Name | TJ | 51-54 |
| 18-19 | BTU MIA Address | TJ | 58-59 |
| 22-24 | BTU MOD Type | TJ | 55-57 |
| 27-28 | BTU Module Address | TJ | 60-61 |
| 32-33 | BTU Channel Number | TJ | 62-63 |
| 37-38 | BTU Word Number | TJ | 68-69 |
| 41-42 | BTU Number of Bits | TJ | 66-67 |
| 46-47 | BTU Start Bit Number | TJ | 64-65 |
| 52-53 | BTU Number of Words | TJ | 75-76 |
| 57-59 | Data Type | TJ | 15-17 |
| 65 | Inv. Meas. Indicator | TJ | 41 |
| 71-74 | Format Number | TT | 11-14 |
| 77 | Format Type | TT | 15 |
| 81-84 | Required TLM Rate | TT | 16-19 |
| 89 | Low Bit Rate Indicator | TT | 34 |
| 95-98 | Actual TLM Rate | TT | 20-23 |
| 101-103 | TLM Start Frame | TT | 28-30 |
| 107-109 | TLM Start Subframe | TT | 31-33 |
| 113-116 | TLM Start Word | TT | 24-27 |
| 120-121 | Start Bit | TJ | 18-19 |
| 127-128 | Data Length | TI | 11-12 |

PAYLOAD NAME
VCN
DATE

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 7 PAYLOAD TELEMETRY FORMAT REQUIREMENTS

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PAGE XXXXXX

| | * BTU CHANNELIZATION | | | | | | | | * | | | * TLM FORMAT | | | | | | | | | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/S ID | BTU NAME | MIA ADD | MOD TYPE | MOD ADD | CHAN NO | WORD NO | NO BITS | START BIT | NO WORDS | DATA TYPE | INV MEAS IND | FMT ID | FMT TYPE | REQ RATE | LOW BIT RATE IND | ACT RATE | START FRAME | START SUBFR | START WORD | START BIT | DATA LENGTH |
| --- | --- | -- | --- | -- | -- | -- | -- | -- | -- | --- | - | --- | - | --- | - | --- | --- | --- | --- | -- | -- |

Figure E-14.- OC&DA Table 7

E.4.9 CC&DA Table 8

This report, figure E-15, is required to specify Format Decommutation parameters.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs with TI and TT records will appear on this report.

Output Requirements:

- Sort by VCN, Format Number, Format Type, M/S ID.
- Section by VCN, Format Number.
- Page Numbering does not restart with section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | TI | 1-10 |
| 13-46 | Systems Nomenclature | TI | 21-54 |
| 49-51 | Data Type | TJ | 15-17 |
| 58 | Inv. Meas. Ind. | TJ | 41 |
| 65-68 | Required TLM Rate | TT | 16-19 |
| 74 | Low Bit Rate Indicator | TT | 34 |

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| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 79-81 | TLM Start Subframe | TT | 31-33 |
| 86-89 | TLM Start Word | TT | 24-27 |
| 94-95 | Start Bit | TJ | 18-19 |
| 101-102 | Data Length | TI | 11-12 |
| 106-115 | Parent M/S ID | TK | 21-30 |

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 8 FMT DECOMMUTATION



| M/S ID | SYSTEMS NOMENCLATURE | DATA TYPE | REQ RATE | ACT RATE | START FRAME | START SUBFR | START WORD | START BIT | DATA LENGTH | PARENT M/S ID |
|---|---|---|---|---|---|---|---|---|---|---|

Figure E-15 - CC&DA Table 8

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MASTER MEASUREMENT DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 14 PAYLOAD ANALOG COMMANDS CALIBRATION



| M/S ID | DSM | DSM TYPE | SYSTEMS NOMENCLATURE | RANGE LOW | RANGE HIGH | ENG UNITS | CAL TYPE | * CALIBRATION COEFFICIENTS * A0 | A1 |
|---|---|---|---|---|---|---|---|---|---|

Figure E-20 - OC&DA Table 14

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## E.4.16 OC&DA TABLE 15

This report, figure E-21, is required to specify the Identification References.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- All M/S IDs that appear on CE or TK records.

Output Requirements:

- Sort by VCN, M/S ID
- Section by VCN
- Page numbering restarts with each section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | AA | 3-12 |
| | VCN | | |
| 1-10 | M/S ID | CE/TK | 1-10 |
| 13-22 | User ID | CE/TK | 11-20 |
| 25-34 | Parent M/S ID | CE/TK | 21-30 |
| 37-46 | Wire M/S ID | CE/TK | 31-40 |
| 49-58 | Related M/S ID | CE/TK | 41-50 |

| M/S ID | SYSTEMS NOMENCLATURE | RANGE LOW | RANGE HIGH | ENG UNITS | CMD TYPE | NO WDS | RF UPLK | PM | GPC I/O | ROUTE | HAZ | SAFE | CMD DEST | FLT PHASE | PARENT M/S ID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Figure E-16.-- OC&DA Table 9.

## E.4.11 CC&DA TABLE 10

This report, figure E-17, is required to specify Payload Command Data, Command Channelization and Definition

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs with CC, CD and CR records, and any BTU Channelization data (card type "CD", and any cols. 39-57), will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID
- Section by VCN
- Page Numbering does not restart with section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | CC | 1-10 |
| 12-21 | User ID | CE | 11-20 |
| 23-27 | DSM Number | CD | 65-69 |
| 30 | DSM Type | CD | 70 |
| 34-36 | Command Type | CD | 58-60 |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 40 | RF Uplink | CD | 61 |
| 46 | Routing Indicator | CD | 62 |
| 50-53 | BTU Name | CD | 39-42 |
| 55-56 | BTU MIA Address | CD | 46-47 |
| 59-61 | BTU MCD Type | CD | 43-45 |
| 64-65 | BTU Module Address | CD | 48-49 |
| 69-70 | BTU Channel Number | CD | 50-51 |
| 74-75 | BTU Word Number | CD | 56-57 |
| 79-80 | BTU Number of Bits | CD | 54-55 |
| 84-85 | BTU Start Bit Number | CD | 52-53 |
| 89-90 | BTU Number of Words | CD | 75-76 |
| 95-98 | BTU 1 Reset Address | CR | 11-14 |
| 101-104 | BTU 1 Reset: Discrete Mask 1 | CR | 15-18 |
| 107-110 | BTU 1 Set Address | CR | 19-22 |
| 113-116 | BTU 1 Set: Discrete Mask 2 | CR | 23-26 |
| 119-122 | BTU 2 Reset Address | CR | 27-30 |
| 125-128 | BTU 2 Set Address | CR | 35-38 |

TABLE 10 PAYLOAD COMMAND DATA, COMMAND CHANNELIZATION AND DEFINITION

| | | | | | * | BTU CHANNELIZATION | | | | | | | | | * * | | BTC | | | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/S ID | USER ID | DSM | DSM TYPE | CMD TYPE | RF UPLK | ROUTE | BTU NAME | MIA ADD | MOD TYPE | MOD ADD | CHAN ADD | WORD NO | NO BITS | START BIT | NO WDS | PRI MDM ADD RST | DIS MSK RST | PRI MDM ADD SET | DIS MSK SET | RED MDM ADD RST | RED MDM ADD SET |
| --- | --- | --- | - | --- | - | - | --- | -- | --- | -- | -- | -- | -- | -- | -- | --- | --- | --- | --- | --- | --- |

Figure E-17.- OC&DA Table 10.

## E.4.12 CC&DA TABLE 11

This report, figure E-18, is required to specify Payload Command Loads.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs with CC, CD and one or more CL records will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID.
- Section by VCN.
- Page Numbering does not restart with section change.
- Print line section M/S ID through CHW once for each M/S ID. Print line section COMMAND WORDS for each CL record.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | CC | 1-10 |
| 13-22 | User ID | CE | 11-20 |
| 25-29 | DSM Number | CD | 65-69 |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 32 | DSM Type | CD | 70 |
| 37-39 | Command Type | CD | 58-60 |
| 44 | RF Uplink | CD | 61 |
| 50 | Routing Indicator | CD | 62 |
| 55-58 | Major Function | CL | 11-14 |
| 61-62 | CP Code | CL | 15-16 |
| 65-69 | Destn | CL | 51-55 |
| 72-75 | Dest/Dest Dep | CL | 17-20 |
| 78-79 | Number of Words | CC | 11-12 |
| 82-85 | CHW (Command Header Word) | CL | 21-24 |
| 87-90 | CDW 1 (Command Data Word) | CL | 25-28 |
| 92-95 | CDW 2 | CL | 29-32 |
| 97-100 | CDW 3 | CL | 33-36 |
| 102-105 | CDW 4 | CL | 37-40 |
| 107-110 | CDW 5 | CL | 41-44 |
| 112-115 | CDW 6 | CL | 45-48 |
| 117-120 | CDW 7 | CL | 49-52 |
| 122-125 | CDW 8 | CL | 53-56 |
| 127-130 | CDW 9 | CL | 57-60 |

Command data words 10-64 appear on subsequent lines.

MASTER MEASUREMENTS DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 11 PAYLOAD COMMAND LOADS



| M/S ID | USER ID | DSM | DSM TYPE | CMD TYPE | RF UPLK | ROUTE | MAJ FUNC | OP CODE | DESTN | DEST DEP | NO WDS | * CHW | COMMAND WORDS (1-64) CDW | CDW | CDW | CDW | CDW | CDW | CDW | CDW | CDW * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| --- | --- | --- | - | --- | - | - | --- | -- | --- | --- | -- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Figure E-18.- OC&DA Table 11.

E.4.13 CC&DA TABLE 12

This report, figure E-19, is required to specify Payloads Multiple Commands.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs from the Predefined Ground Commands File (Tape File 2) with CC, CD and CM records will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID
- Section by VCN
- Page Numbering does not restart with section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | CC | 1-10 |
| 13-22 | User ID | CE | 11-20 |
| 25-29 | DSM Number | CD | 65-69 |
| 33 | DSM Type | CD | 70 |
| 38-40 | Command Type | CD | 58-60 |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 45 | RF Uplink | CD | 61 |
| 52 | Routing Indicator | CD | 62 |
| 59-63 | RTC 1 | CM | 11-15 |
| 66-70 | RTC 2 | CM | 16-20 |
| 73-77 | RTC 3 | CM | 21-25 |
| 80-84 | RTC 4 | CM | 26-30 |
| 87-91 | RTC 5 | CM | 31-35 |
| 94-98 | RTC 6 | CM | 36-40 |
| 101-105 | RTC 7 | CM | 41-45 |
| 108-112 | RTC 8 | CM | 46-50 |
| 115-119 | RTC 9 | CM | 51-55 |
| 122-126 | RTC 10 | CM | 56-60 |

MASTER MEASUREMENT DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 12 PAYLOAD MULTIPLE COMMANDS



| M/S ID | USER ID | DSM | DSM TYPE | CMD TYPE | RF UPLK | ROUTE | * 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | RELATED DSM NUMBER | | | | | | | | | |

Figure E-19.- OC&DA Table 12.

## E.4.14 CC&DA TABLE 13

This report, figure E-20, is required to specify the Payload Buildable Commands.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs from the Buildable/Shell Ground Commands File (Tape File 3) will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID, DSM Number
- Section by VCN
- Page Numbering does not restart with section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | CC | 1-10 |
| 13-22 | User ID | CE | 11-20 |
| 25-29 | DSM Number | CD | 65-69 |
| 32 | DSM Type | CD | 70 |
| 37 | RF Uplink | CD | 61 |

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| 43 | Routing Indicator | CD | 62 |
| 49-50 | Data Length | CX | 17-18 |
| 55-56 | Start Word Number | CX | 19-20 |
| 61-62 | Start Bit Number | CX | 21-22 |
| 66-75 | Parameter M/S ID | CX | 23-32 |
| 77-86 | Parameter Title | CX | 33-42 |
| 90 | Parameter Type | CX | 43 |
| 94-101 | Parameter Units | CX | 44-51 |
| 107 | Data Expressed | CX | 52 |
| 114-129 | Parameter Data | CX | 53-68 |

PAYLOAD NAME
VCN
DATE

MASTER MEASUREMENT DATA BASE SYSTEM
ORBITER COMMAND & DATA ANNEX
TABLE 13 PAYLOAD BUILDABLE COMMANDS

JSC-XXXXX
PAGE 13-XXX

| M/S ID | USER ID | DSM | DSM TYPE | RF UPLK | ROUTE | DATA LENGTH | START WORD | START BIT | * M/S ID | PARAMETER TITLE | TYPE | * UNITS | DATA EXPRESSED | PARAMETER DATA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| --- | --- | --- | - | - | - | -- | -- | -- | --- | --- | - | --- | - | --- |

Figure E-20.- OC&DA Table 13.

E.4.15 OC&DA TABLE 14

This report, figure E-21, is required to specify Payload Analog Command Calibration parameters.

Input Requirements:

- Payload Name
- VCN (blank for all)

Selection Criteria:

- Only M/S IDs from the Predefined Onboard Commands File (Tape File 1) with CC, CD and CV records will appear on this report.

Output Requirements:

- Sort by VCN, M/S ID
- Section by VCN
- Page Numbering does not restart with section change.

| REPORT COLUMN | DATA ELEMENT | CARD TYPE | CARD COLUMN |
|---|---|---|---|
| | Payload Name | Other | |
| | VCN | Other | |
| 1-10 | M/S ID | CC | 1-10 |
| 13-46 | Systems Nomenclature | CC | 21-54 |
| 49-53 | Data Range: Low | CD | 19-23 |
| 55-59 | Data Range: High | CD | 24-28 |
| 63-70 | Engineering Units | CC | 13-20 |

E.4.18 Payloads Tape Compare

This capability is required to verify the contents of a tape, output from the Payloads data base, against a tape used to load the data originally, and report the differences.

Requirements

- Compare two tapes, containing multiple files of 80 character, unblocked, records, and report only mismatched records. Compare all files.

- Insure alignment of identifiers:
  File Number
  M/S ID or Format Number
  Card Type
  Card Number

- Print mismatched records on separate lines, labeling one as "IN", the other as "OUT". For the "IN" record, print all data in the record. For the "OUT" record, print only unmatched data and identification (M/S ID or Format Number, Card Type and Card Number). Print blank line between each set. Start each file at the top of a page, and print file number and run date on each page.

- Print a column guide (01-80) at the top and bottom of each page.



ORIGINAL PAGE IS
OF POOR QUALITY

PRECEDING PAGE BLANK NOT FILMED

PAGES 171 through
178 missing

- For the purposes of this compare, Payload Number is not considered to be an identifier and will only be reported as a mismatched record if the two tapes do not match.

ORIGINAL PAGE IS
OF POOR QUALITY

## E.4.19 Payloads Tape Print

This capability is required to permit visual examination of the data for one or more specified payloads recorded on a magnetic tape.

### Requirements

- Input is Payload Identifier and Payload Name of requested, or blank for all.

- Data input is from magnetic tape, nine (9) track, 1600 BPI density, ASCII encoded, unlabeled, four (4) files per payload, 80 character (unblocked) records.

- Report consists of record images with column identification lines (01-80 printed at the top and bottom of each page. Payload Identifier, Payload Name, file number, and file name should be printed in the report heading. Start each file on a new page.

## E.5 INTERSYSTEM DATA TRANSFER

### E.5.1 General

The following sections list the products of the Payloads Data Base Subsystem which serve to transfer data from the Master Payloads Data Base (MPDB) to other systems in computer-readable form and media. Each product is described in terms of input requirements (to be entered by the user) and output requirements.

### E.5.2 Payloads Data Tape

A magnetic tape, containing data relating to a specific payload, is required for interface with other systems.

Input Requirements

- Payload Identifier in desired output sequence.

Output Requirements

- Physical: Magnetic tape, nine track, 1600 BPI density, ASCII encoded, unlabeled, four (4) files per payload, 80 character (unblocked) records.
- Payload Identifier will be converted to the Payload Number by which it was known on original input.
- The format of the output tape will be the same as the format of the input tape, described in Section E.2, Payloads Data Base Load Tape.

## E.5.3 Telemetry Descriptor Tape

This output product is required by MCC and KSC. It will consist of an unlabeled, 1600 bpi, ASCII encoded, magnetic tape which contains a header file and two data files, formats as described below.

### Input Requirements

- Payload Identifier
- Associated Telemetry Format Numbers (blank for all)
- Associated PSP Configuration Message IDs (blank for all)
- Flight Number
- Telemetry Descriptor Tape (TDT) Number
- Multiple Payloads may be requested.

### Output Requirements

- Sort: File 2 - VCN, Telemetry Format Number
  File 3 - VCN, PSP Configuration ID
- The header file (File 1) consists of one unblocked, fixed length (270 characters), record in the following format:

| Length | Data Element |
|---|---|
| 8 | TDT Number |
| 8 | Tape Creation Date |
| 10 | Software Release Identification |
| 8 | Flight Number |
| 200 | VCN Table (Maximum of 25 VCNs (8 characters each) indicating |

| | |
|---|---|
| | payloads contained on data file) |
| 1 | *Value = 2 |
| 35 | Blanks |

*Indicates number of data files on tape.

The VCN table consists of VCNs associated with the payloads selected. Duplicates are eliminated where VCN has been assigned to more than 1 set of payload data.

- File 2 consists of multiple fixed length records (270 characters), with the format and processing requirements as described in Table E-6.

- File 3 consists of multiple fixed length records (90 characters), with the format and processing requirements as described in Table E-7.

- The capability will be provided to print the contents of each record of every file on the tape in display character mode. For file 2, data elements from "Payload Name" through "Minor Frame Counter Value" will be printed on one line, and the remainder of the record on the following line. For both files, double spacing between record print is required.

- The capability will also be provided to print a formatted report of the contents of file 1 and of every record in files 2 and 3 to permit visual examination of the contents of the tape for the purposes of coordination and quality control. This Telemetry Descriptor Tape Report will consist of three

sections, representing the three files. The format of the file 1 section is depicted in figure E-24, file 2 in figure E-25, and file 3 in figure E-26. The data elements are as listed on Tables E-6 and E-7, and in description of file 1 above.

FILE 2: TELEMETRY DESCRIPTOR RECORD FORMAT

| LENGTH | DATA RECORD LOCATION CARD COLUMNS | ELEMENT | PROCESSING |
|---|---|---|---|
| 10 | AA 3-12 | PAYLOAD NAME | |
| 3 | | PAYLOAD IDENTIFIER | |
| 8 | | VCN | |
| 4 | TA 2-5 | FORMAT NUMBER | |
| 1 | TA 6 | FORMAT TYPE | |
| 1 | TA 7 | PDI FORMAT MODE | Blank if Format Type not = 8 |
| 12 | TA 65-76 | BIT RATE | |
| 4 | TA 38-41 | BIT RATE TOLERANCE | |
| 2 | TA 46-47 | BITS PER WORD (WORD SIZE) | Blank if Format Mode* = 4 |
| 4 | TA 48-51 | MINOR FRAME LENGTH (WORDS) | Blank if Format Mode* = 1 or 4 |
| 3 | TA 52-54 | NUMBER OF MINOR FRAMES | Blank if Format Mode* = 1 or 4 |
| 4 | | MAJOR FRAME LENGTH | If Format Mode* = 1, data record location is TA 48-51. If Format Mode* = 2, data record location is TA 52-54. Blank if Format Mode* = 3 or 4 |
| 5 | TA 55-59 | MAJOR FRAME PERIOD | |
| 8 | | MAJOR FRAME SYNC PATTERN | If Sync Type (TB 8) = "M", data record location is TB 9-16. Otherwise, data record location is TB 23-24. |
| 1 | | MAJOR FRAME SYNC LOCATION FRAME | If Sync Type (TB 8) = "M", data record location is TB 17. Otherwise, data record location is TB 22. |

*Format Mode = column 7, card type TA

TABLE E-6

FILE 2: TELEMETRY DESCRIPTOR RECORD FORMAT
(continued)

| LENGTH | DATA RECORD LOCATION CARD COLUMNS | ELEMENT | PROCESSING |
|---|---|---|---|
| 4 | | MAJOR FRAME SYNC LOCATION WORD | If Sync Type (TB 8) = "M", data record location is TB 18-21. Otherwise, data record location is TB 25-28. |
| 8 | | MINOR FRAME SYNC PATTERN (HEX) | If Sync Type (TB 8) = "F", data record location is TB 9-16. Otherwise, field is left blank. |
| 4 | | MINOR FRAME SYNC LOCATION | If Sync Type (TB 8) = "F", data record location is TB 18-21. Otherwise, field is left blank. |
| 1 | TB 29 | MINOR FRAME COUNTER DIRECTION | |
| 4 | TB 33-36 | MINOR FRAME COUNTER LOCATION | |
| 3 | TB 30-32 | MINOR FRAME COUNTER VALUE (INITIAL) | |
| 1 | TB 37 | SUBFRAME COUNTER DIRECTION | |
| 4 | TB 40-43 | SUBFRAME COUNTER LOCATION | |
| 2 | TB 38-39 | SUBFRAME COUNTER VALUE (INITIAL) | |
| 21 | TB 46-66 | SAMPLES PER MAJOR FRAME | |
| 3 | TA 23-25 | FORMAT ID LOCATION - FRAME | |
| 4 | TA 19-22 | FORMAT ID LOCATION - WORD | |
| 4 | TA 26-29 | FORMAT ID VALUE | |
| 4 | TA 48-51 | DATA BLOCK LENGTH | Blank if Format Mode* = 1, 2, or 3. |

*Format Mode = column 7, card type TA

TABLE E-6

FILE 2: TELEMETRY DESCRIPTOR RECORD FORMAT
(concluded)

| LENGTH | DATA RECORD LOCATION CARD COLUMNS | ELEMENT | PROCESSING |
|---|---|---|---|
| 8 | TB 9-16 | DATA BLOCK SYNC PATTERN | If Sync Type (TB 8) = "B", otherwise blank. |
| 3 | TB 71-73 | SUBCOM DEPTH | |
| 3 | TB 74-76 | SUB-SUBCOM DEPTH | |
| 6 | TC 13-18 | PAYLOAD DOWNLINKED FRAME SIZE | |
| 12 | Calculate | PDI OUTPUT DATA RATE | POR = PDI Output Data Rate (XXXXX.YYYYYY)<br>T = Toggle Buffer Size (TC 9-12(XXXX))<br>R = PDI Input Bit Rate (TA 65-76 (XXXXX.YYYYYY))<br>F = Payload Downlinked Frame Size (TC 13-18(XXXXXX))<br>If Format Mode* = 1, 2, or 3<br>POR = (TR)/F<br>If Format Mode* = 4, POR = R<br>Output blanks if calculation fails for any reason. |
| 3 | TA 30-32 | WINDOW SIZE | |
| 5 | TA 33-37 | TLM BANDWIDTH | |
| 93 | | SPARE | |
| 270 | TOTAL RECORD LENGTH | | |

*Format Mode = column 7, card type TA

TABLE E-6

FILE 3: PSP CONFIGURATION RECORD FORMAT

| LENGTH | DATA RECORD LOCATION CARD COLUMNS | ELEMENT | PROCESSING |
|---|---|---|---|
| 10 | AA 3-12 | PAYLOAD NAME | |
| 3 | Other | PAYLOAD IDENTIFIER | |
| 8 | Other | VCN | |
| 2 | CA 15-16 | PSP CONFIGURATION ID | |
| 2 | CA 6-7 | COMMAND DATA RATE | |
| 1 | CA 8 | COMMAND DATA CODE | |
| 1 | CA 9 | COMMAND SUBCARRIER IDLE PATTERN | |
| 1 | CA 10 | UMBILICAL SELECTION | |
| 4 | CA 17-20 | PSP ASSCCIATED FORMAT ID | |
| | | | NOTE: The following five fields contain data for the Format Number (TA 2-5) corresponding to the PSP Associated Format ID (CA 17-2C). |
| 12 | TA 65-76 | BIT RATE | |
| 4 | TA 42-45 | TLM DATA CODE | |
| 1 | TB 7 | SYNC LENGTH | |
| 8 | TB 9-16 | SYNC HEX VALUE | |
| 4 | TA 48-51 | WORDS PER FRAME OR DATA BLOCK | |
| 29 | | SPARE | |
| --- | | | |
| 90 | TOTAL RECORD LENGTH | | |

TABLE E-7

TELEMETRY DESCRIPTOR TAPE REPORT-SECTION 1

| DATA ELEMENT | VALUE | PAGE |
|---|---|---|
| TOT NUMBER | ----- | |
| TAPE CREATION DATE | --/--/-- | |
| SOFTWARE RELEASE IDENTIFICTION | - | |
| FLIGHT NUMBER | -------- | |
| VCN TABLE | -------- | |

FIGURE E-24

TELEMETRY DESCRIPTOR TAPE REPORT-SECTION 2
DECOMMUTATION CHARACTERISTICS TABLE

VCN
DATE

PAGE

| PARAMETER | VALUE |
|---|---|
| PAYLOAD NAME | ---------- |
| PAYLOAD IDENTIFIER (MMDB ID) | --- |
| FORMAT NUMBER | ---- |
| FORMAT TYPE | - |
| PDI FORMAT MODE | - |
| INPUT STREAM DATA RATE (10-64000BPS) | ---------- |
| BIT RATE TOLERANCE (UP TO 9.99%) | ---- |
| WORD SIZE (BITS) | -- |
| MINOR FRAME LENGTH (WORDS) | ---- |
| NUMBER OF MINOR FRAMES | --- |
| MAJOR FRAME LENGTH | ---- |
| MAJOR FRAME PERIOD | ----- |
| MAJOR FRAME SYNC PATTERN (HEX) | -------- |
| MAJOR FRAME SYNC LOCATION (X/YYYY) | -/---- |
| MINOR FRAME SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| MINOR FRAME SYNC LOCATION | ---- |
| MINOR FRAME COUNTER LOCATION (X/YYYY) | -/---- |
| MINOR FRAME COUNTER VALUE (INITIAL) | --- |
| SUBFRAME COUNTER LOCATION (X/YYYY) | -/---- |
| SUBFRAME COUNTER VALUE (INITIAL) (DECIMAL) | -- |
| SAMPLES PER MAJOR FRAME | ---------- |
| FORMAT IDENTIFIER LOCATION (XXX/YYYY) | ---/---- |
| FORMAT IDENTIFIER VALUE (XXXX) (HEX) | ---- |
| DATA BLOCK LENGTH (16-1024 WORDS) | ---- |
| DATA BLOCK SYNC PATTERN (HEX) (2-4 WORDS) | -------- |
| SUBCOM DEPTH (NO. MINOR FRAMES) | --- |
| SUB-SUBCOM DEPTH (NO. MINOR FRAMES OR SUBFRAMES) | --- |
| PAYLOAD DOWNLINKED FRAME SIZE | ------ |
| PDI OUTPUT DATA RATE | ---------- |
| WINDOW SIZE | --- |
| TELEMETRY BANDWIDTH | ----- |

FIGURE E-25

TELEMETRY DESCRIPTOR TAPE REPORT-SECTION 3
PSP CONFIGURATION MESSAGE DATA

VCN
DATE

PAGE

| PARAMETER | VALUE |
|---|---|
| PAYLOAD NAME | ---------- |
| PAYLOAD IDENTIFIER (MMDB ID) | --- |
| PSP CONFIGURATION MESSAGE ID | -- |
| PAYLOAD COMMAND DATA RATE | -- |
| PAYLOAD COMMAND DATA CODE | - |
| COMMAND SUBCARRIER IDLE PATTERN | - |
| UMBILICAL SELECTION | - |
| FORMAT ID | ----- |
| TELEMETRY RATE | ---------- |
| TELEMETRY DATA CODE | ---- |
| FRAME SYNC WORD LENGTH | - |
| TELEMETRY FRAME SYNC WORD | -------- |
| TELEMETRY FRAME LENGTH | ---- |

FIGURE E-26

### E.5.4 TDT Copy/Compare

This capability is required to provide copies of the Telemetry Descriptor Tape "master" and verify the content of the copy vs. the master.

Requirements

- Provide an exact copy of the three files contained on the Telemetry Descriptor Tape specified as input and verify the copy.

- Provide an independent capability to compare two Telemetry Descriptor Tapes and indicate successful comparison by an appropriate output message.

## E.6 PAYLOADS DELETE

This capability is required to delete one or more Payload Identifiers and physically remove all associated data from the MPDB.

### Input Requirements

- Payload Identifier

### Output Requirements

- Multiple Payload Identifiers may be specified.
- The Payload Identifier and all data identified by it and sub-qualifiers will be physically removed from the MPDB files.

## E.7 PAYLOAD COPY CAPABILITY

This capability is required for the purpose of generating additional sets of payload data where initial differences are minimal.

### Requirements

- Copy all data for a specified payload identifier and create a new set of data with a new payload identifier.
- As the copy is made, the following fields must be changed to reflect the input data:
  Payload Name (optional)
  M/S ID Character 5
  VCN
  BTU MIA Address
  BTU Name
  Parent M/S ID, Wire M/S ID, and Related M/S ID, Character 5 of each (Must be the same as M/S ID character 5.)
  System Nomenclature
  (Overlay starting in character 1 until the first "?" character of the user input data is sensed. The remaining characters are not to be changed.)
  SSI ID 1
  SSI ID 2
  DEST/DEST DEP
- User will input:
  Source Payload Identifier
  New Payload Identifier (must not exist in data base)
  New Payload Name (optional)
  M/S ID Change (1 character)

VCN

New BTU MIA Address (2 characters)

New BTU Name (4 characters)

System Nomenclature Change (1-34 characters)

SSI ID 1

SSI ID 2

Dest/Dest Dep

- If an input data element value is blank, the values contained in the original set of data for that data element will be copied, unchanged, to the new data set.
- Data element "Dest/Dest Dep" must be blank or any combination of "1's" and "0's".

## E.8 UNREPORTED DATA ELEMENTS

This capability is required to provide visibility to the values contained in the data base for data elements which are not included on other reports.

Input Requirements

- Payload Name
- VCN (blank for all)

Requirements

- Sort by Payload Identifier
- Report Title: UNREPORTED MPDB DATA ELEMENTS
- Payload Identifier, Payload Name, report date and page number will be included in each page heading. A change of Payload Identifier will initiate a new page.
- Within each Payload Identifier, three sets of data are to be reported, command file data, M/S ID related data, and TLM format related data. These sets are to be separated by a blank line, followed by the column headings appropriate for the following data. See Figure E-27 for graphic display of report headings.
- Report may be requested as a stand-alone run. However, it must be included when all of the OC&DA Tables are requested as a single run.
- Command file data.

| Columns | Data Element | Source |
|---|---|---|
| 11-12 | Words Per Record | CA 2-3 |
| 21-22 | Word Length | CA 4-5 |
| 31-34 | GN&C Requirements | CA 31-34 |
| 44 | GN&C Transfer Rate | CA 35 |

- M/S ID related data

Sorted on M/S ID.

| Columns | Data Element | Source |
|---|---|---|
| 2-11 | M/S ID | ALL 1-10 |
| 14-34 | DSM Title | CC 56-76 |
| 38-41 | BTU 2 Reset Mask | CR 31-34 |
| 45-48 | BTU 2 Set Mask | CR 39-42 |
| 53-54 | Calibration Type | CV 11-12 |
| | | TR 11-12 |
| 60 | Cal. Eff., Curve Series | TR 13 |
| 66 | Cal. Number of Sets | TR 15 |
| 73-74 | SSI ID 1 | TI 72-73 |
| 79-80 | SSI ID 2 | TI 74-75 |
| 90 | Precond. No. of Meas. | TP 69 |

- TLM Format related data

Sorted on Format Number

| Columns | Data Element | Source |
|---|---|---|
| 2-5 | Format Number | TA 2-5 |
| 9-13 | TLM Bandwidth | TA 33-37 |
| 17 | Sync Length | TB 7 |
| 22 | Sync Type | TB 8 |
| 27-30 | OD Format No. (1) | TD 7-10 |
| 33 | PDI Window No. (1) | TD 11 |
| 36-38 | OD Start Word (1) | TD 12-14 |
| 42-45 | OD Format No. (2) | TD 15-18 |
| 48 | PDI Window No. (2) | TD 19 |
| 51-53 | OD Start Word (2) | TD 20-22 |

| | | | |
|---|---|---|---|
| 57-60 | OD Format No. (3) | TD | 23-26 |
| 63 | PDI Window No. (3) | TD | 27 |
| 66-68 | OD Start Word (3) | TD | 28-30 |
| 72-75 | OD Format No. (4) | TD | 31-34 |
| 78 | PDI Window No. (4) | TD | 35 |
| 81-83 | OD Start Word (4) | TD | 36-38 |
| 87-90 | OD Format No. (5) | TD | 39-42 |
| 93 | PDI Window No. (5) | TD | 43 |
| 96-98 | OD Start Word (5) | TD | 44-46 |
| 102-105 | OD Format No. (6) | TD | 47-50 |
| 108 | PDI Window No. (6) | TD | 51 |
| 111-113 | OD Start Word (6) | TD | 52-54 |
| 117-120 | OD Format No. (7) | TD | 55-58 |
| 123 | PDI Window No. (7) | TD | 59 |
| 126-128 | OD Start Word (7) | TD | 60-62 |

PAYLOAD NAME
PAYLOAD IDENTIFIER

MASTER MEASUREMENTS DATA BASE SYSTEM
UNREPORTED MPDB DATA ELEMENTS

DATE XX/XX/XX
PAGE XXXX

| WORDS PER RECD | WORD LENGTH | GN&C REQMNT | GN&C TRANS RATE |
|---|---|---|---|
| -- | -- | ---- | - |

| M/S ID | DSM TITLE | BTU 2 RESET | MASKS SET | CALIBRATION TYPE | CALIBRATION CURVE SERIES | CALIBRATION NUM SETS | STD SERIAL INTERFACE 1 | STD SERIAL INTERFACE 2 | NUMBER OF MEASUREMENTS IN PREC. |
|---|---|---|---|---|---|---|---|---|---|
| --- | --- | --- | --- | -- | - | - | -- | -- | - |

| FORMAT NUMBER | TLM BAND-WIDTH | SYNC LGTH | SYNC TYPE | OPERATIONAL DOWNLINK FMT # | W # | STRT WORD | FMT # | W # | STRT WORD | FMT # | W # | STRT WORD | FMT # | W # | STRT WORD | FMT # | W # | STRT WORD | FMT # | W # | STRT WORD | FMT # | W # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| --- | --- | - | - | --- | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- | - | --- | --- | - |

Figure E-27.- Unreported Data Elements

## E.9 PAYLOADS SUMMARY/STATUS REPORT

This report is to check data previously loaded into the payloads data base via on-line form 1.

Input Requirements

- Xerox 9700 Option

Output Requirements

- Report title Summary/Status Report
- Output of the following data base elements:
  - P/L Name
  - P/L Identifier (internal)
  - VCN
  - P/L Number (external)
  - Status

MASTER MEASUREMENTS DATA BASE SYSTEM
SUMMARY/STATUS REPORT

DATE PAGE

| P/L NAME | P/L ID | VCN | P/L NUM | STAT | P/L ID | VCN | P/L NUM | STAT | P/L ID | VCN | P/L NUM | STAT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| --- | --- | --- | --- | -- | --- | --- | --- | -- | --- | --- | --- | -- |

Figure E-28.- Summary/Status Report.



NASA-JSC