## **General Disclaimer**

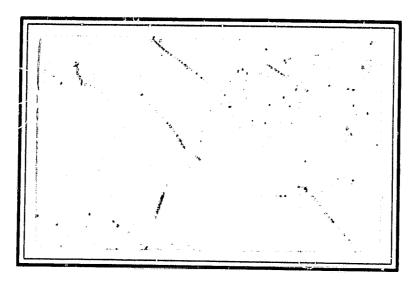
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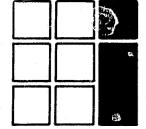
(NASA-CR-170850) PDSS CONFIGURATION CONTROL PLAN AND PROCEDURES (Intermetrics, Inc.) 34 p HC A03/MF A01 CSCL 22A

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# INTERMETRICS

# INTERMETRICS INC.

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IR-AL-003

PDSS CONFIGURATION CONTROL PLAN AND PROCEDURES

**1 JANUARY 1983** 

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PREPARED FOR: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

GEORGE C. MARSHALL SPACE FLIGHT CENTER HUNTSVILLE, ALABAMA 35812 CONTRACT NUMBER NAS8-33825

INTERMETRICS, INC. PREPARED BY:

3322 SOUTH MEMORIAL PARKWAY HUNTSVILLE, ALABAMA 35801

### **PREFACE**

This document contains the PDSS Configuration Control Plan and  $_{\bullet}$  Procedures.

This document was prepared for Marshall Space Flight Center's Payload Project Office under NASA Contract NAS8-33825.

Questions concerning this document should be directed to Intermetrics, Inc., Huntsville Office.

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### 1.0 INTRODUCTION

### 1.1 SCOPE

This document contains the Payload Development Support System. (PDSS) Configuration Control Plan and Procedures.

The objective of these plans and procedures is to establish the process for maintaining configuration control of the PDSS system, especially the Spacelab Experiment Interface Device's (SEID) RAU, HRM, and PDI Interface simulations and the PDSS ECOS DEP Services simulation.

The plans and procedures as specified in the following sections are designed to provide a simplified but complete configuration control process. The intent is to require a minimum amount of paperwork but provide total traceability of PDSS during experiment test activities.

### 1.2 APPLICABLE DOCUMENTS

The following documents are referenced by this document:

EXPERIMENT COMPUTER OPERATING SYSTEM DESIGN SPECIFICATIONS Volumes I and II ECO 8945B McDonnell Douglas, Corp. April, 1980

EXPERIMENT COMPUTER OPERATING SYSTEM REQUIREMENTS DEFINITION DOCUMENT MDC G6862D McDonnell Douglas, Corp. April, 1980

SPACELAB DISPLAY DESIGN AND COMMAND USAGE DIVISION MSFC-PROC-711A, MSFC April, 1980

PDSS USERS MANUAL IR-AL-001 Intermetrics, Inc. 15 January 1982

USER'S GUIDE FOR SPACELAB EXPERIMENT INTERFACE DEVICE IR260-7 Intermetrics, Inc. August, 1979

SPACELAB'S CDMS SERIAL INPUT/OUTPUT USER'S HANDBOOK Technical Memo IBM December, 1980

SPACELAB PAYLOAD ACCOMMODATION HANDBOOK Revision 1 SLP/2104 NASA and ESA 31 July 1978

SPACELAB PAYLOAD ACCOMMODATION HANDBOOK APPENDIX A - AVIONICS INTERFACE DEFINITION Revision 1 NASA and ESA 31 May 1979

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# 2.0 PDSS CONFIGURATION CONTROL

# 2.1 PDSS CHANGE CONTROL AUTHORITY

Configuration control of PDSS will be the responsibility of MSFC and Intermetrics, Inc. with Intermetrics providing configuration management functions in support to the Spacelab Payload Project Office of Marshall Space Flight Center.

The method for meeting the objectives of PDSS configuration control is the establishment of the PDSS Configuration Control Board (PDSS/CCB).

The objectives of the PDSS/CCB are:

- 1. To provide MSFC management with visibility of the PDSS development and test process.
- 2. To provide an effective and efficient method for incorporation of changes into the PDSS including updates to baselined system documents.
- 3. To insure PDSS Spacelab Qualification certification.
- 4. To provide a central point for distributing PDSS technical information.
- 5. To provide a method for PDSS users to submit discrepancy reports and/or change requests.
- 6. To provide a method for PDSS users to submit PDSS Experiment Test Reports.

The responsibilities and organization of the PDSS/CCB are defined in the following sections.

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## 2.2 PDSS/CCB RESPONSIBILITIES

The PDSS/CCB is responsible for the following functions:

- 1. Maintain PDSS Baseline Documentation
  - PDSS User's Manual
  - SEID User's Manual
  - PDSS Design Manual
  - SEID Design Manual
- 2. Maintain a PDSS Technical Library
- 3. Maintain PDSS Qualification Test Plan
- 4. Review and disposition PDSS Engineering Change Requests
- 5. Review and disposition PDSS Deviation Reports
- 6. Review and archive PDSS Test Reports
- 7. Establish agendas and conduct PDSS Reviews

# 2.3 PDSS/CCB MEMBERSHIP

The organization and membership assignments for the PDSS/CCB are:

MEMBERS		RESPONSIBILITY	ORGANIZATION
R.	BOUNDS		INTERMETRICS
Τ.	GREENE		INTERMETRICS
J.	BLANKENSHIP	SECRETARY	INTERMETRICS
R.	LESTER	CHAIRMAN	MSFC/JA13
J.	MOORE		MSFC/JA41
D.	DAUGHERTY		MSFC/SA63
J.	LEWIS		MSFC/EF15
Р.	HAMBY		MSFC/EF15
L.	WILSON		MSFC/ET43

Intermetrics will provide PDSS/CCB secretary functions.

# 2.4 PDSS/CCB MEETINGS

The PDSS/CCB meetings are to be scheduled as needed for processing configuration control information and reviewing PDSS status.

PDSS/CCB meetings should be scheduled at least on a quarterly basis with a PDSS/CCB meeting scheduled after each major PDSS Test activity.

The PDSS/CCB Chairman will chair the meetings.

For each meeting the PDSS/CCB Secretary will prepare an agenda defining the items that are to be covered for that meeting,

The PDSS/CCB Secretary will record minutes of the meetings and will distribute those minutes to the members as soon as possible after the meeting. If any action items are assigned by the CCB, the secretary will distribute minutes to those persons assigned to perform the action item.

## 3.0 PDSS BASELINES

The following are configuration control items for PDSS:

### BASELINE ITEM

BASELINE DATE

# DOCUMENTS

------

PDSS USERS MANUAL

April 1983

IR-AL-001

Intermetrics, Inc.

SEID II SPECIFICATION

April 1983

IR-AL-007

1 April 1983

Intermetrics, Inc.

PDSS SOFTWARE TEST PLAN

January 1982

IR-AL-005

1 January 1982

Intermetrics, Inc.

SPACELAB EXPERIMENT INTERFACE

June 1982

DEVICE COMPATABILITY AND **VERIFICATION TEST** 

MTCP-CS-SEID-300

10 June 1982

Marshall Space Flight Center

#### SOFTWARE

PDSS Software - VO2

April 1983

#### HARDWARE

Spacelab Experiment Interface Device April 1983

4.0 configuration control process

# 4.1 configuration control process

The configuration control process to be used by the PDSS/CCB is depicted in Figure 4-1.

PDSS Configuration control actions are initiated by:

- New or expanded changes identified after baselining.
- Deviations or problems identified during formal reviews or PDSS user tests.

Examples of the forms that are used in the configuration process are contained in Appendix A.

# CONFIGURATION CONTROL PROCESS

STEP	FORM	CONFIGURATION CONTROL ACTION
0	RN	PREPARE RELEASE NOTICE FOR BASELINE DOCUMENTS OR COMPUTER PROGRAMS
1		IF SOURCE OF ACTION IS TEST DISCREPANCY: GO TO STEP 2 REVIEW DISCREPANCY; GO TO STEP 2 NEW, MODIFIED SCOPE: GO TO STEP 8
2	(T)DR	PREPARE (TEST) DISCREPANCY REPORT
3		SUBMIT (T)DR TO PDSS/CCB
4		LOG (T)DR
5	CE	PREPARE PDSS CHANGE EVALUATION
6		LOG CE
1		IF NEW OR MODIFIED CHANGE GO TO STEP 17
8	ECR	PREPARE ENGINEERING CHANGE REQUEST
9		SUBMIT ECR TO CCB
10		LOG ECR
11	CE	PREPARE CHANGE EVALUATION
12		LOG CE
13		IF CHANGE REQUEST APPROVED GO TO STEP 17
14	CCBD	PREPARE CONFIGURATION CONTROL BOARD DIRECTIVE - "CHANGE DISAPPROVED"
15		LOG CCBD
16		ACTION CLOSED

FIGURE 4-1: CONFIGURATION CONTROL PROCESS

# CONFIGURATION CONTROL PROCESS (CONTINUED)

STEP	FORM	CONFIGURATION CONTROL ACTION
	<b>€</b> ∪ = □ = □	
17	ECP	PREPARE ENGINEERING CHANGE PROPOSAL
18		SUBMIT ECP TO CCB
19		LOG ECP
20		IF CHANGE PROPOSAL  APPROVED: GO TO STEP 21  REJECTED: GO TO STEP 14  TO BE RESUBMITTED: GO TO STEP 17
21	CCBD	PREPARE CONFIGURATION CONTROL BOARD DIRECTIVE - "CHANGE APPROVED"
22		LOG CCBD
23		REVISE DOCUMENTATION
24		IMPLEMENT CHANGE
25		VERIFY CHANGE
26		ACTION CLOSED

FIGURE 4-1: CONFIGURATION CONTROL PROCESS

### 4.2 FORMS

Figures A-1 through A-7 identify the forms that are used by the configuration process. A brief description of each form follows.

- 1. ENGINEERING CHANGE REQUEST (ECR) The ECR is to be used to initiate requests for changes to satisfy new or additional requirements (see Figure A-1).
- 2. CONFIGURATION CONTROL BOARD DIRECTIVE (CCBD) The CCBD is to be used to close out a request presented to the PDSS/CCB whether the closeout is approval or disapproval (see Figure A-2).
- 3. CHANGE EVALUATION (CE) The CE is to be used to describe the evaluation of the change impact. This evaluation is presented to the PDSS/CCB to aid in the approval process for any request initiated by an ECR (see Figure A-3).
- 4. (TEST) DISCREPANCY RECORD (DR/TDR) The (T)DR is to be used to record any discrepancies (see Figure A-4).

The DR is to be used to record any design implementation errors or deficiencies subsequent to document approval or is used to record any design implementation errors or deficiencies recognized during formal reviews.

A TDR is to be used any time a problem/anomaly is encountered during testing with the exception of an obvious test deviation or human factor which is immediately recognized and corrected without disturbing the normal progress of the test.

- 5. SOFTWARE PROBLEM REPORT (SPR) The SPR is to be used to report software problems (see Figure A-5).
- 6. RELEASE NOTICE (RN) The RN is to be used to document any PDSS release. Under "comments" the ECR's, and (T)DR's closed out by the release are listed (see Figure A-6).
- 7. ENGINEERING CHANGE PROPOSAL (ECP) The ECP is to be used to describe the change proposal as identified by an ECR (see Figure A-7).

#### 4.3 CONFIGURATION STATUS ACCOUNTING

The configuration control accounting function provides the capability of capturing, storing, and retrieving all data pertinent to the management and operation of the PDSS.

The status accounting function provides the following information:

- Current and accurate PDSS configuration baseline documents
  - Original released document
  - Realined document for approved changes
- Current and accurate PDSS configuration baseline computer programs
  - Source listings
  - Object programs
  - Load programs
- 3. (Test) Discrepancy Record Log
- 4. Engineering Change Request Log
- 5. Engineering Change Proposal Log
- 6. Configuration Control Board Directive Log
- 7. PDSS Technical Library

This information will be kept by the PDSS/CCB secretary and will be available on request and will be available for the PDSS/CCB meetings.

## 5.0 INTERFACE MANAGEMENT

The PDSS/CCB will coordinate any activities that are required of PDSS to maintain the PDSS qualified interfaces.

These interfaces include:

\* Experiment Computer Operating System (ECOS) Services

Reference: Experiment Computer Operating System

Design Specification

Source: Spacelab Integration Contracts

MDTSCO/IBM

\* Spacelab RAU

Reference: Spacelab Payload Accomodation Handbook

Source: MSFC's Spacelab Program Office

APPENDIX A

CONFIGURATION CONTROL FORMS

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FIGURE A-4: DISCREPANCY RECORD

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FIGURE A-4: DISCREPANCY RECORD (CONTINUED)

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FIGURE A-5: SOFTWARE PROBLEM REPORT

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# SOFTWARE RELEASE NOTICE

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COMMENTS:

FIGURE A-6: SOFTWARE RELEASE NOTICE

# ENGINEERING CHANGE PROPOSAL

THE FORMAT OF THE ENGINEERING CHANGE PROPOSAL IS LEFT TO THE ORGANIZATION PREPARING THE ECP. THE ECP SHOULD REFERENCE THE PROGRAM. END ITEMS, CONTRACT NUMBER AND RELATED ECR.

FIGURE A-7: ENGINEERING CHANGE PROPOSAL

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14. JUSTIFICATION FOR CH	ANGE (Include elle	ect if not incorporated; (if no	CHINITY, TONLINUS ON MSFC . F	bim 1127-1, continuation	1 10004[]1
17. EFFECTS ON:					
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4 CHANGE NO.:					3. PAGE
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6 PROGRAM CONTROL NO.	7	. ALSPONSIBLE INDIVID	UAL(S)/ORGANI	ZATI	ON(S):
8. CHANGE TITLE!			. END ITEM N	HAAB	ER AND HOMENCLATURE!
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12. CHANGE DISPOSITIONI	*****		·		
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SA61 Form-10 (Hay 1976) (OT)

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WRITE HARD FOR CEGIBLE COPIES 1 104 NO. 1A 1B DISCREPANCY TOTAL RECORD SHEETS PAGE J PART NAME: PART NO. & REV. S. S/N/LOT NO 7 D R. NO,1 B. PLF, DESIGN D. MEAS NO. IID, MEG OR SUPPLIER III. EFFECTIVITY: 12. LR. NO. 13. NHA NAMEI 14. NHA P/N: 15. DETECTED DURING 16. REF. DOC. NO.I 17. SUB SYSTEM/PROGRAM: D GSF 71. 22. DISCREPANCY SICE 23. INITIATOR: 24. DRON, 3. TEST CONDUCTOR/SUPERVISOR: 24. Q.C. STAMPI DISPOSITION 30. 2 2 2 CONSTRAINT ITEM WORKED ITEM ACCEPTANCE NO. SAFETY HAZARD T/S PLAN REQ. 11 FINAL DISPOSITION: M. FINAL ACCEPTANCE & DATE 135. MATERIAL REVIEW REQUIRED YES ACCEPT. **(3)** (I) ITEM NO. FUNCTIONAL FAIL. FA REQ. CTO - v. Ø Œ (3) □ ~n Scp C/SC Oliver

1. RECORD COPY

MBFC - Form 468 (November 1814)

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# SOFTWARE RELEASE NOTICE

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COMMENTS: