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Produced by the NASA Center for Aerospace Information (CASI)
This Design Note is Submitted to NASA in Partial Fulfillment of Contract NAS 9-14354
(NASA-CE-144526) ADVANCED CREW PROCEDURES DEVELOPMENT TECHNIQUES: PROCEDURES AND PERFORMANCE PROGRAM TRAINING PLAN
(McDonnell-Douglas Technical Services) 13 p Unclas
HC $3.25 CSCL 05I G3/53 39635

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1.0 SUMMARY

This design note describes the Procedures and Performance Program (PPP) training plan. The plan has been developed to support the training of PPP users in the operations associated with PPP usage. This document contains an overview of the contents of each training session and a detailed outline to be used as the guideline for each session. The PPP Users Guide, MDC W0009 will also be used extensively to support training activities.

2.0 INTRODUCTION

The PPP is an automated procedures recording and crew/vehicle performance monitoring system. The heart of the system is a digital computer program which translates SPS data inputs into crew procedures. These procedures may be compared with a stored reference, thus providing a difference procedures capability. The program also monitors and records selected crew and vehicle performance parameters. These performance parameters may be compared to a set of established criterion, thus providing a performance evaluation capability. These procedures and performance data are available for CRT display according to user specified format in real-time, post-run, and on hardcopy output. The data may be transferred to the Generalized Document Processor (GDP) for formal documentation and distribution.

The PPP is now available as an operational SPS support program. This design note presents the plan for training the prospective PPP users to use the program to obtain the desired SPS data outputs. Details of PPP operations are contained in the PPP Users Guide, MDC W0009 which is used extensively in support of exercises contained in this training plan.
3.0 **DISCUSSION**

The PPP has been developed to provide SPS procedures and performance data outputs. The system is now available as an operational SPS support program. Various PPP operations are required to activate the PPP and access the desired data. This design note presents the plan for training potential PPP users in the detailed PPP operations. Presently, five different training sessions have been identified. Appendix A presents an overview of the contents of each session. The first three sessions are necessary to understand the PPP structure and operations for accessing the available PPP outputs. The fourth session deals with data transfer capabilities in support of FDF documentation and the fifth session presents the user interface for defining additional PPP formats and updating the PPP database contents. Appendix B contains detailed outlines to be used as the guidelines for each training session. Each session will rely extensively on the PPP Users Guide, MDC W0009.
APPENDIX A

PPP Training Plan Overview
PPP Training Plan Overview

Session 1 - Systems Description and User Interface
- Hardware Interface
- Program Activation
- Display Structure
- Command Interface
- PPP Initialization
- Typical Formats (using all display selection commands)
- PPP Post-Run
- Program Termination

Session 2 - Data Output and Reconstruction
- SPS Program Activation
- Actual versus Simulated SPS Transfer Discussion
- Initial Crew Station Configuration
- Procedures Data Display
- Flight Display Unit
- Performance Output (alphanumeric and graphic)
- Reconstruction
- Hold Difference
- Training Data

Session 3 - Difference Procedures Output
- Switch Configuration Difference
- Sequence Configuration Difference
- Detailed Difference Listing
- Summary Procedures
- Summary Procedures Difference
- Reference Data Display Output
- Discussion on Difference Test Data

Session 4 - PPP/GDP Transfer
- PPP to GDP
- COPY=GDP
- Termination Sequence (discuss RITIT and tape transfer)
- GDP to PPP
- GDP STORE Tape (discuss tape transfer)
- Submission of Tape and Program CRIS
- GDPSTRT and GDPEXEC (tutorial operations)
- CREF

Session 5 - PPP Data Base and Format Construction
- F=PRO, F=PVL, F=PER, and F=TRN
- Termination Sequence
- RTOS and GRRTOS
- STOR and GRSTOR
- Data Base Structure and Content Discussion
APPENDIX 3

PPP Training Plan Session Outlines
<table>
<thead>
<tr>
<th>OUTLINE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Hardware Discussion</td>
<td>CDC 211, 243, Function Key Box and Flight Display Unit</td>
</tr>
<tr>
<td>II. CDC 6400 Operations</td>
<td>SPS not required</td>
</tr>
<tr>
<td>A. Input Execute (PPP)</td>
<td>Discuss Interactive and Batch</td>
</tr>
<tr>
<td>B. Attach 211</td>
<td></td>
</tr>
<tr>
<td>III. PPP Operations</td>
<td>Discussion</td>
</tr>
<tr>
<td>A. Display Trees</td>
<td>Detailed</td>
</tr>
<tr>
<td>B. Command Structure</td>
<td>Discussion</td>
</tr>
<tr>
<td>C. Initialization</td>
<td></td>
</tr>
<tr>
<td>1. Required</td>
<td></td>
</tr>
<tr>
<td>2. Optional</td>
<td></td>
</tr>
<tr>
<td>D. Display Selection</td>
<td></td>
</tr>
<tr>
<td>1. Command, Cue, and Error</td>
<td>$\uparrow, \downarrow, \uparrow, \downarrow, CUE, COMMAND$</td>
</tr>
<tr>
<td>2. Alphanumeric Menus (except 100)</td>
<td>DISPLAY, DISPLAY=,N,+,-,* , CLEAR</td>
</tr>
<tr>
<td>3. Graphical Menus</td>
<td>GRAPH, GRAPH=,N,+,-,* , CLEAR</td>
</tr>
<tr>
<td>4. Alphanumeric and Graphical Displays</td>
<td>Representative not all DISPLAY, DISPLAY=,GRAPH, GRAPH=,N,+,-,* , CLEAR</td>
</tr>
<tr>
<td>E. Post-Run</td>
<td>Detailed</td>
</tr>
<tr>
<td>1. Required</td>
<td>Discussion</td>
</tr>
<tr>
<td>2. Optional</td>
<td></td>
</tr>
<tr>
<td>3. Training Data</td>
<td></td>
</tr>
<tr>
<td>IV. CDC 6400 Operations</td>
<td>Script-Detailed; Status-general review</td>
</tr>
<tr>
<td>A. Termination</td>
<td></td>
</tr>
<tr>
<td>B. Obtain Lineprinter Output</td>
<td></td>
</tr>
</tbody>
</table>
### OUTLINE

#### I. CDC 6400 Operations
- A. Input Execute Decks (SPS & PPP)
- B. Attach 211 (SPS & PPP)

#### II. PPP Operations
- A. Data Transfer Discussion
- B. Initial C/S Configuration
- C. Procedures Data Displays
- D. Flight Display Unit Operations
- E. Data Reconstruction in HOLD
  1. Procedures
  2. Performance
- F. Hold Difference
- G. Data Reconstruction in Post-Run
  1. Required Post-Run
  2. Reconstruction
  3. Reset PPP - Terminate SPS

#### III. PPP Operations
- A. Performance Data Displays
- B. Performance Evaluation Displays
- C. Graphical Displays
- D. Data Reconstruction
  1. Procedures
  2. Performance
  3. Graphics
- E. Post-Run
  1. Required
  2. Training Data

### REMARKS
- Actual SPS Transfer
- SPS deck detail - PPP deck review
- SPS detail - PPP review
- Actual versus Simulated (RUNPT)
- ICOMPARE
- Input COPY=LM & MT commands, CUE key and FREEZE key operations
- Via CUE & REPEAT= - use CONTINUE and SPS OPERATE Discussion
- (ENDRT) Simulated SPS transfer
- Show different repeat times
- Script-general review; Status-detailed
Training Plan Session 2 (Data Output and Reconstruction) (Continued)

OUTLINE

IV. CDC 6400 Operations
   A. Terminate
   B. Obtain Lineprinter Output

REMARKS

Review
Training Plan Session 3 (Difference Procedures Output)

OUTLINE

I. CDC 6400 Operations
   A. Input Execute (PPP)
   B. Attach 211

II. PPP Operations
   A. Data Transfer Discussion
   B. Switch Configuration Diff
   C. Sequence Configuration Diff
   D. Detailed Difference Listing
   F. Summary Procedures
   G. Reference Data Output

III. CDC 6400 Operations
   A. Terminate
   B. Obtain Lineprinter Output

IV. Diff Procedures Test Data

REMARKS

Simulated SPS transfer

Actual versus Simulated (RUNRT)
Preestablished and Random (COMPARE)

Show inputs from B and C discuss Hold Diff inputs

Show FMT and discuss output

Discussion of data base contacts examples of preestablished differences in these sessions
Training Plan Session 4 (PPP/GDP Transfer)

OUTLINE:

I. CDC 6400 Operations
   A. Input Execute (PPP)
   B. Attach 211

II. PPP Operations
    A. PPP to GDP Discussion
    B. Data Displays

III. CDC 6400 Operations
     A. Termination

IV. GDP STORE Tape Output

V. STORE Tape and Program CRIS Submission

VI. Transfer Input Operations
    A. Input GDPSTRT and GDPEXEC
    B. Tutorial Operations

VII. CDC 6400 Operations
     A. Termination
     B. Obtain Lineprinter Output

VIII. Input CREF

IX. CDC 6400 Operations

REMARKS

Simulated SPS transfer

COPY=GDPS discussion
   Input COPY=GDPS commands

Show extra 211 inputs and discuss RITIT, tape transfer operations and return of CDC tape

Discuss tape transfer

Discuss return of GDP tape

Include erroneous input

Show extra 211 inputs
Training Plan Session 4 (PPP/GDP Transfer) (Continued)

OUTLINE

X. PPP Operations
   A. Review Ref Options
   B. Review Ref Data

XI. CDC 6400 Operations
    A. Termination
    B. Obtain Lineprinter Output

XII. Restore Ref Options

REMARKS

Use / Command
Training Plan Session 5 (Data Base and Format Construction)

OUTLINE

I. CDC 6400 Operations
   A. Input Execute (PPP)
   B. Attach 211

II. PPP Operations
   A. Input Format Descriptors
      (alphanumeric & graphical)
   B. Display Formats
   C. Data Base File Cleanup

III. CDC 6400 Operations
   A. Termination
   B. Obtain Lineprinter Output

IV. Discuss RTOS and GRRTOS

V. Discuss and RUN STOR and GRSTOR

VI. Data Base Structure and Content
   A. Hollerith Statements
   B. Data Base Parameters
   C. Data Base Update
      (under development)

REMARKS

Simulated SPS transfer

Discussion of punch cards (SWITCH), resultant formats, 211 capabilities (show all different inputs at least once).
Use simulated data input

Show extra 211 steps

Discuss