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LOG****TITLE:
ACIS EEPROM Table Programming Procedure - FS
Version 1.5****DOC. NO.
36-55002 Rev. A**

Revision	Date (mm/dd/yy)	ECO No.	Page(s) Affected	Reason	Approval
A	7/8/97	36-940	all	Initial version	<i>PTK</i>

ACIS EEPROM Table Programming Procedure - FS Version 1.5

MIT Center for Space Research

36-55002 Rev. A

July 8, 1997

1.0 Introduction

1.1 Purpose

This procedure describes the steps required to modify the parameter tables in the ACIS Back End Processor's (BEP) Electrically Erasable Programmable Read-Only Memory (EEPROM).

This procedure describes how to:

1. Program the ACIS instrument with version 1.5 of the ACIS Instrument Software
2. Verify that the contents of the re-programmed EEPROM matches the new version

1.2 Scope

This document is intended for internal use by the ACIS Flight Software development team. Unless otherwise noted, no one other than the Flight Software development team should attempt this procedure.

2.0 References

TABLE 1. Reference Documents

Part Number	Version	Title
MIT 36-54002.08	A	ACIS Flight Software Release Notes 1.5

3.0 Resources

- A Littlefield Remote Command and Telemetry Unit (LRCTU)
- An LRCTU to Instrument cable with grounded programming enable pins.

- The RCTU control script, **rctuctl**, and supporting scripts and macros and programs, **machctl**, **flight_ee.mac**, **eeprom.srec** (NOTE: These have already been placed onto “lise” and have been modified to run out of a single directory).
- An S-record version of the flight software, **acisBepRom.srec**
- A binary image of the flight software, **acisBepRom.bin.tmp**

NOTE: Use the “Binary Identification” procedure specified in the ACIS Flight Software Release Notes for Release 1.5 (MIT 36-54002.08) to verify that the binary file contains the 1.5 Release of the ACIS Flight Software.

4.0 Procedure

4.1 Assumptions

The description of how to program and verify the instrument assume the following:

- The cable connecting the LRCTU to the instrument is connected and has the program enable pins attached to instrument ground.
- The host GSE machine is “lise”
- The LRCTU command port is on /dev/ttyC40 on “lise” and the LRCTU reset port is on /dev/ttyC41. If different, manually edit this procedure.
- The command server, *cserver*, is running and is accepting commands on socket number 8541
- The telemetry server, *filterServer*, is running and emitting data on its default socket number, 7002.
- The user knows how perform basic operations, such as controlling BEP power, and resetting the BEP.

4.2 Programming the A and B-side EEPROM

1. Power up Side-A BEP and Side-B BEP
Using the Grap Box, set the main switch to Side-A, hit DPA Power: Enable followed by DPA Power:On. Then set the A-B switch to Side-B and repeat the Enable and On.
2. Start *rctuctl*
3. When the **Log File Setup** box comes up, hit the **Apply** button.
4. From the **Comm->Port** menu, select **/dev/ttyC40**.
5. From the **Comm->Reset Port** menu, select **/dev/ttyC41**
6. Hit the **Reset** menu button
7. From the **Command** menu, pick the **Enter Name** selection
8. When the **File Name** window comes up, enter **TBD** for the script directory, and hit **Save**
9. From the **Command->Select** menu, select **flight_ee.mac**, and wait for the program to be loaded into the LRCTU.
10. Once loaded, the program will prompt the user for the S-record file to use to program ACIS. Enter **acisBepRom.srec** and then hit the **Apply** button.
11. The program will bring up a status window which shows the programming in progress. Wait until the program is complete. This will take approximately 5 hours to complete.
12. Once complete, hit the **Quit** menu button to exit *rctuctl*.

4.3 Checking the Side-A EEPROM Load

1. Launch a telemetry client to produce data files using:
filterClient -h lise | *psci* -l dump -m
2. Select Side-A and issue a cold reboot of the BEP.
3. Issue a dump command to read all of EEPROM using:
echo read 0 0xbfc00000 0x40000 | *buildCmds* | *cclient* lise 8541
4. Watch the telemetry window until it stops producing *bepReadReply* telemetry packets. This should take a few minutes, so be patient.
5. Once the dump is complete, there should be a file, **dump.bepReadReply.dat**, in the directory which launched *filterClient*...
6. Reverse the bytes in the file using:
flip32 < **dump.bepReadReply.dat** > **dump.flipped**
7. Compare the flipped file with the desired image,
cmp **acisBepRom.bin.tmp** **dump.flipped**
8. If the files are identical, *cmp* will not print any messages, and the burn was a success.
9. If there are differences, *cmp* will print a message indicating that the two files are different. If so, the burn failed. Get help.

4.4 Checking Side-B EEPROM

Repeat Section 4.3 for BEP Side-B to complete the procedure (in step 2, select Side-B rather than Side-A).