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**FOS GIMP CORRECTION
FLIGHT READINESS REVIEW**

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AGENDA

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Requirements (from STOMS CCR 1402[HSTP CCR 3199])

- Calculate delta-x and delta-y deflection offsets to cover the whole computation time (nominally 30 minutes)
- Calculate one (x,y) point for every GIMP tick (nominally 15 seconds)
- Use least-squares algorithm to compute a third-order polynomial fit to the data
 - 1 equation for the x-offset motion
 - 1 equation for the y-offset motion
- Load 2 tables to the NSSC-1 OBC
 - Table of 8 polynomial coefficients for x and y offsets and SMS-supplied initial GIMP tick (YFGIMPCB)
 - Enable table (YFGMPFCE: if ENABLE keyword is specified in the SMS)

Requirements (cont'd)

SMS-STATEMENT SYNTAX

```
[label:] FOSGIMP, OPMODE(mnemonic)
, ORIENT(decimal,decimal,decimal)
[, TICK(integer)]
[, COMPDUR(integer)]
[, ENABLE]
, TIME = absolute_time [:]
```

R	KEYWORD	DESCRIPTION	TYPE	UNITS	RANGE	RESOLUTION
*	OPMODE	Data acquisition mode	mnemonic	n/a	1-8 char	n/a
*	ORIENT (ra, dec, roll)	HST attitude right ascension declination roll phase angle	decimal decimal decimal	degrees degrees degrees	0-360 -90,90 0-360	10**-.7 10**-.7 10**-.7
	TICK	First GIMP tick for FOS use	integer	n/a	0-120 (default=0)	2
	COMPDUR	Duration range of computation	integer	seconds	0-1800 (default=1800)	30 secs
	ENABLE	Enable GIMP computation in NSSCI	n/a	n/a	n/a	n/a
*	TIME	Reference time for table load and computation start	absolute time	UTC	n/a	n/a

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Development History

- CCR 1402 - FOS GIMP Correction: in PASS Release 22.00
- DR 1177 - Radian trigonometric functions used and not degrees: delivered in PASS Release 23.00 (PDB workaround in place for Release 22.00)

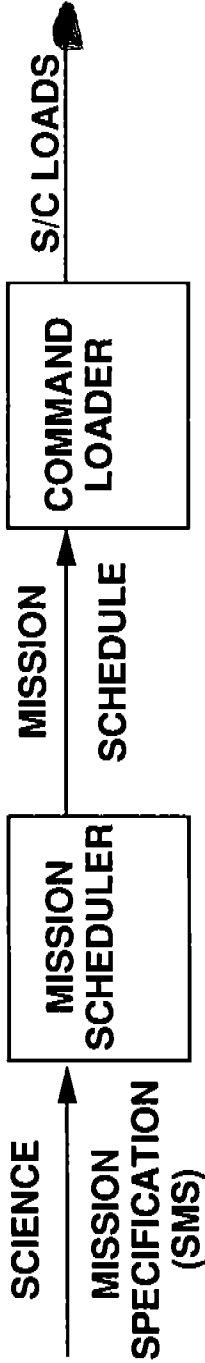
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Implementation

- CCR 1402 - FOS GIMP Correction, affected Mission Scheduler and Command Loader



YF6 IMP C B
YF6 IMP PCE
YF6 IMP P. PPT
J. Repart.

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Implementation (Cont'd)

- Mission Scheduler
 - 3 subroutines modified
 - Recognize the FOSGIMP SMS-statement
 - Time sort FOSGIMP SMS-statement
- Command Loader
 - 5 subroutines modified and 7 new subroutines
 - Process the FOSGIMP SMS-statement
 - Compute 8 polynomial coefficients for x and y offsets
 - Generate 2 binary memory load tables
 - Used existing PASS software (subroutines):
 - Determine next major frame pulse time
 - Obtain s/c position vector
 - Compute geomagnetic field vector
 - Compute attitude matrix
 - Compute least-squares polynomial fit
 - Generate binary memory load tables

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Testing

- Per SEAS System Development Methodology (SSDM)
 - Unit/Module test
 - Integration test
 - Acceptance test
- Calibration testing with NSSC-1 flight software group (Glenn Foley) 6/92
- Calibration testing with ST Scl (George Hartig and Don Neal) 7/92 - 8/92
 - ST Scl supplied PASS with input data and files
 - ST Scl verified output from PASS with expected results
- Supported FOSGIMP test-SMS testing between ST Scl and PASSOPS (Steve Sands) 9/92

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Risk

- CCR 1402 - FOS GIMP Correction is completely driven by external interfaces via FOSGIMP SMS-statement
- Format of the 2 new tables are database driven (PDB)
 - table formats and parameters file (TFPF)
 - table library file (PLTD)
- If no FOSGIMP SMS-statement and/or no table format definition in the PDB, then no FOSGIMP correction tables generated
- Per CCR 1402, each computed deflection offset is range checked

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Status/Dates

- PASS Release 22.00 (CCR 1402/FOS GIMP) operational 10/12/92
- PASS Release 22.00 Command Loader removed from operations due to unrelated problem (was available for FOS GIMP testing) 10/21/92
- PASS Release 22.03 Command Loader (CCR 1402/FOS GIMP) operational 11/30/92
- PASS Release 23.00 (DR 1177) was delivered December 11, 1992

Issues/Concerns

- None