SPACECRAFT MAGNETIC CALIBRATION TEST

FOR THE

FAST SPACECRAFT

ATTITUDE CONTROL AND STABILIZATION BRANCH, CODE 745

NASA GODDARD SPACE FLIGHT CENTER

JUNE 1994

Test Performed by:	
Jate:	
Completion Date:	

Signature Page

ared By:

ACS Test Engineer

6/20/99 Date

Approved By:

R. Kolecki, Code 303 FAST Flight Assurance Manager

REVISION PAGE

	sion	DATE		DESCRIPTION	
!		!	!		
I		!	!		
ļ		ļ.	1		
!		į	Į.		
!		į	!		
ļ.		į.	!		
!		į	!		
į		!	!		
ļ		ļ.	į.		
i		!	!		
į		!	!		
į		!	!		
į		!	į		
į		!	!		
į		!	į.		
!		į	!		
i		I	ļ.		
!		!	!		
!		!	!		
ļ		!	!		
!		!	!		
į.		i	!		
!	_	!	1		
		!	!		
		!	!		
!		!	!		
j		ļ ļ	j.		

TABLE OF CONTENTS (OUTLINE):

1NTRODUCTION

SUPPORT

- 2.1) Documents
- 2.2) Equipment
- 2.3) Personnel

3. SPECIAL CONSIDERATIONS

- 3.1) Connector Savers
- 3.2) ESD Considerations
- 3.3) Magnetic Considerations
- 3.4) Cleanliness

4. PRE-TEST OPERATIONS

5. FUNCTIONAL/ELECTRICAL PROCEDURES

- 5.1 S/C perm/deperm
- 5.2 MAG scale factor test
- 5.3 MAG trim determination
- 5.4 MAG phasing
- 5.5 Dipole Moment/Phasing Verification
- 5.6 Bdot Verification

1. INTRODUCTION

Spacecraft Magnetic Calibration Test for the FAST spacecraft

1. INTRODUCTION

1.1 Purpose

The purpose of this procedure is to verify the magnetics on the FAST spacecraft.

1.2 Scope

This procedure defines setup prerequisites, supplementary documentation, equipment, and personnel requirements for the FAST magnetic calibration test.

1.3 General

1.3.1 Subsystem Definition

The Magnetic Control subsystem consists of the following components:

- a. Magnetometer
- b. Spin and Prec coils
- c. MUE

1.4 General Description of the Mag Cal test

This procedure describes the sequence for performing a magnetic calibration test for FAST.

- 5.1 S/C perm/deperm
- 5.2 MAG scale factor test
- 5.3 MAG trim determination
- 5.4 MAG phasing
- 5.5 Dipole Moment/Phasing Verification
- 5.6 Verification of the trim resistor de-contamination matrix
- 5.7 Bdot Verification

1.5 Changes to These Procedures

Necessary changes to these procedures found just prior to or during performance of the procedures shall be red-lined on the official copy of the procedure which is maintained by the ACS engineer performing the test. Deviations to procedures shall be red-lined in the official copy and summarized at the end of this procedure. The ACS lead engineer and the QA representative will initial and date all changes.

1.6 Reporting of Problems

Problems, anomalies, or failures discovered during execution of this procedure shall be entered on a FAST Spacecraft Discrepancy Report.

SUPPORT

Supplementary Documents

The latest issue of the following supplementary documents contain information relevent to this procedure.

- a. FAST MUEGSE Interface Drawing
- b. FAST Harness Drawing
- c. FAST Magnetic Trim box Schematics

2.2 Special Tools and Equipment

In addition to general tools and equipment, the following types of tools and equipment are required for this procedure:

Item	Make/Model/Serial Numbe	r Calibration Due date
FAST MAG TRIM BOX & CABLES		
Multimeter #1		
Multimeter #2		
Multimeter #3		<u></u>
Multimeter #4		
Multimeter #5		
Multimeter #6		
+/- 10 V POWER SUPPLY		
Frequency Analyzer		
Chart Recorder 2 or more chn		
METER		
TES! MAGNET FAST		
Break Out Boxes		
Digital Storage Oscilloscope		

2.3 Personnel

2.3.1 QA

NOTIFY QA REPRESENTATIVE 24 HOURS BEFORE BEGINNING THIS PROCEDURE.

2.3.2 Responsible Engineer

The engineer responsible for the Magnetic Calibration test will be Mary Walker, or their designated representative.

2.3.3 Other Required Pesonnel

The following personnel are required:

- a. Subsystem Representative for ACS
- b. Quality Assurance Representative

2.3.4 On-Call Personnel

The following personnel will be on-call during the test.

- a. ACS Lead Engineer
- b. MUEGSE Engineer

SPECIAL CONSIDERATIONS

3.1 Connector Savers and Flight Connector Mate and Demate

Connector savers for the magcal test are N/A.

Flight connector mating and demating must be performed by an

Electrical Technician. If during the course of any test or test setup
a connector mate or demate is required, a person authorized for
connector mate and demate must be contacted to perform the operation.

3.2 ESD Considerations

All persons within one meter of the spacecraft must be properly grounded.

3.3 MAGNETIC CONSIDERATIONS

All special equipment and tools being used in close proximity to the S/C must be checked for magnetic cleanliness. If a specific tool necessary for this procedure violates the FAST I & T magnetic specification a substitute tool shall be used.

CLEANLINESS

All materials and tools used for this procedure must be washed with alcohol and wiped down with clean cotton wipes before taken into the clean room. Procedures must be printed on clean room paper. Cables to be run from outside the clean room into the clean room should be completely washed down, taken inside the clean room, then fed out of the clean room.

- 4. N/A
- FUNCTIONAL/ELECTRICAL PROCEDURES
- 5.1 S/C Perm/Deperm
- 5.1.1 GSE and S/C setup
- 5.1.1.1 Place s/c on facility cart (stainless steel cart has magnetic wheels)
 (s/c mag boom lined up (coarsely) with tracks for facility
 cart). S/C ACS X axis lined up with the facility EAST/WEST axis.

	VERIFY
.2 s/c mag boom in stowed position	VERIFY

			VERIFY
5.1.1.4	Position test mag	netometers (facility)	MEDIEW
			VERIFY
.1.5	Zero out field		
			VERIFY
5.1.2	Functional testin	g	
5.1.2.1	Annotate dipole r	dipole on s/c using fac eading from facility wi moment from the facili	th procedure step number.
	E/W	N/S	Up/Down
			VER I FY
		test connectors, MUEGSE ery GSE, battery air co	to ASE, I&T GSE to ASE, anditioning) VERIFY
.3		dipole on s/c (with all investigate and deperm	gse connected- s/c off)
		reading from facility wi e moment from the facili	ith procedure step number. ity's data sheet below.
	E/W	N/S	Up/Down
			VER I FY
5.1.2.4	Power on s/c vi	a SPWRUP- configure as	listed below:
	perform	procedure written by Da	rrell Mitchell
	configu illumin	ugh combinations checkin ration - shunting curren ating arrays, if field n of s/c and gse)	
			VERIFY

5.1.2.5 Measure ability of spin and precession coils to place a perm on the spacecraft. Make measurements listed below. Run coils at +L7, -L7, and L0.

Do	the	following:	

Send "/atorque ena		
Send "/ascontrol e		
Send "/apcontrol e		
Send "/aoloop enab		
Send "/ascoillev Send "/apcoillev		
Send "/aoloopmode		
beria , ao to opino ao	P -0-0	
		VERIFY
b. spin +, prec 0	- verify dipole	
		with procedure step number.
		ility's data sheet below.
E/W	N/S	Up/Down
•		·
· 		
c. Send "/ascoill		
spin 0, prec 0 -		with management at an number
		with procedure step number. ility's data sheet below.
kecora the Dipole	moment from the rac	itity's data sheet below.
E/W	N/S	Up/Down
E/W 	N/S	Up/Down
E/W	N/S	Up/Down
		Up/Down
d. Send "/ascoill	ev L7"	Up/Down
d. Send "/ascoill Send "/aoloopmode	ev L7" neg "	Up/Down
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 -	ev L7" neg " verify dipole	<u> </u>
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r	ev L7" neg " verify dipole eading from facility	Up/Down with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r Record the Dipole	ev L7" neg " verify dipole eading from facility moment from the fac	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r Record the Dipole	ev L7" neg " verify dipole eading from facility	with procedure step number.
d. Send "/ascoill Send "/aoloopmode spin -, prec O - Annotate dipole r Record the Dipole	ev L7" neg " verify dipole eading from facility moment from the fac	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r	ev L7" neg " verify dipole eading from facility moment from the fac	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r Record the Dipole	ev L7" neg " verify dipole eading from facility moment from the fac	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec O - Annotate dipole r Record the Dipole	ev L7" neg " verify dipole eading from facility moment from the fac	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec O - Annotate dipole r Record the Dipole E/W	ev L7" neg " verify dipole eading from facility moment from the fac N/S ev L0"	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r Record the Dipole E/W e. Send "/ascoill spin 0, prec 0 -	ev L7" neg " verify dipole eading from facility moment from the fac N/S ev L0" verify dipole	with procedure step number. ility's data sheet below.
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole Record the Dipole E/W e. Send "/ascoill spin 0, prec 0 - Annotate dipole r	ev L7" neg " verify dipole eading from facility moment from the fac N/S ev L0" verify dipole eading from facility	with procedure step number. ility's data sheet below. Up/Down
d. Send "/ascoill Send "/aoloopmode spin -, prec 0 - Annotate dipole r Record the Dipole E/W e. Send "/ascoill spin 0, prec 0 - Annotate dipole r	ev L7" neg " verify dipole eading from facility moment from the fac N/S ev L0" verify dipole eading from facility	with procedure step number. Fility's data sheet below. Up/Down

E/W 	N/S	Up/Down
g. Send "/apcoil	lev LO"	
spin 0, prec 0		
Annotate dipole	reading from facility	with procedure step number.
Record the Dipol	e moment from the fac	ility's data sheet below.
E/W	N/S	Up/Down
L/ N		
L/ #		
h. Send "/apcoil		
h. Send "/apcoil Send "/apcoildin spin O, prec - Annotate dipole Record the Dipol	neg" - verify dipole reading from facility	with procedure step number. ility's data sheet below. Up/Down
h. Send "/apcoil Send "/apcoildin spin 0, prec - Annotate dipole	neg" - verify dipole reading from facility e moment from the fac	ility's data sheet below.
h. Send "/apcoil Send "/apcoildir spin 0, prec - Annotate dipole Record the Dipol E/W i. Send "/apcoil spin 0, prec 0 Annotate dipole	reg" - verify dipole reading from facility e moment from the fac N/S	ility's data sheet below.

Send "/ascorttev L7"

Send "/apcoillev L7"

Send "/apcoildir pos"

Send "/apcoildir pos"

spin +, prec + - verify dipole

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

Up/Down

k. Send "/ascoillev LO"
Send "/apcoillev LO"
spin 0, prec 0 - verify dipole
Annotate dipole reading from facility with procedure step number.
Record the Dipole moment from the facility's data sheet below.

E/W

N/S

Up/Down

L. Send "/ascoillev L7"

Send "/apcoillev L7"

Send "/aoloopmode neg "

Send "/apcoildir pos"

spin -, prec + - verify dipole

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

E/W

N/S

Up/Down

M. Send "/ascoillev LO"

Send "/apcoillev LO"

spin 0, prec 0 - verify dipole

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

E/W

N/S

Up/Down

N. Send "/ascoillev L7"

Send "/apcoillev L7"

Send "/apcoildir neg"

Send "/apcoildir neg"

spin -, prec - - verify dipole

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

E/W

N/S

Up/Down

:/W	N/S	Up/Down
. Send "/ascoi		
Send "/apcoille		
Send "/aoloopmo	•	
Send "/apcoildi	r neg" - verify dipole	
		with procedure step number.
-		lity's data sheet below.
E/W	N/S	Up/Down
Send "/apcoille		
Send "/apcoille spin 0, prec 0 Annotate dipole	v LO" - verify dipole reading from facility	with procedure step number. lity's data sheet below.
Annotate dipole	v LO" - verify dipole reading from facility	
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo	v LO" - verify dipole - reading from facility le moment from the faci	lity's data sheet below.
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo	v LO" - verify dipole - reading from facility le moment from the faci	lity's data sheet below.
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo	v LO" - verify dipole - reading from facility le moment from the faci	lity's data sheet below.
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo E/W R. if s/c deter spin and perm fou	v LO" - verify dipole - reading from facility le moment from the faci N/S mined to have ability to precession coils, take and above, repeat, try to	Up/Down To be permed via the worst case from to deperm using
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo E/W R. if s/c deter spin and perm fou	v LO" - verify dipole - reading from facility le moment from the faci N/S mined to have ability to	Up/Down To be permed via the worst case from to deperm using
Send "/apcoille spin 0, prec 0 Annotate dipole Record the Dipo E/W R. if s/c deter spin and perm fou s/c spin dipole Annotate dipole	v LO" - verify dipole reading from facility le moment from the faci N/S mined to have ability to precession coils, take and above, repeat, try to and precession coils,	Up/Down To be permed via the worst case from to deperm using

5.2 Magnetometer scale factor
S/C setup
5.2.1.1 Setup the following, use SPWRUP: - muegse through umbilical, mag trim box through ACS test connector (loopback) and trim connectors, s/c on- normal mode, instr on, bat on-line, shunts on, coils off, nulled field, test magnetometer located near acs magnetometer (deployed)
VERIFY
- start chgpktrate (0,8,3,S) (get raw mag data)
VERIFY
- Deploy mag boom
VERIFY
5.2.2 Scale Factor Procedure
5.2.2.1 Have facility generate a positive 50k gamma east field
5.2.2.2 Rotate s/c (on turntable) until voltages read at trim box correspond to a pos X (ACS) field reading (rotate until Y (ACS) voltage is < +/- 20 millivolts and X (ACS) reads pos.)
5.2.2.3 Turn off facility east/west field
5.2.2.4 Have facility generate a pos 50k gamma north field
5.2.2.5 Record voltages from trim box to check north/south to Y (ACS) alignment
VOLTAGE AT TRIM BOX
X (ACS)
Y (ACS)
z (ACS)
YRED (ACS)
5.2.2.6 Have facility zero out field and record the following:
NULL FIELD READING VOLTAGE AT TRIM BOX
X (ACS)
Y (ACS)
Z (ACS)

YRED	(ACS)	

5-2.7 Stimulate X(ACS) axis- stimulate -50k gamma to + 50kgamma East/West, increments 10k gamma record I&T raw mag, record voltages at trim box, (page snap TQACS)

For each of the following, set the field as shown and record the voltages as listed from the mag trim box and snap the page TQACS from the I&T GSE. Annotate the snaps with this procedure step number and the stimulated field.

FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-50k E/W	-		•	
	E/W (fac)	N/S (fac)	Up/d(fac)	
_	-		•	
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-40k E/W _				
	E/W (fac)	N/S (fac)	Up/d(fac)	
	-			
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-30k E/W _	E/W (fac)	N/S (fac)	Up/d(fac)	
_	 -			
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-20k E/W _				
	E/W (fac)	N/S (fac)	Up/d(fac)	
-	•			
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-10k E/W _				

N/S (fac)

Up/d(fac)

E/W (fac)

FIELD Ok E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +10k E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
		N/S (fac)	Up/d(fac)	
FIELD +20k E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
		N/S (fac)	Up/d(fac)	
FIELD +30k E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +40k E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	····
FIELD +50k E/W	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	

5.2.2.8 Stimulate Y (ACS) and RED axis-stimulate -50k gamma to + 50k g North/ South, increments 10k gamma, record I&T raw mag, record voltages at trim box

For each of the following, set the field as shown and record the voltages as listed from the mag trim box and snap the page TQACS from the I&T GSE. Annotate the snaps with this procedure step number and the stimulated field.

FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-50k N/S _	E/W (fac)	N/S (fac)	Up/d(fac)	
-				
FIELD -40k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
-40K N/3	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD -30k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
-	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD -20k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
-	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD -10k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED

	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD Ok N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +10k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +20k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +30k N/S	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)		
FIELD +40k N/S		Y(ACS)		RED
		N/S (fac)		
FIELD +50k N/S	X(ACS)		Z(ACS)	RED

5.2.2.9 Stimulate Z (ACS) axis- stimulate -50k gamma to + 50k gamma Up/Down, increments 10k gamma record I&T raw mag, record voltages at trim box, (page snap TQACS)

For each of the following, set the field as shown and record the voltages as listed from the mag trim box and snap the page TQACS from the I&T GSE. Annotate the snaps with this procedure step number and the stimulated field.

FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-50k U/D	 -			
	E/W (fac)	N/S (fac)	Up/d(fac)	
	-			118
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-40k U/D	-			
	E/W (fac)	N/S (fac)	Up/d(fac)	
	-			
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-30k U/D				
	E/W (fac)	N/S (fac)	Up/d(fac)	
	-			
FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
-20k U/D				
	E/W (fac)	N/S (fac)	Up/d(fac)	

FIELD -10k U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD Ok U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +10k U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +20k U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +30k U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	
FIELD +40k U/D	X(ACS)	Y(ACS)	Z(ACS)	RED
	E/W (fac)	N/S (fac)	Up/d(fac)	

	FIELD	X(ACS)	Y(ACS)	Z(ACS)	RED
	+50k U/D	E/W (fac)	N/S (fac)	Up/d(fac)	
5.3 Det	ermi ne tr im	resistor contamin	ation matrix		
5.3.1 s	mag s/o shu loo	trim plugs, muegs g trim box through c on- normal mode, unts on, coils off cated near acs mag URUP,	ACS test connecting instron (in signification), nulled field,	ctor (loopback), tandby), bat on-l test magnetomete	r
				VERIFY	
	sta	art CHGPKTRATE (0,	8,3,S) - proc t	o get ACS RAW mag	data
				VERIFY	_
5.3.2 T	rim Procedu	re-			
5.3.2.1	Verify tri	n box resistances	set to open		
5.3.2.2		deployed compensa	tion network is	selected. If no	t,
				VERIFY	
5.3.2.3	Measure and	alog trim offsets	(at mag trim bo	x). Record below	
RAW MAG	DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENS MAG DA		X(ACS)	Y(ACS)	Z(ACS)	RED
FACILIT	Y MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	

5.3.2.4 Do the following:

Configure the S/C to normal mode, instruments on-line (standby), bat on-line, shunts on, nulled field

Send "/atorque enable"

Send "/ascontrol enable"

Send "/apcontrol enable"

Send "/aoloop enable"

Send "/ascoillev L7"

Send "/apcoillev LO"

Send "/aoloopmode pos "

VERIFY

5.3.2.5 Measure contamination through trim box via multimeters. Record below.

RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		

5.3.2.6 Null out contamination by dialing in resistances on the trim box, use hardline mag comp multimeters as feedback. Get compensated values to zero +/- TBD. Record below.

COMPENSATED

MAG DATA

X(ACS)

Y(ACS)

Z(ACS)

RED

2.9 Send /AOLOOPMODE NEG.	Verify correc	t neg spin d	oil current.
- verify correct deco	ntamination.	Record value	s listed below

RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
10 n/a				
5.3.2.11 Send /ASCO	ILLEV LO and veri	fy zero coil cur	rent.	
			VER I FY	
5.3.2.12 Send /APCO current.	ILLEV L7 and /APC	OILDIR POS and v	erify precession	ı coil
			VERIFY	
5.3.2.13 Measure co Record belo		gh trim box via	multimeters.	
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	

COIL	MONITORS	SPIN	PREC

5.3.2.14 Null out contamination by dialing in resistances on the trim box, use hardline mag comp multimeters as feedback. Get compensated values to zero +/- TBD. Record below.

COMPENSATED				
MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED

5.3.2.15 n/a

5.3.2.16 n/a

5.3.2.17 Send /APCOILDIR NEG. Verify correct neg spin coil current.
- verify correct decontamination. Record values listed below.

RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
CUMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		

5.3.2.18 Send /APCOILLEV LO and verify zero coil current.

VERIFY
VERIFY

5.3.2.19 Connect prec trim discovered above

Connect spin trim discovered above

VERIFY____

			VERIFY	_
5.3.2.21 Measure co Record belo		gh trim box via	multimeters.	
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
/APCO	OPMODE POS VILLEV L7 VILDIR NEG VILLEV L7			
			VER I FY	·
5.3.2.23 Measure co Record belo		gh trim box via	multimeters.	
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	

MONITORS	SPIN	PREC		
/APC	OOPMODE NEG OILLEV L7 OILDIR NEG OILLEV L7			
5.3.2.25 Measure c	ontamination throu	gh trim box vía	VERIFY	_
Record bel	OW.			
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
/APC	DOPMODE NEG DILLEV L7 DILDIR POS DILLEV L7			
			VER I FY	

27 Measure contamination through trim box via multimeters. Record below.

RAW MAG DATA

X(ACS)

Y(ACS)

Z(ACS)

RED

_				
PENSATED DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
5.3.2.27b. Open tri the resi	m contamination : stances selected			
R1PXRD				
R1SXRD				
R1PZD				
R1SZD				
R1PYD	,			
R1SYD	.			
R1PXD				
R1SXD				
R2PXRD				
R2SXRD				
R2PZD				
R2SZD	<u> </u>			
R2PYD				
R2SYD				
R2PXD				
R2SXD				

command	pos	y	commutation	(deployed)
command	pos	z	commutation	(stowed)

/APCOILLEV LO
/AOLOOPMODE POSY

VER	IEV	

5.3.2.29	Slowly	decrease the y-deployed, or z-stowed trim
		resistance to about 20% less than the trim value
		watching for oscillations in the coil current

Record the resistance value at which oscillations (instabilities in the closed loop commutation) are first seen:

	RESISTANCE:	
--	-------------	--

5.3.2.30 Slowly increase the y-deployed, or z-stowed trim
resistance to about 20% greater than the trim value
watching for oscillations in the coil current

Record the resistance value at which oscillations (instabilities in the closed loop commutation) are first seen:

RESISTANCE:	ISTANCE:	
-------------	----------	--

31 Trim margin/magnetic stability test- Send the following: command neg y commutation (deployed) command neg z commutation (stowed)

/AOLOOPMODE NEGY

5.3.2.32 Slowly decrease the y-deployed, or z-stowed trim
resistance to about 20% less than the trim value
watching for oscillations in the coil current

Record the resistance value at which oscillations (instabilities in the closed loop commutation) are first seen:

RESISTANCE:	

5.3.2.33 Slowly increase the y-deployed, or z-stowed trim
resistance to about 20% greater than the trim value
watching for oscillations in the coil current

Record the resistance value at which oscillations (instabilities in the closed loop commutation) are first seen:

_	RESISTANCE:	

34 Shutdown the spacecraft using SPWRDOWN

VER	I	FY	•
VER	I	FΥ	

5.3.2.35	Demate	the P701-B connector from the spacecraft
		VERIFY
5.3.2.36	Mea	the trim contamination switches for spin and precession. sure the resistances selected for decontamination looking k through P701-B and record below.
	R1PXRD	·
	R1SXRD	
	R1PZD	
	R1SZD	
	R1PYD	
	R1SYD	
	R1PXD	·
	R1SXD	
	R2PXRD	
	R2SXRD	
	R2PZD	
	R2SZD	····
	R2PYD	
	R2SYD	
	R2PXD	
	R2SXD	
5.3.3 Se	tup-	no trim plugs, muegse through umbilical, mag trim box through ACS test connector (loopback), s/c on- normal mode, instr on (in standby), bat on-line, shunts on, coils off, nulled field, test magnetometer located near acs magnetometer, deployed position, use
		SPWRUP,
		VERIFY
		STOW THE MAG BOOM

VERIFY____

sta	rt CHGPKTRATE (0,	8,3,S) - proc to	get ACS RAW mag	
5.3.4 Trim Procedur	e-			
5.3.4.1 Verify trim	box resistances	set to open	VERIFY	
5.3.4.2 Verify the send /AMAGO		tion network is s	selected. If no	t,
			VERIFY	
5.3.4.3 Measure and	olog trim offsets	(at mag trim box). Record below	
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
SATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		

5.3.4.4 Do the following:

Configure the S/C to normal mode, instruments on-line (standby), bat on-line, shunts on, nulled field $\frac{1}{2}$

Send "/atorque enable"

Send "/ascontrol enable"

Send "/apcontrol enable"

Send "/aoloop enable"

Send "/ascoillev L7"

Send "/apcoillev LO"

Send "/aoloopmode pos "

.5 Measure cont Record below	·			
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS		PREC		
.6 Null out con		aling in resista s as feedback.	nces on the trim Get compensated	
.6 Null out con hardline mag to zero +/-	tamination by di	aling in resista s as feedback.		
.6 Null out con hardline mag to zero +/- COMPENSATED MAG DATA	ntamination by di comp multimeter TBD. Record bel	aling in resista s as feedback. ow.	Get compensated	values
.6 Null out con hardline mag to zero +/- COMPENSATED MAG DATA 5.3.4.7 n/a 5.3.4.8 n/a 6.3.4.9 Send /AOLOOP	ntamination by di comp multimeter TBD. Record bel X(ACS)	aling in resista s as feedback. ow. Y(ACS)	Z(ACS)	values RED
.6 Null out con hardline mag to zero +/- COMPENSATED MAG DATA 5.3.4.7 n/a 5.3.4.8 n/a 6.3.4.9 Send /AOLOOP	ntamination by di comp multimeter TBD. Record bel X(ACS)	aling in resista s as feedback. ow. Y(ACS)	Z(ACS)	values RED

FACILITY MAG DATA	E/W (TAC)	N/S (Tac)	up/d(тас)	
. MONITORS	SPIN	PREC		
5.3.4.10 n/a				
5.3.4.11 Send /ASCOI	LLEV LO and veri	fy zero coil curi	VERIFY	
5.3.4.12 Send /APCOI current.	LLEV L7 and /APC	DILDIR POS and ve	erify precession	coil
			VER I FY	
5.3.4.13 Measure con Record below			Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
-			onces on the tri	m hav
	ontamination by d g comp multimeter TBD. Record bel	s as feedback.		

	-			
5~3	/.	16	-	<i>-</i>
_	νΨ.	. 10	111	•

verity ex	orrect decontamin			
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED Mag data	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
-				
5.3.4.18 Send /APCOI	LLEV LO and veri	fy zero coil cur	rent.	
54.18 Send /APCOI	LLEV LO and veri	fy zero coil cur	rent. VERIFY	
i.3.4.19 Connect spi		d above		
5.3.4.19 Connect spi	n trim discovere	d above		_
Connect spi Connect pre 5.3.4.20 Send /AOLOC /ASCOI /APCOI	n trim discovere c trim discovere	d above	VERIFY	_
Connect spi Connect pre 5.3.4.20 Send /AOLOC /ASCOI /APCOI	n trim discovere c trim discovere PMODE POS LLEV L7 LDIR POS	d above	VERIFY	
5.3.4.20 Send /AOLOC /ASCOI /APCOI	n trim discovere c trim discovere PMODE POS LLEV L7 LDIR POS LLEV L7	d above d above	VERIFY VERIFY	

.. 17 Send /APCOILDIR NEG. Verify correct neg spin coil current.

COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED				
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)					
COIL MONITORS	SPIN	PREC						
/ASCO /APCO	5.3.4.22 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7							
5.3.4.23 Measure co		gh trim box via m	VERIFY	_				
RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED				
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED				
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)					
COIL MONITORS	SPIN	PREC						

24 Send /AOLOOPMODE NEG
/ASCOILLEV L7
/APCOILDIR NEG
/APCOILLEV L7

VERIFY	
--------	--

.25 Measure contamination	through	trim box	via	multimeters.
Record below.				

RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		
				

.26 Send /AOLOOPMODE NEG /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7

VERIFY____

5.3.4.27 Measure contamination through trim box via multimeters.

Record below.

RAW MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED				
COMPENSATED MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
COIL MONITORS	SPIN	PREC		

3.4.27		n trim contamination switches for spin and precession. Measure resistances selected for decontamination and record below.
	tile	resistances selected for decontainmation and record below.
ŀ	R1PXR	
	R1SXR	
i	R1PZ	
!	R1SZ	
	R1PY	
•		
١	R1SY	<u></u>
1	R1PX	
ĺ	R1SX	
,		
1	R2PXR	
,		
١	R2SXR	
1	R2PZ	
	R2SZ	
İ	R2PY	
I	R2SY	
1	R2PX	
	R2SX	
3_4_28	Trim ma	argin/magnetic stability test- Send the following:
		command prec LO
		command pos y commutation (deployed)
		command pos z commutation (stowed)
		/APCOILLEV LO
		/AOLOOPMODE POSZ
		VERIFY
3.4.29	Slowly	decrease the y-deployed, or z-stowed trim
		resistance to about 20% less than the trim value
_		watching for oscillations in the coil current
	Record	the resistance value at which oscillations (instabilities
	in the	closed loop commutation) are first seen:
		RESISTANCE:

5.3.4.30	Slowly	increase the y-deployed, or z-stowed trim resistance to about 20% greater than the trim value watching for oscillations in the coil current
		the resistance value at which oscillations (instabilities closed loop commutation) are first seen:
		RESISTANCE:
5.3.4.31	Trim ma	argin/magnetic stability test- Send the following: command neg y commutation (deployed) command neg z commutation (stowed)
		/AOLOOPMODE NEGZ
		VERIFY
5.3.4.32	Slowly	decrease the y-deployed, or z-stowed trim
		resistance to about 20% less than the trim value
		watching for oscillations in the coil current
		the resistance value at which oscillations (instabilities closed loop commutation) are first seen:
		RESISTANCE:
.33	Slowly	increase the y-deployed, or z-stowed trim resistance to about 20% greater than the trim value watching for oscillations in the coil current
		the resistance value at which oscillations (instabilities closed loop commutation) are first seen:
		RESISTANCE:
5.3.4.34	Shutdo	wn the spacecraft using SPWRDOWN
		VERIFY
5.3.4.35	Demate	the P701-A connector from the spacecraft
		VERIFY
5.3.4.34	Meas	the trim contamination switches for spin and precession. sure the resistances selected for decontamination looking k through P701-A and record below.
	R1PXR	
	R1SXR	
	R1PZ	
	R1SZ	
	R1PY	

.

	R1SY		
$\overline{}$	R1PX		
	R1SX		
	R2PXR		
	R2SXR		
	R2PZ		
	R2SZ		
	R2PY		
	R2SY		
	R2PX		
	R2SX		
<u>.4</u> Magi		r Frequency Response no trim plugs, muegse through umbilical, mag trim box through ACS test connector s/c on- normal mode, instr on, bat on-li	(loopback), ine,
		shunts on, coils off, nulled field, test located near acs magnetometer, deployed	magnetometer
			VERIFY
		MAGNETOMETER BOOM MUST BE DEPLOYED	
			VERIFY
5.4.2	Procedu	re-	
		X(ACS)-axis - verify 3 db rolloff	
5.4.2.1		channel one of the chart recorder to the d by the facility- East/West channel	e test magnetometer
			VERIFY
		channel two of the chart recorder to the channel	e the trim box
			VERIFY

5.4.2.3 Connect channel one of the frequency analyzer to the test magnetometer provided by the facility- East/West channel

	VERIFY
5.4.2.4	Connect channel two of the frequency analyzer to the trim box -X(ACS) channel
	VERIFY
5.4.2.5	Have facility generate up (spin axis = pos s/c Z) rotating field at 0.5 to 100 RAD/SEC, 30k gamma (note: the up/down axis will be the spin axis for the rotating field i.e. N/S, E/W fields will be driven with sine waves)
	-facility should start at 0.5 RAD/SEC and slowly increase frequency until peak to peak amplitude of sine wave recorded at chart recorder of ACS magnetometer channel X drops by 3 db. At this point, the frequency of the input field should be recorded as the 3db corner frequency of the FAST magnetometer. Record below. Annotate chart recorder plots with procedure step number, ACS channel, and facility magnetometer channel.
	FREQUENCY:
	-try to use frequency analyzer setting up channel 1 as source and comparing channel two vs. channel one to get bode plot (frequency plot) of magnetometer for both gain and phase. Record 3 db rolloff frequency from plots below.
	FREQUENCY:
5.4.3	Procedure-
	Y(ACS)-axis - verify 3 db rolloff
5.4.3.1	Connect channel one of the chart recorder to the test magnetometer provided by the facility- North/South channel
	VERIFY
5.4.3.2	Connect channel two of the chart recorder to the the trim box -Y(ACS) channel
	VER I FY
5.4.3.3	Connect channel one of the frequency analyzer to the test magnetometer provided by the facility- North/South channel
	VERIFY
	Connect channel two of the frequency analyzer to the trim box -Y(ACS) channel

VERIFY____

0.5 to 100 RAD/SEC, 30k gamma

(note: the up/down axis will be the spin axis for the rotating field i.e. N/S, E/W fields will be driven with sine waves)

-facility should start at 0.5 RAD/SEC and slowly increase frequency until peak to peak amplitude of sine wave recorded at chart recorder of ACS magnetometer channel Y drops by 3 db. At this point, the frequency of the input field should be recorded as the 3db corner frequency of the FAST magnetometer. Record below. Annotate chart recorder plots with procedure step number, ACS channel,

	and facility magnetometer channel.
	FREQUENCY:
	-try to use frequency analyzer setting up channel 1 as source and comparing channel two vs. channel one to get bode plot (frequency plot) of magnetometer for both gain and phase. Record 3 db rolloff frequency from plots below.
	FREQUENCY:
5.4.4	Procedure-
	Y RED(ACS)-axis - verify 3 db rolloff
.1	Connect channel one of the chart recorder to the test magnetometer provided by the facility- North/South channel
	VERIFY
5.4.4.2	Connect channel two of the chart recorder to the the trim box -Y RED(ACS) channel
	VERIFY
5.4.4.3	Connect channel one of the frequency analyzer to the test magnetomete provided by the facility- North/South channel
	VER I FY
5.4.4.4	Connect channel two of the frequency analyzer to the trim box -Y RED(ACS) channel
	VER I FY

5.4.4.5 Have facility generate up (spin axis = pos s/c Z) rotating field at 0.5 to 100 RAD/SEC, 30k gamma

> (note: the up/down axis will be the spin axis for the rotating field i.e. N/S, E/W fields will be driven with sine waves)

-facility should start at 0.5 RAD/SEC and slowly increase frequency until peak to peak amplitude of sine wave recorded at chart recorder of ACS magnetometer channel Y RED drops by 3 db. At this point, the frequency of the input field should be recorded as the 3db corner

ı	frequency of the FAST magnetometer. Record below. Annotate chart recorder plots with procedure step number, ACS channel, and facility magnetometer channel.
	FREQUENCY:
	-try to use frequency analyzer setting up channel 1 as source and comparing channel two vs. channel one to get bode plot (frequency plot) of magnetometer for both gain and phase. Record 3 db rolloff frequency from plots below.
	FREQUENCY:
.4.5	Procedure-
	Z (ACS)-axis - verify 3 db rolloff
i.4.5.1	Connect channel one of the chart recorder to the test magnetometer provided by the facility- Up/down channel
	VERIFY
5.4.5.2	Connect channel two of the chart recorder to the the trim box -Z(ACS) channel
	VERIFY
.3	Connect channel one of the frequency analyzer to the test magnetometer provided by the facility- Up/Down channel
	VERIFY
5.4.5.4	Connect channel two of the frequency analyzer to the trim box
	VERIFY
5.4.5.5	Have facility generate EAST (spin axis = pos s/c X) rotating field at 0.5 to 100 RAD/SEC, 30k gamma (note: the East/West axis will be the spin axis for the rotating field i.e. N/S, U/D fields will be driven with sine waves)
	-facility should start at 0.5 RAD/SEC and slowly increase frequency until peak to peak amplitude of sine wave recorded at chart recorder of ACS magnetometer channel Z drops by 3 db. At this point, the frequency of the input field should be recorded as the 3db corner frequency of the FAST magnetometer. Record below. Annotate chart recorder plots with procedure step number, ACS channel, and facility magnetometer channel.
	FREQUENCY:
	-try to use frequency analyzer setting up channel 1 as source and comparing channel two vs. channel one to get bode plot (frequency

plot) of magnetometer for both gain and phase. Record 3 db rolloff

frequ	ency from plots below.
FREQUI	ENCY:
5.5 Magnetomet	er Phasing
spin f	ield- verify correct spin phase determination both directions
5.5.1 setup-	no trim plugs, muegse through umbilical, mag trim box through ACS test connector (loopback), s/c on- launch mode, instr off, bat on-line, shunts on, coils off, nulled field, test magnetometer located near acs magnetometer, stowed
	VERIFY
	STOW MAG BOOM
	VERI FY
5.5.2 proced	ure-
5.5.2.1 Verify	mag boom in stowed configuration
	VERIFY
.2 Have fa	ncility provide pos (+Z up) rotating field - 30k gamma
	VERIFY
5.5.2.3 Open se acquisi	peration switches on ASE and verify ACS goes to initial tion mode
	VERIFY
5.5.2.4 Set EOD	timer to 1 minute - /AEOD LIMIT = 60
	VERIFY
5.5.2.5 Once AC spin di	S initial acq mode goes to state 3, Dump ACS packet containing rection information "/mtlsendpkg appid = 12"
	VERIFY
5.5.2.6 Record 1	the following:
	ASSNSCNTNEG
	ASSNSCNTPOS
7 Have fac	ility provide neg (+Z down) rotating field - 30k gamma

VERIFY____

	the following to reset the ACS into its preset initial acq state
-	selmode normal
/mosts	selmode initacq
	VEDITY
	VERIFY
5.5.2.9 Set EC	D timer to 1 minute - /AEOD LIMIT = 60
	7.125 2.11.1 = 00
	VERIFY
	ACS initial acq mode goes to state 3, Dump ACS packet containing irection information "/mtlsendpkg appid = 12"
	VERIFY
5.5.2.11 Recor	d the following:
	ASSNSCNTNEG
	ASSNSCNTPOS
5.5b verify	correct commutation
5.5.3 setup-	no trim plugs, muegse through umbilical,
	mag trim box through ACS test connector (loopback),
/	
	s/c on- normal mode, instr on, bat on-line,
	shunts on, coils enabled, nulled field, test magnetometer
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed
	shunts on, coils enabled, nulled field, test magnetometer
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb)
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted)
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb)
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (2-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin
5.5.4 proced	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY ure- both commutation switches, both sources (4 comb) (2-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (2-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY /amagcomp stowed /aoloopmode negz
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY /amagcomp stowed /aoloopmode negz /aoloop enable /atorque enable /ascontrol enable
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY /amagcomp stowed /aoloopmode negz /aoloop enable /atorque enable
	shunts on, coils enabled, nulled field, test magnetometer located near acs magnetometer, deployed VERIFY DEPLOY MAG BOOM VERIFY Ure- both commutation switches, both sources (4 comb) (Z-inverted, Z-noninverted, Y-inverted, Y-noninverted) Both directions mag stimulus, each condition Locate facility test magnetometer near SPIN coil to verify correct moment output phase of spin commands VERIFY /amagcomp stowed /aoloopmode negz /aoloop enable /atorque enable /ascontrol enable

5.5.4.2 Have facility generate an pos up/down field (up) (pos Z (acs))

	VERIFY
5-6.3 Verify spin coil moment = neg E/W (WEST) or -X magnetometer located near SPIN coil	(acs) using facility
	VERIFY
5.5.4.4 Record the spin coil current as seen in telement MAG trim box below	try and via the
ASPINCOILCURR (from I&T gse)	
TRIM BOX SPIN COIL CURRENT	_
5.5.4.5 Have facility generate an neg up/down field (do	own) (neg Z (acs))
	VERIFY
5.5.4.6 Verify spin coil moment = pos E/W (EAST) or +X magnetometer located near SPIN coil	(acs) using facility
	VERIFY
5.5.4.7 Record the spin coil current as seen in telemet MAG trim box below	ry and via the
ASPINCOILCURR (from I&T gse)	_
TRIM BOX SPIN COIL CURRENT	_
5.5.4.8 Send /aoloopmode posz	
	VERIFY
5.5.4.9 Have facility generate an pos up/down field (up) (pos Z (acs))
	VERIFY
5.5.4.10 Verify spin coil moment = pos E/W (EAST) or +X magnetometer located near SPIN coil	(acs) using facility
	VERIFY
5.5.4.11 Record the spin coil current as seen in telement MAG trim box below	try and via the
ASPINCOILCURR (from I&T gse)	-
TRIM BOX SPIN COIL CURRENT	-
5.5.4.12 Have facility generate an neg up/down field (do	own) (neg Z (acs))

VERIFY____

5.5.4.13 Verify spin coil moment = neg magnetometer located near SPIN	g E/W (WEST) or -X (acs) using facility I coil
	VER I FY
5.5.4.14 Record the spin coil current MAG trim box below	as seen in telemetry and via the
ASPINCOILCURR (from I&T gse)	
TRIM BOX SPIN COIL CURRENT	
5.5.4.15 Send /amagcomp deploy /aoloopmode negy	
	VERIFY
5.5.4.16 Have facility generate an pos	N/S field (N) (pos Y (acs))
	VERIFY
5.5.4.17 Verify spin coil moment = neg magnetometer located near SPIN	E/W (WEST) or -X (acs) using facility coil
	VER I FY
18 Record the spin coil current a	as seen in telemetry and via the
ASPINCOILCURR (from I&T gse)	
TRIM BOX SPIN COIL CURRENT	
5.5.4.19 Have facility generate an neg	N/S field (S) (neg Y (acs))
	VERIFY
5.5.4.20 Verify spin coil moment = pos magnetometer located near SPIN	
	VER I FY
5.5.4.21 Record the spin coil current a MAG trim box below	s seen in telemetry and via the
ASPINCOILCURR (from I&T gse)	
TRIM BOX SPIN COIL CURRENT	
?2 Send /aoloopmode posy	
	VERIFY

5.5.4.23 Have facility generate an pos N/S field (N) (pos Y (acs))

		VERIFY
5-E-4.	24 Verify spin coil moment = pos E/W (EAST) or magnetometer located near SPIN coil	+X (acs) using facility
		VER I FY
5.5.4.	25 Record the spin coil current as seen in tel MAG trim box below	emetry and via the
	ASPINCOILCURR (from I&T gse)	
	TRIM BOX SPIN COIL CURRENT	
5.5.4.	26 Have facility generate an neg N/S field (S)	(neg Y (acs))
		VER I FY
5.5.4.	27 Verify spin coil moment = neg E/W (WEST) or magnetometer located near SPIN coil	-X (acs) using facility
		VERIFY
5.5.4.	28 Record the spin coil current as seen in tel MAG trim box below	emetry and via the
	ASPINCOILCURR (from I&T gse)	
	TRIM BOX SPIN COIL CURRENT	
5.5c	Coil moment/verification - open loop commandi	ng spin and prec coils
5.5.5	setup- no trim plugs, muegse through umbilio mag trim box through ACS test connec s/c on- normal mode, instr on, bat or shunts on, coils enabled, nulled fie located near acs magnetometer, deploy	tor (loopback), n-line, ld, test magnetometer
		VER I FY
	NOTE: if facility requires mag boom to be so to rotate the s/c and measure the dipo stow the boom at this point	
		VER I FY
5.5.6	procedure- go through all of the coil command moments generated by the spacecraft	· · · · · · · · · · · · · · · · · · ·
		VERIFY

5.5.6.1 Send the following to the spacecraft:
 /ascontrol enable
 /apcontrol enable

	/aoloop enable			
_	/apcoillev l0			
*				VERIFY
.6.2	Send the following /aoloopmode pos /ascoillev L7	to the spacecra	ft to config	ure the coils:
	, 1555			
				VERIFY
6.3	Measure analog tri	n offsets (at ma	g trim box).	Record below.
	COIL MONITORS (trim box)	SPIN	PREC	
		· · · · · · · · · · · · · · · · · · ·		
	Have facility measu Annotate dipole rea Record the Dipole m	ading from facili	ity with pro	
	E/W	N/S		Up/Down
`	Snap page 'TQACS' f procedure step numb		and annotate	e with the
				VERIFY
6.4	Send the following	to the engagement	it to config	uno the esile.
.	seria the rottowing	to the spacecrai	t to configu	are the coits:
	/ascoillev L6			
				VERIFY
6.5	Measure analog trim	offsets (at mag	ı trim box).	Record below.
	COIL MONITORS	SPIN	PREC	
	(trim box)			
	Have facility measu Annotate dipole rea Record the Dipole m	ding from facili	ty with proc	
	E/W	N/S		Up/Down
	Snap page 'TQACS' f		and annotate	with the
	procedure step numb	er.		
				VERIFY

/atorque enable

5.5.6.6 Send the following to the spacecraft to configure the coils:

			VERIFY
7 Measure analog	trim offsets (at mag	g trim box).	Record below.
COIL MONITORS (trim box)	SPIN	PREC	
Annotate dipole	easure dipole from s reading from facil le moment from the s	ity with proc	
E/W	N/S		Up/Down
Snap page 'TQACS	S' from the I&T gse	and annotate	with the
			VER I FY
Send the following	ing to the spacecraf	t to configu	re the coils:
/ascoillev L4			
			VERIFY
COIL MONITORS (trim box)	rim offsets (at mag	PREC	Record below.
	easure dipole from s	pacecraft.	-
Annotate dipole	reading from facili e moment from the f		
Annotate dipole	reading from facili		
Annotate dipole Record the Dipol	reading from facili e moment from the f N/S ' from the I&T gse	acility's da	ta sheet below. Up/Down
Annotate dipole Record the Dipol E/W Snap page 'TQACS	reading from facili e moment from the f N/S ' from the I&T gse	acility's da	ta sheet below. Up/Down with the
Annotate dipole Record the Dipol E/W Snap page 'TQACS procedure step n	reading from facili e moment from the f N/S ' from the I&T gse	acility's da	ta sheet below. Up/Down with the
Annotate dipole Record the Dipol E/W Snap page 'TQACS procedure step n	reading from facili e moment from the f N/S ' from the I&T gse umber.	acility's da	ta sheet below. Up/Down with the

5.5.6.11 Measure analog trim offsets (at mag trim box). Record below.

(trim box)	SPIN	PREC	
Annotate dipole	easure dipole from reading from facil e moment from the	ity with prod	
E/W	N/S		Up/Down
Snap page 'TQACS	from the I&T gse	and annotate	with the
			VER I FY
2 Send the follow	ing to the spacecr	aft to config	pure the coils:
/ascoillev L2			
			VERIFY
3 Measure analog COIL MONITORS (trim box)	SPIN	PREC	record below.
COIL MONITORS (trim box) Have facility me. Annotate dipole		PREC 	 edure step numb
COIL MONITORS (trim box) Have facility me Annotate dipole	SPIN asure dipole from series	PREC 	 edure step numbe
COIL MONITORS (trim box) Have facility me Annotate dipole Record the Dipole	SPIN asure dipole from s reading from facili e moment from the s N/S	PREC spacecraft. ity with proc facility's da	edure step numbe ta sheet below. Up/Down
COIL MONITORS (trim box) Have facility me Annotate dipole Record the Dipole E/W Snap page 'TQACS	SPIN asure dipole from s reading from facili e moment from the s N/S	PREC spacecraft. ity with proc facility's da	edure step numbers ta sheet below. Up/Down with the
COIL MONITORS (trim box) Have facility me Annotate dipole Record the Dipole E/W Snap page 'TQACS procedure step no	SPIN asure dipole from s reading from facili e moment from the s N/S	PREC spacecraft. ity with proc facility's da	edure step numbota sheet below. Up/Down with the
COIL MONITORS (trim box) Have facility me Annotate dipole Record the Dipole E/W Snap page 'TQACS procedure step no	SPIN asure dipole from sereading from facility e moment from the serious N/S ' from the I&T gseumber.	PREC spacecraft. ity with proc facility's da	edure step numbota sheet below. Up/Down with the
COIL MONITORS (trim box) Have facility me. Annotate dipole Record the Dipole E/W Snap page 'TQACS procedure step no	SPIN asure dipole from sereading from facility e moment from the serious N/S ' from the I&T gseumber.	PREC spacecraft. ity with proc facility's da	edure step numbota sheet below. Up/Down with the
COIL MONITORS (trim box) Have facility me. Annotate dipole Record the Dipole E/W Snap page 'TQACS procedure step no	SPIN asure dipole from sereading from facility e moment from the serious N/S ' from the I&T gseumber.	PREC spacecraft. ity with proc facility's da and annotate	edure step numbota sheet below. Up/Down with the VERIFY ure the coils:

Have facility measure dipole from spacecraft.

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

Snap page 'TQACS' fr	om the I&T gse	and annotate w	ith the
procedure step numbe	r.		
		V	ERIFY
16 Send the following	to the spacecra	aft to configur	e the coils:
/ascoillev LO			
,		,	VERIFY
.17 Measure analog tri	m offsets (at m	ag trim box).	Record below
	0011	PREC	
COIL MONITORS (trim box) Have facility measurements and the Dipole of	adima from fact	spacecraft.	edure step nu ta sheet belo
(trim box)	ure dipole from	spacecraft.	edure step nu ta sheet belo Up/Down
(trim box) Have facility measure Annotate dipole reacted the Dipole of E/W	ure dipole from ading from faci moment from the	spacecraft. lity with proce facility's da	Up/Down
(trim box) Have facility measurements Annotate dipole record the Dipole in	ure dipole from ading from faci moment from the N/S	spacecraft. lity with proce facility's da	Up/Down
(trim box) Have facility measure Annotate dipole reactions the Dipole reaction. E/W Snap page 'TQACS'	ure dipole from ading from faci moment from the N/S	spacecraft. lity with proce facility's da	Up/Down
(trim box) Have facility measure Annotate dipole reacted the Dipole of E/W Snap page 'TQACS' procedure step number 1	ure dipole from ading from faci moment from the N/S from the I&T gs	spacecraft. lity with proce facility's da	Up/Down with the
(trim box) Have facility measure Annotate dipole reference the Dipole in E/W Snap page 'TQACS' procedure step number 1.6.18 Send the following steps and the following steps are steps and the following steps are ste	ure dipole from ading from faci moment from the N/S from the I&T gamber.	spacecraft. lity with proce facility's da se and annotate	Up/Down with the VERIFY
(trim box) Have facility measure Annotate dipole reacted the Dipole of E/W Snap page 'TQACS' procedure step number 1	ure dipole from ading from faci moment from the N/S from the I&T gamber.	spacecraft. lity with proce facility's da	Up/Down with the VERIFY

Have facility measure dipole from spacecraft.

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

(trim box)

§.20 Send the follow			VERIFY
`	ing to the spacecr	aft to config	gure the coils:
/ascoillev L6			
			VERIFY
6.21 Measure analog	trim offeets (at m	og trim boy)	December 1 av.
			Record below.
COIL MONITORS (trim box)	SPIN	PREC	
Annotate dipole	asure dipole from reading from facil e moment from the	ity with prod	
E/W	N/S		Up/Down
Snap page 'TQACS'	from the I&T gse	and annotate	with the
			VERIFY
22 Send the follow	ing to the spacecra	aft to config	ure the coils:
/ascoillev L5			
			VERIFY
.23 Measure analog 1	trim offsets (at ma	ag trim box).	Record below.
23 Measure analog 1 COIL MONITORS (trim box)	trim offsets (at ma	ag trim box). PREC	Record below.
COIL MONITORS (trim box) Have facility mea		PREC 	_ edure step number.
COIL MONITORS (trim box) Have facility mea	SPIN asure dipole from series	PREC 	_ edure step number.
(trim box) Have facility mea Annotate dipole r Record the Dipole	SPIN asure dipole from second from the second from the I&T gse	PREC spacecraft. ity with proc facility's da	edure step number. ta sheet below. Up/Down
COIL MONITORS (trim box) Have facility mea Annotate dipole r Record the Dipole E/W Snap page 'TQACS'	SPIN asure dipole from second from the second from the I&T gse	PREC spacecraft. ity with proc facility's da	edure step number. ta sheet below. Up/Down
COIL MONITORS (trim box) Have facility mea Annotate dipole r Record the Dipole E/W Snap page 'TQACS'	SPIN asure dipole from sereading from the semment from t	PREC spacecraft. ity with proc facility's da	edure step number. ta sheet below. Up/Down with the

VER I FY__

	COIL MONITORS (trim box)	SPIN	PREC
	Have facility mea Annotate dipole r Record the Dipole	eading from faci	spacecraft. lity with procedure step number facility's data sheet below.
	E/W	N/S	Up/Down
	Snap page 'TQACS' procedure step num	from the I&T gse	and annotate with the
			VER I FY
5.6.	26 Send the followin	g to the spacecr	aft to configure the coils:
	/ascoillev L3		
			VERIFY
- , ,	27.4		
	COIL MONITORS (trim box)	IM Offsets (at m	ag trim box). Record below.
	COIL MONITORS (trim box) Have facility measu	SPIN ure dipole from sading from facili	PREC
	COIL MONITORS (trim box) Have facility measu	SPIN ure dipole from sading from facili	PREC Spacecraft. ty with procedure step number.
	COIL MONITORS (trim box) Have facility measu Annotate dipole rea Record the Dipole m	SPIN Ure dipole from soling from facilinoment from the following the following the following the following the following the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the section of the factorial se	PREC spacecraft. ty with procedure step number. acility's data sheet below.
	COIL MONITORS (trim box) Have facility measurements annotate dipole real Record the Dipole measurements and the D	SPIN Ure dipole from soling from facilinoment from the following the following the following the following the following the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section in the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the factorial section is a section of the factorial section of the section of the factorial se	PREC spacecraft. ty with procedure step number. acility's data sheet below. Up/Down
	COIL MONITORS (trim box) Have facility measure. Annotate dipole reactions are reacted the Dipole reaction. E/W Snap page 'TQACS' find procedure step numbers.	SPIN ure dipole from seconding from facilinoment from the form th	PREC spacecraft. ty with procedure step number. acility's data sheet below. Up/Down and annotate with the
	COIL MONITORS (trim box) Have facility measure. Annotate dipole reactions are reacted the Dipole reaction. E/W Snap page 'TQACS' find procedure step numbers.	SPIN ure dipole from seconding from facilinoment from the form th	PREC spacecraft. ty with procedure step number. acility's data sheet below. Up/Down and annotate with the
	COIL MONITORS (trim box) Have facility measure. Annotate dipole real Record the Dipole measure. Snap page 'TQACS' for procedure step numbers.	SPIN ure dipole from seconding from facilinoment from the form th	PREC spacecraft. ty with procedure step number. acility's data sheet below. Up/Down and annotate with the
.6.28	COIL MONITORS (trim box) Have facility measure. Annotate dipole real Record the Dipole in E/W Snap page 'TQACS' for procedure step numbers. Send the following /ascoillev L2	SPIN ure dipole from seconding from facilinoment from the form th	PREC spacecraft. ty with procedure step number. acility's data sheet below. Up/Down and annotate with the VERIFY ft to configure the coils:

`		e facility's data sheet below.
E/W	N/S	Up/Down
Snap page !	TQACS! from the 18T as	se and annotate with the
procedure s	tep number.	se and amotate with the
		VERIFY
5.30 Send the fo	ollowing to the spaced	raft to configure the coils:
/ascoillev (.1	
		VERIFY
.31 Measure ana	log trim offsets (at 1	mag trim box). Record below.
COIL MONITOR (trim box)	S SPIN	PREC
Have facilit	y measure dipole from	spacecraft.
Record the D	ipole moment from the	lity with procedure step number. facility's data sheet below.
Record the D	ipole moment from the	facility's data sheet below. Up/Down
E/W	ipole moment from the N/S	facility's data sheet below.
E/W Snap page 'TG	ipole moment from the N/S	facility's data sheet below. Up/Down
E/W Snap page 'To procedure sta	ipole moment from the N/S ACS: from the I&T gse p number.	facility's data sheet below. Up/Down and annotate with the
E/W Snap page 'To procedure sta	ipole moment from the N/S PACS: from the I&T gseep number.	facility's data sheet below. Up/Down and annotate with the
Snap page 'To procedure sta	ipole moment from the N/S PACS: from the I&T gseep number.	facility's data sheet below. Up/Down and annotate with the
Snap page ITO procedure ste	ACS: from the I&T gse p number.	facility's data sheet below. Up/Down and annotate with the VERIFY aft to configure the coils:
Snap page ITO procedure ste	ipole moment from the N/S DACS' from the I&T gse ep number. Lowing to the spacecra	facility's data sheet below. Up/Down and annotate with the VERIFY aft to configure the coils:
Snap page 'TO procedure sta 32 Send the fol /ascoillev LO 33 Measure anal COIL MONITORS (trim box) Have facility Annotate dipol	og trim offsets (at massure dipole from sele reading from facili	facility's data sheet below. Up/Down and annotate with the VERIFY aft to configure the coils: VERIFY PREC PREC

Have facility measure dipole from spacecraft.

Snap page 'TQACS' from the I&T gse and annotate with the procedure step number. VERIFY___ Send the following to the spacecraft to configure the coils: 5.5.6.34 /apcoildir pos (PRECESSION COIL POSITIVE) /apcoillev L7 VERIFY___ 5.5.6.35 Measure analog trim offsets (at mag trim box). Record below. COIL MONITORS SPIN **PREC** (trim box) Have facility measure dipole from spacecraft. Annotate dipole reading from facility with procedure step number. Record the Dipole moment from the facility's data sheet below. E/W N/S Up/Down Snap page 'TQACS' from the I&T gse and annotate with the procedure step number. VERIFY 5.5.6.36 Send the following to the spacecraft to configure the coils: /apcoillev L6 VERIFY_ 5.5.6.37 Measure analog trim offsets (at mag trim box). Record below. COIL MONITORS SPIN PREC (trim box) Have facility measure dipole from spacecraft. Annotate dipole reading from facility with procedure step number. Record the Dipole moment from the facility's data sheet below. E/W Up/Down

Snap page 'TQACS' from the I&T gse and annotate with the procedure step number.

VERIFY

			VER	FY
.39	Measure analog t	rim offsets (at	mag trim box). Rec	ord belo
	COIL MONITORS (trim box)	SPIN	PREC	
-	Have facility mean Annotate dipole ro Record the Dipole	eading from faci	spacecraft. lity with procedure facility's data sh	step nu eet belo
	E/W	N/S	Up/D	own
F	Snap page 'TQACS' procedure step num	from the I&T gse mber.	e and annotate with	
			VERI	Y
0	Send the followin	g to the spacecr	aft to configure th	e coils
	apcoillev L4			
			VFRIF	Υ
C	Measure analog tr DIL MONITORS trim box)	im offsets (at ma	ag trim box). Reco	rd below
CC (1	OIL MONITORS trim box) ave facility measu nnotate dipole rea	SPIN ure dipole from sading from facili	ag trim box). Reco PREC	step num
CC (1	OIL MONITORS trim box) ave facility measu nnotate dipole res ecord the Dipole m	SPIN ure dipole from sading from facili	PREC prececraft.	step num ≘t below
Ha Ar Re	OIL MONITORS trim box) ave facility measu nnotate dipole res ecord the Dipole m	SPIN ure dipole from seding from facilinoment from the form the form the form the form the form the form the I&T gse	PREC PREC spacecraft. ty with procedure statistics data sheet	step num et below wn
Ha Ar Re	DIL MONITORS trim box) ave facility measu nnotate dipole resecord the Dipole m	SPIN ure dipole from seding from facilinoment from the form the form the form the form the form the form the I&T gse	PREC PREC spacecraft. ty with procedure stacility's data shee	step num et below wn
Ha Ar Re	OIL MONITORS trim box) ave facility measu notate dipole resecord the Dipole n W hap page 'TQACS' focedure step numb	SPIN ure dipole from s ading from facili noment from the f N/S	PREC PREC spacecraft. ty with procedure stacility's data shee	step num et below wn
Ha Ar Re	OIL MONITORS trim box) ave facility measu notate dipole resecord the Dipole n W hap page 'TQACS' focedure step numb	SPIN ure dipole from s ading from facili noment from the f N/S	PREC PREC spacecraft. ty with procedure stacility's data sheet Up/Down	step num et below wn

5.5.6.43 Measure analog trim offsets (at mag trim box). Record below.

5.5.6.38 Send the following to the spacecraft to configure the coils:

	COIL MONITORS (trim box)	SPIN	PREC	
	Annotate dipole	easure dipole from reading from faci e moment from the	lity with pro	ocedure step number. data sheet below.
	E/W 	N/S		Up/Down
	Snap page 'TQACS procedure step n	' from the I&T gse umber.	e and annotat	e with the
				VERIFY
5.5.6	.44 Send the follow	ing to the spacecr	aft to confi	gure the coils:
	/apcoillev L2			
				VERIFY
5.5.6	.45 Measure analog t	rim offsets (at m	ag trim box)	. Record below.
	COIL MONITORS (trim box)	SPIN	PREC	
	Annotate dipole r	sure dipole from seading from facil	ity with proc	edure step number. Ita sheet below.
	E/W	N/S		Up/Down
	Snap page 'TQACS' procedure step nu	from the I&T gse	and annotate	with the
				VERIFY
5.5.6.	46 Send the followin	ng to the spacecra	ft to config	ure the coils:
	/apcoillev L1			
				VERIFY
5.5.6.4	7 Measure analog tr	im offsets (at mag	g trim box).	Record below.
	COIL MONITORS (trim box)	SPIN	PREC	

Have facility measure dipole from spacecraft.

Annotate dipole reading from facility with procedure step number.

Record the Dipole moment from the facility's data sheet below.

E/W	N/S		Up/Down
Snap page 'TQACS	i from the I&T g	se and annota	te with the
			VER I FY
5.48 Send the follow	ing to the space	craft to conf	igure the coils:
/apcoillev LO			
			VERIFY
.49 Measure analog	trim offsets (at	mag trim box). Record below.
COIL MONITORS (trim box)	SPIN	PREC	
Have facility mea Annotate dipole r Record the Dipole	eading from faci	lity with pro	cedure step numbe ata sheet below.
E/W	N/S		Um (Davin
Snap page 'TQACS'	from the I&T gse	and annotat	Up/Down
Snap page 'TQACS' procedure step nu	from the I&T gse	e and annotat	
Snap page 'TQACS' procedure step nu 50 Send the following /apcoildir neg /apcoillev L7	from the I&T gsomber.		e with the VERIFY
procedure step nu 50 Send the following /apcoildir neg	from the I&T gsomber.	aft to config	e with the VERIFY
procedure step nu 50 Send the following /apcoildir neg	from the I&T gsd mber. ng to the spacecr (N	aft to config EGATIVE PRECE	e with the VERIFY gure the coils: ESSION) VERIFY
procedure step nu 50 Send the followin /apcoildir neg /apcoillev L7	from the I&T gsd mber. ng to the spacecr (N	aft to config EGATIVE PRECE	e with the VERIFY gure the coils: ESSION) VERIFY
procedure step nu 50 Send the followin /apcoildir neg /apcoillev L7 51 Measure analog tr	from the I&T gsember. Ing to the spacecre (Notes) aft to config EGATIVE PRECE ag trim box). PREC pacecraft.	e with the VERIFY gure the coils: ESSION) VERIFY Record below.	

	procedure step number.	•		
				VERIFY
.52	2 Send the following to	the spacecraf	t to config	pure the coils:
	/apcoillev L6			
	7			
				VERIFY
5.5.6.53	Measure analog trim o	ffsets (at mag	trim box).	Record below.
	COIL MONITORS (trim box)	SPIN	PREC	
	Have facility measure of Annotate dipole reading Record the Dipole momen	from facility	/ with proc	- edure step numbe ta sheet below.
	E/W	N/S		Up/Down
· ;	Snap page 'TQACS' from procedure step number.	the I&T gse an	d annotate	with the
_				VERIFY
54	Send the following to	the spacecraft	to configu	ure the coils:
,	apcoillev L5			
				VERIFY
5.5.6.55	Measure analog trim of	fsets (at mag	trim box).	Record below.
	OIL MONITORS trim box)	SPIN	PREC	
A	ave facility measure d nnotate dipole reading ecord the Dipole momen	from facility	with proce	dure step number a sheet below.

N/S

VERIFY____

Up/Down

36 Send the following to the spacecraft to configure the coils:

/apcoillev L4

E/W

5-5-6.57 Measure analog tri	m offsets (at	mag trim box)	. Record below.
COIL MONITORS (trim box)	SPIN	PREC	
Have facility measur Annotate dipole read Record the Dipole mo	ding from faci	lity with pro	cedure step number. ata sheet below.
E/W	N/S		Up/Down
Snap page 'TQACS' fr procedure step numbe	om the I&T gs	e and annotate	with the
			VERIFY
5.5.6.58 Send the following	to the spacec	raft to config	ure the coils:
/apcoillev L3			
			VERIFY
.59 Measure analog trim	offsets (at m	mag trim box).	Record below.
COIL MONITORS (trim box)	SPIN	PREC	
Have facility measure Annotate dipole readi Record the Dipole mom	ng from facil	ity with proce	edure step number. a sheet below.
E/W	N/S		Up/Down
Snap page 'TQACS' fro procedure step number	m the I&T gse -	and annotate	with the
			VERIFY
5.5.6.60 Send the following to	o the spacecra	aft to configu	re the coils:
/apcoillev L2			
		,	VERIFY
51 Measure analog trim o	offsets (at ma	g trim box).	Record below.
COIL MONITORS (trim box)	SPIN	PREC	

VERIFY____

	Annotate dipole	asure dipole from reading from faci e moment from the	spacecraft. lity with procedure step nun facility's data sheet below	mber. /-
	E/W	N/S	Up/Down	
	Snap page 'TQACS procedure step no	from the I&T gs umber.	and annotate with the	
			VER I FY	
5.5.6.	.62 Send the followi	ing to the spacec	aft to configure the coils:	
	/apcoillev L1			
			VER I FY	_
5.5.6.	63 Measure analog t	rim offsets (at m	ag trim box). Record below	
	COIL MONITORS (trim box)	SPIN	PREC	
	Have facility mea Annotate dipole r Record the Dipole	eading from facil	spacecraft. ity with procedure step numb facility's data sheet below.	per.
	E/W	N/S	Up/Down	
		from the I&T gse	Up/Down and annotate with the	
	Snap page 'TQACS'	from the I&T gse	<u> </u>	
5.5.6.6	Snap page 'TQACS' procedure step nu	from the I&T gse	and annotate with the	
5.5.6.6	Snap page 'TQACS' procedure step nu	from the I&T gse	and annotate with the VERIFY	
5.5.6.6	Snap page 'TQACS' procedure step num	from the I&T gse	and annotate with the VERIFY	
	Snap page 'TQACS' procedure step num 64 Send the following /apcoillev L0	from the I&T gse mber. ng to the spacecr	and annotate with the VERIFY off to configure the coils:	
	Snap page 'TQACS' procedure step num 64 Send the following /apcoillev L0	from the I&T gse mber. ng to the spacecr	and annotate with the VERIFY oft to configure the coils: VERIFY	
	Snap page 'TQACS' procedure step num 4 Send the following /apcoillev LO 5 Measure analog tr COIL MONITORS (trim box) Have facility meas Annotate dipole re	from the I&T gsember. Ing to the spacecration offsets (at management of spin) Ure dipole from sading from facili	and annotate with the VERIFY Ift to configure the coils: VERIFY g trim box). Record below. PREC	

_	Snap page 'TQACS' from the I&T gse and annotate procedure step number.	with the
/ \.		VERIFY
5.5d Bd	ot verification test- record mag and filtered ma	
	stimulate with rotating field at diff.	frequencies
5.5.7	setup- no trim plugs, muegse through umbilical MUEGSE PLUGGED INTO ACS PATCH PLUG 708 s/c on- initial acq, instr off, bat on- shunts on, coils enabled, nulled field, located near acs magnetometer, stowed b	line, test magnetomete
	,	
		VERIFY
5.5.8 p	procedure- set up rotating fields and verify bdo	t control
5.5.8.1	Have facility generate up (pos s/c Z) rotating 5 rpm, 30k gamma	field at
	(note: the up/down axis will be the rotating field i.e. N/S, E/W fields with sine waves)	
		VERIFY
2	Send the following	
	/mostselmode normal	
	<pre>/mostselmode initacq /aeod limit = 60 (set EOD timer to 1 mi /asenssel mag</pre>	inute)
		VERIFY
5.5.8.3	wait for initial acq state 3	
		VERIFY
	Set 4ktlm filter table to transmit every pkt 12 via 'start chgpktrate (0,3,12,s)'	
		VERIFY
	start seqprt (AMAGX,AMAGY,AMAGZ,ABZR,ABZF,APRECO via 'seqprt magcal,1 >> magcal.dat'	ILCURR)
		VERIFY
	Verify correct spin sense determination (positiv by check ASSCNTPOS and ASSCNTNEG	e)

VER I FY____

5.5.8.7 At Muegse, type
'spin period 5 pipper 1'
'sss angle + 45'

VER1FY
5-8.8 send /abdotangle angle= 40
VERIFY
5.5.8.9 Monitor data for 20 minutes (let seqprt fill at 0 Z (up/down) field)
VERIFY
5.5.8.10 Have facility generate + 20K gamma (up) field
VERI FY
5.5.8.11 Monitor data for 10 minutes (let seqprt fill at +20k gamma Z (up/down) field)
VER I FY
5.5.8.12 Have facility generate - 20K gamma (down) field
VER1FY
5.5.8.13 Monitor data for 10 minutes (let seqprt fill at -20k gamma Z (up/down) field)
VERIFY
.14 Have facility generate O gamma (up) field
VERIFY
5.5.8.15 Monitor data for 10 minutes (let seqprt fill at 0 Z (up/down) field)
VERIFY
5.5.8.16 Have facility generate oscillating up/down field at 20k gamma peak to peak, 40 second period
VERIFY
5.5.8.17 Monitor data for 10 minutes (let seqprt fill at oscillating Z (up/down) field)
VER1FY
5.5.8.18 Have facility generate oscillating up/down field at 20k gamma peak to peak, 400 second period
VERIFY
عرة.19 Monitor data for 40 minutes (let seqprt fill at oscillating Z (up/down) field)
VERIFY

5.5.8.20 Have facility generate oscillating up/down field

			VERIFY	
	.21 Monito	or data for 3.5 ho	ours (let seqprt fill at (up/down) field)	— -
		oscittating 2	(up/down) field)	
			VERIFY	
5.6 V	erificatio	on of the trim res	istor de-contamination matrix	
5.6.1	Setup-	s/c on- normal m shunts on, coils	S INSTALLED, muegse through umbilical PLUG INSTALLED ode, instr on (in standby), bat on-li off, nulled field, test magnetometer magnetometer, deployed position, use	ine,
			VERIFY	_
		start CHGPKTRATE	(0,8,3,S) - proc to get ACS RAW mag VERIFY	
		DEPLOY THE MAG BO	OM VERIFY	
	Trim Verit	fication Procedure	-	
5.0.2.	1 Verify F	light trim plugs	installed in spacecraft	
			VER1FY	_
5.6.2.2	Verify t send /AM	he deployed compe AGCOMP DEPLOY	nsation network is selected. If not	
			VERIFY	_
5.6.2.3		contamination for CS from I&T gse a	zero field. nd annotate with the procedure step	
			VER1FY	_
5.6.2.4	Do the fo	ollowing:		
	on-lir Send "/at	e the S/C to norma ne, shunts on, nul corque enable" control enable"	l mode, instruments on-line (standby led field), bat
	Send "/ap Send "/ac Send "/as	ocontrol enable" cloop enable" ccoillev L7" ccoillev L0"		
		loopmode pos "		
		-	VER I FY	•

5.6.2.6 Send /AOLOOPMODE NEG. Verify correct neg spin coil current verify correct decontamination. Snap TOACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.7 Send /ASCOILLEV LO and verify zero coil current. VERIFY 5.6.2.8 Send /APCOILLEV L7 and /APCOILDIR POS and verify precession coil current. VERIFY 5.6.2.9 Snap TOACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current verify correct decontamination. Snap TOACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILDIR NEG /APCOILLIR NEG /APCOIL NEG /APCOI	5.6.2.5	Measure contamination for zero field. Snap TQACS from I&T gse and annotate with the procedure step number.
Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.7 Send /ASCOILLEV LO and verify zero coil current. VERIFY 5.6.2.8 Send /APCOILLEV L7 and /APCOILDIR POS and verify precession coil current. VERIFY 5.6.2.9 Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		VERIFY
5.6.2.7 Send /ASCOILLEV LO and verify zero coil current. VERIFY 5.6.2.8 Send /APCOILLEV L7 and /APCOILDIR POS and verify precession coil current. VERIFY 5.6.2.9 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.6	- verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step
5.6.2.8 Send /APCOILLEV L7 and /APCOILDIR POS and verify precession coil current. VERIFY 5.6.2.9 Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV L0 and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from 1&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		
S.6.2.9 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.7	
5.6.2.9 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.8	Send /APCOILLEV L7 and /APCOILDIR POS and verify precession coil current.
5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TOACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS		VER1FY
5.6.2.10 Send /APCOILDIR NEG. Verify correct neg spin coil current. - verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLER NEG /APCOILLER NEG /APCOILLER NEG /APCOILLER NEG	5.6.2.9	Snap TQACS from I&T gse and annotate with the procedure step number.
- Verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		VERIFY
5.6.2.11 Send /APCOILLEV LO and verify zero coil current. VERIFY 5.6.2.12 Send /AOLOOPMODE POS		 verify correct decontamination. Snap TQACS from I&T gse and annotate with the procedure step
VERIFY 5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		VERIFY
5.6.2.12 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.11	Send /APCOILLEV LO and verify zero coil current.
/ASCOILLEV L7 /APCOILLEV L7 VERIFY 5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		VERIFY
5.6.2.13 Snap TQACS from I&T gse and annotate with the procedure step number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.12	/ASCOILLEV L7 /APCOILDIR POS /APCOILLEV L7
Number. VERIFY 5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		
5.6.2.14 Send /AOLOOPMODE POS /ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7	5.6.2.13	Snap TQACS from I&T gse and annotate with the procedure step number.
/ASCOILLEV L7 /APCOILDIR NEG /APCOILLEV L7		VERIFY
	5.6.2.14	/ASCOILLEV L7 /APCOILDIR NEG

5.6.2.15 Snap TQACS from I&T gse and annotate with the procedure step number.

		VERIFY
F (2 4 (a)		
	/AOLOOPMODE NEG	
	/ASCOILLEV L7	
	/APCOILDIR NEG	
	/APCOILLEV L7	
		VERIFY
5.6.2.17 Snap numb	TQACS from I&T gse and annotate with the	e procedure step
		VERIFY
5.6.2.18 Send	/AOLOOPMODE NEG	
	/ASCOILLEV L7	
	/APCOILDIR POS	
	/APCOILLEV L7	
		VERIFY
5.6.2.19 Snap	TQACS from I&T gse and annotate with the	procedure step
		VERIFY
5.6.2.20 Send	/AOLOOPMODE POSY	
		VERIFY
5.6.2 21 Verif	y the spin coil does not oscillate	
	y the spin cort does not oscillate	VERIFY
		VERTEI
5.o.2.22 Send	/AOLOOPMODE NEGY	
		VER I FY
F (2 27)		
J.0.2.23 Verit	y the spin coil does not oscillate	
		VERIFY
		<u> </u>
5.6.3 Setup-	FLIGHT TRIM PLUGS INSTALLED, muegse thr FLIGHT ACS PATCH PLUG INSTALLED	rough umbilical,
	<pre>s/c on- normal mode, instr on (in stand shunts on, coils off, nulled field, tes located near acs magnetometer, deployed SPWRUP,</pre>	st magnetometer
	or most ,	VERIFY
	start CHGPKTRATE (0,8,3,5) - proc to ge	
	STOW THE MAG BOOM	
		VER I FY

Trim Verification Procedure- STOWED م

.1 Verify Flight trim plugs installed in spacecraft

5.6.4.2 Verify the deployed compensation network is selected. If not,

	•	VER I FY
<u> </u>	Measure contamination for zero field.	
	Snap TQACS from I&T gse and annotate we number.	with the procedure step
		VERIFY
5.6.4.4	Do the following:	
	Configure the S/C to normal mode, inst on-line, shunts on, nulled field Send "/atorque enable"	ruments on-line (standby),
	Send "/ascontrol enable"	
	Send "/apcontrol enable"	
	Send "/aoloop enable"	
	Send "/ascoillev L7"	
	Send "/apcoillev LO" Send "/aoloopmode pos "	
	Seria Maccoopilode pos	VERIFY
		4
5.6.4.5	Measure contamination for zero field. Snap TQACS from 1&T gse and annotate w number.	ith the procedure step
	number .	VER I FY
.6	Send /AOLOOPMODE NEG. Verify correct - verify correct decontamination. Snap TQACS from 1&T gse and annotate w	
	number.	VERIFY
5.6.4.7	Send /ASCOILLEV LO and verify zero coi	l current.
	·	VER I FY
5.6.4.8	Send /APCOILLEV L7 and /APCOILDIR POS current.	and verify precession coil
		VER I FY
5.6.4.9	Snap TQACS from I&T gse and annotate w number.	ith the procedure step
		VER I FY
5.6.4.10	Send /APCOILDIR NEG. Verify correct : - verify correct decontamination.	
	Snap TQACS from I&T gse and annotate w number.	ith the procedure step
		VER I FY
	Send /APCOILLEV LO and verify zero co	il current.

bat

VERIFY____

/ASCOILLEV L7
/APCOILDIR POS
/APCOILLEV L7

	YAR GOTTELA EL	
		VER I FY
5.6.4.13	Snap TQACS from I&T gse and annotate with t	he procedure step
	number.	
		VERIFY
5 4 1 11	Count May common and	
3.0.4.14	Send /AOLOOPMODE POS	
	/ASCOILLEV L7	
	/APCOILDIR NEG	
	/APCOILLEV L7	
		VERIFY
5.6.4.15	Snap TQACS from I&T gse and annotate with tinumber.	he procedure step
	number.	
		VERIFY
.		-
5.6.4.16	Send /AOLOOPMODE NEG	
	/ASCOILLEV L7	
	/APCOILDIR NEG	
	/APCOILLEV L7	
		VER I FY
17	Spop TOACS from 197 and and a second	
17	Snap TQACS from I&T gse and annotate with th number.	e procedure step
	indiade:	
		VER I FY
5.6.4.18	Send /AOLOOPMODE NEG	
	/ASCOILLEV L7	
	/APCOILDIR POS	
	/APCOILLEV L7	
	•	
		VER I FY
	Snap TQACS from I&T gse and annotate with th	e procedure step
•		VERIFY
		VERIFI
5.6.4.20 s	Send /AOLOOPMODE POSZ	
		VERIFY
5.6.4.21 V	Verify the spin coil does not oscillate	
		VERIFY

5.6.4.22 s	Send /AOLOOPMODE NEGZ	
		VERIFY
23 V	erify the spin coil does not oscillate	
		VER I FY

5.7 Ali	ignment d	of SSS to Magnetometer-	
5-2-1	setup-	no trim plugs, muegse through umbilica mag trim box through ACS test connector nulled field, facility test magnetometer aligned to of facility mag coil survey lin	r (loopback), with .5 degrees
			VERIFY
		S/C OFF,	VERI FY
		S/C on facility or stainless steel care	VERIFY
		MAG BOOM SHOULD BE STOWED	VERIFY
5.7.2	procedu	are- align the spacecraft then have facil 3 different mag field vectors, read mag back out mag alignment	
5.7.2.1		line up S/C such that the mirror of the	:
		SSS lines up with the surveyed East/Wes	t axis
		of the magcal facility using the facili	
ŕ		theodolite to within 0.5 degrees (adjust about Z (spacecraft axis). SSS should due East.	
			VERIFY
5.7.2.2		line up S/C such that the mirror of the	
		SSS lines up with the surveyed Up/Down	axis
		of the magcal facility using the facili	
		theodolite to within 0.5 degrees (adjus about X (spacecraft axis).	t rotation
		about A (spacecraft axis).	VERIFY
5.7.2.3		level the spacecraft such that the top (rotation about the Y (spacecraft axis) with respect to gravity. Place the lev on the spacecraft along the boom axis (Adjust with shims or deflation or infla) is level el S/C X axis).
		the S/C cart tires to get the spacecraf	
			VER I FY
5 7 2.4		power the s/c on using SPWRUP- normal m bat on-line, shunts on, coils disabled,	ode, instr on,
			VERIFY

5.7.2.5 Send the following:

/atorque disable /ascontrol disable

			VER I FY	
6	At the I&T gse, 'S'		0,3,8,S)' to	
			VER I FY	
5.7.2.7	have the facility a	null out the earth	n's field if not	
			VER I FY	
5.7.2.8	Snap the page 'TQA(step number and the			re
			VER I FY	
5.7.2.9 Measure	e analog trim offsets	s (at mag trim bo)	x). Record belo	w.
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED PATA BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DA	NTA E/W (fac)	N/S (fac)	Up/d(fac)	
5.7.2.10	have the facility g	enerate a pos E/W	(east) 30k gamm	
5.7.2.11	Snap the pa	ge 'TQACS' and an commanded field.		procedure
			VER I FY	
5.7.2.12 Measur	e analog trim offset	s (at mag trim bo	x). Record belo	o₩.
RALL MAG DATA BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED				
MAG DATA	X(ACS)	Y(ACS)	Z(ACS)	RED

.ITY MAG [ATA	E/W (fac)	N/S (fac)	Up/d(fac)	
.7.2.13	have fielo		enerate a neg E/W	(west) 30k gamma	
				VER I FY	_
.7.2.14	step		e 'TQACS' and an commanded field.	notate with the p	rocedure
				VER I FY	_
7.2.15 Measu W MAG DATA RIM BOX)	ıre anal	og trim offsets X(ACS)	(at mag trim bo	x). Record below Z(ACS)	RED
_					
ATA KIM BOX)		X(ACS)	Y(ACS)	Z(ACS)	RED
CILITY MAG D	ATA	E/W (fac)	N/S (fac)	Up/d(fac)	
7.2.16	have field		nerate a pos N/S	(north) 30k gamma VERIFY_	
7.2.17			' and annotate w	ith the procedure	
				VER I FY	
건.2.18 Measu	re anale	og trim offsets	(at mag trim bo	(). Record below.	•
W MAG DATA RIM BOX)		X(ACS)	Y(ACS)	Z(ACS)	RED

COMPENSATED MAG DATA (IRIM BOX)	_	X(ACS)	Y(ACS)	Z(ACS)	RED		
FACILITY MAG DA	TA –	E/W (fac)	N/S (fac)	Up/d(fac)			
5.7.2.19	have fiel		generate a neg N/S	(south) 30k gam			
5.7.2.20			CS' and annotate w e commanded field.				
VERIFY							
4G DATA BOX)		X(ACS)	Y(ACS)	Z(ACS)	RED		
COMPENSATED MAG DATA (TRIM BOX)	_	X(ACS)	Y(ACS)	Z(ACS)	RED		
FACILITY MAG DAT	ΓA	E/W (fac)	N/S (fac)	Up/d(fac)			
5.7.2.22	have field		generate a pos Up/	D (up) 30k gamma VERIFY			
5.7.2.23			CS' and annotate w	ith the procedure	:		
				VER I FY			

5.7.2.24 Measure analog trim offsets (at mag trim box). Record below.

RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
NSATED MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
5.7.2.25 have fiel		enerate a neg Up/	D (neg) 30k gamm	
5.7.2.26 Snap	the page 'TQACS number and the	i and annotate w commanded field.	ith the procedur	e
27 Measure ana	log trim offsets	: (at mag trim bo	VERIFYx). Record belo	
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DATA	E/W (fac)	N/S (fac)	Up/d(fac)	
5.7.3 Deployed boom	alignment			
5.7.3.1 DEPLOY THE MA the spacecraf correct align	G BOOM. Be very it. If in doubt, ment of facility	use theodolite	not to move to re-verify	
	·		VERIFY	

.2 n/a

5.7.3.5 n/a				
6	At the spacecra	aft, send "/amagcomp	deploy"	
5.7.3.7	have the facili	ty null out the eart	th's field if not	:
			VERIFY	
5.7.3.8	Snap the page 'step number and	TQACS' and annotate the label 'null fie	with the procedu	ıre
			VERIFY	
5.7.3.9 Measur	e analog trim off	sets (at mag trim bo	x). Record belo	W.
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
FAUILITY MAG D	ATA E/W (fac	N/S (fac)	Up/d(fac)	
5.7.3.10	have the facilit	ty generate a pos E/N	√ (east) 30k gamı VERIFY	
5.7.3.11	Snap the step number and	e page 'TQACS' and ar the commanded field.	nnotate with the	procedure
			VER I FY	
5.7.3.12 Measur	e analog trim off	sets (at mag trim bo	x). Record belo)₩_
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED ATA BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED

5.7.3.4 n/a

FACILITY MAG D	ATA E	W (fac)	N/S (fac)	Up/d(fac)	
5.7.3.13	have the f	acility gen	erate a neg E/	W (west) 30k gamma	
5.7.3.14	Sn step numbe	ap the page r and the c	'TQACS' and a ommanded field	nnotate with the p	orocedure
				VER I FY	_
5.7.3.15 Measu	re analog tr	im offsets	(at mag trim b	ox). Record below	
RAW MAG DATA (TRIM BOX)	×(ACS)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
	-				
FACILITY MAG DA	.TA E/I	/ (fac)	N/S (fac)	Up/d(fac)	
5.7.3.16	have the fa	acility gene	erate a pos N/S	S (north) 30k gamma	
5.7.3.17			and annotate w	with the procedure	
				VER I FY	
5.7.3.18 Measur	e analog tri	m offsets (at mag trim bo	ox). Record below.	·
RAW MAG DATA	X(A	.cs)	Y(ACS)	Z(ACS)	RED
COMPENSATED MAG DATA (TRIM BOX)	X(A	CS)	Y(ACS)	Z(ACS)	RED

TY MAG DA	TA E/W (fac)	N/S (fac)	Up/d(fac)	
5.7.3.19	have the facility	generate a neg N/S	S (south) 30k gamm VERIFY	
5.7.3.20		ACS' and annotate was commanded field.	with the procedure	
			VER I FY	<u> </u>
5.7.3.21 Measure	e analog trim offse	ets (at mag trim bo	ox). Record below	ı .
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
ISATED ATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED
FACILITY MAG DAT	TA E/W (fac)	N/S (fac)	Up/d(fac)	
			V	
	have the facility	generate a pos Up/	D (up) 30k gamma	
			VERIFY	_
	Snap the page 'TQA step number and th		•	
			VERIFY	
5 7 3.24 Measure	e analog trim offse	ts (at mag trim bo	x). Record below	
RAW MAG DATA (TRIM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RED

MAG DATA (TOLM BOX)	X(ACS)	Y(ACS)	Z(ACS)	RE
FACILITY MAG DAT	TA E/W (fac)	N/S (fac)	Up/d(fac)	
5.7.3.25	have the facility of field	generate a neg Up/	D (neg) 30k gamm VERIFY	
	Snap the page 'TQAC step number and the			
			VER I FY	
5.7.3.27 Measure	analog trim offset	s (at mag trim bo Y(ACS)	x). Record below	
		Y(ACS)	Z(ACS)	REC
AG DATA BOX)	X(ACS)			REI