SWICS PARTICULARS:

1. GROUNDING:
   - SWICS SECONDARIES ARE TIED TO CHASSIS.
2. TEMPERATURE OPERATIONS:

IN SPEC. OPER.	DESIGN	SURVIVAL
-55°C to +5°C	-30°C to +28°C	-30°C to +30°C

   (SSO MUST BE REPLACE IF TEMPERATURE EXCEEDS 29°C)
3. POWER PROFILE:
   - 4.46W NOMINAL POWER
   - 5.46W PERIODS OF HIGH SOLAR ACTIVITY
   - 6.96W PERIODS OF SUPPLEMENTAL HEATING (2.5W OP HEATER, 4.0W SURVIVAL HEATER)
4. HANDLING:
   - OUTGAS IN VACUUM (<10^{-6} TORR) FOR 12 HOURS BEFORE OPERATING SSO OR MCP.
   - REQUIRES HUMIDITY & TEMPERATURE CONTROLS TO PREVENT CONDENSATION.
5. ACCESS REQUIREMENTS:
   - ASSESS REQUIRED FOR DISABLE PLUGS
6. RADIATION SOURCES:
   - NONE
7. CLEANING AGENT:
   - ISOPROPYL ALCOHOL IS AN APPROVED CLEANING AGENT ON AND NEAR THE INSTRUMENT.
   - USE OF VOLATILE CHEMICALS NEARBY MUST BE RESTRICTED.
8. GREEN & RED TAGGED ITEMS:
   - GREEN- A1080-P03/PAPS ENABLE PLUG,INSTALL PRIOR TO LAUNCH
   - GREEN- A1080-P04/DPPS ENABLE PLUG,INSTALL PRIOR TO LAUNCH
   - RED- A1080-P03/PAPS FULL DISABLE PLUG
   - RED- A1080-P04/DPPS FULL DISABLE PLUG
   - RED/WHITE- A1080-P03/PAPS PARTIAL DISABLE PLUG
   - RED- A1090-P01/PYRO SHORTING PLUG
9. RELEASE MECHANISM:
   - USES PYROTECHNICS ELECTROEXPLOSIVES DEVICES TO RELEASE AN APERTURE COVER .
10. PURGE REQUIREMENTS:
    - NITROGEN PURGE REQUIRED UNTIL LAUNCH.
    - @SE NITROGEN SPECIFIED AS MAX. 5.0 psi PRESSURE.
    - ULE® IN LINE RESTRICTOR WILL REDUCE NITROGEN FLOW RATE TO 0.50 L/minute.
11. HIGH VOLTAGE EXTREME OF TBD???V.
12. THE SWICS DATA IS COLLECTED AND OUTPUTTED BY THE SSS DPU

C & DH ALLOCATIONS:

1. INSTRUMENT DATA - 504 BITS/SEC OUT OF THE SSS DPU 1624 BITS/SEC.
2. TLM DATA:
   - DCM1-SO3 = SSS DPU SCIENCE DATA
   - DCM2-SEA3/MAIN_BUS_V = 28V MAIN BUS VOLTAGE
   - DCM1-DIFA3/S3DPU_CONV_SEC_I = SSS DPU POWER CURRENT
   - DCM1-AD7/SWICS_INT_T = INTERNAL TEMP
   - DCM1-AD4/SWICS_IF_T = I/F TEMP
   - DCM1-DIFA26/SWICS_OP_HTRS_I = INPUT & HEATER CURRENTS
   - DCM1-SDS*25/SWICS_PWR = CMD R35A/B TELLTALE
   - DCM1-SDS*28/SWICS_OP_HTR = CMD R38A/B TELLTALE
   - DCM1-SDS*45/SWICS_IF_S_HTR = CMD R57A/B TELLTALE
   - DCM1-SDS*76/SWICS_PYRO = CMD R99A/B TELLTALE
   - DCM1-SDS*83/MAIN_PYRO = CMD R103A/B TELLTALE
   - DCM1-SDS*86/BK_PYRO = CMD R110A/B TELLTALE
3. COMMANDS:
   - CMD R99A/B(SWICS_PYRO_ENA/DIS) = SWICS PYROTECHNICS ARM
   - CMD R35A/B(SWICS_POWER_ON/OFF) = SWICS TURN ON/OFF
   - CMD R38A/B(SWICS_OP_HTR_ENA/DIS) = SWICS INTERNAL OPERATIONAL HEATER ENA/DISABLE
   - CMD R57A/B(SWICS_IF_SHTR ENA/DIS) = SWICS I/F & SURVIVAL HTR ENA/DISABLE
   - CMD R103A/B(MAIN_PYRO_FIRE/SAFE) = PYRO FIRE PRI.
   - CMD R110A/B(BK_PYRO_FIRE/SAFE) = PYRO FIRE RED.

KEYS:

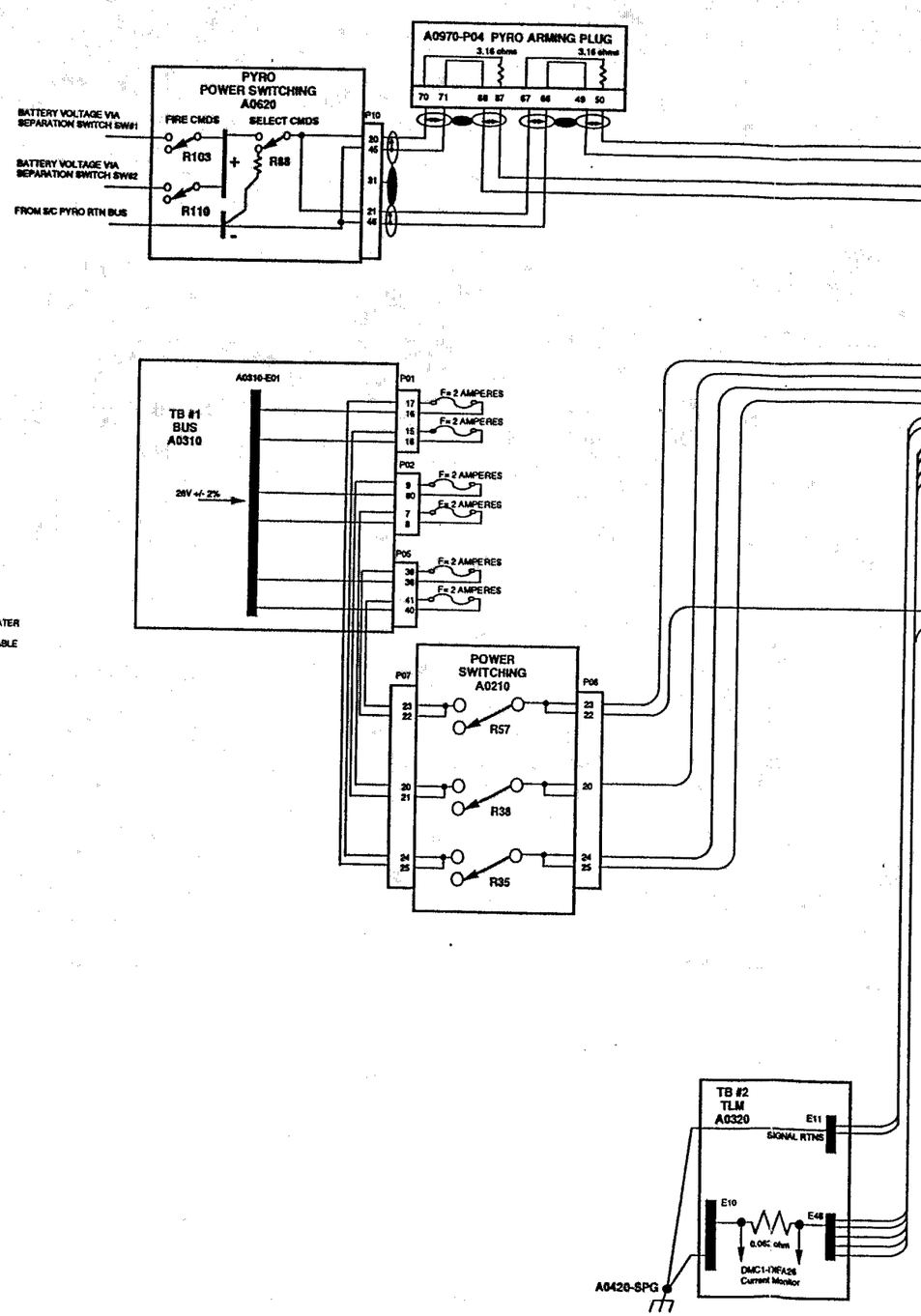
A0610 = C&DH A
A0230 = C&DH B

CHASSIS CONNECTIONS

SIGNAL RTNS

ISOLATED RTNS

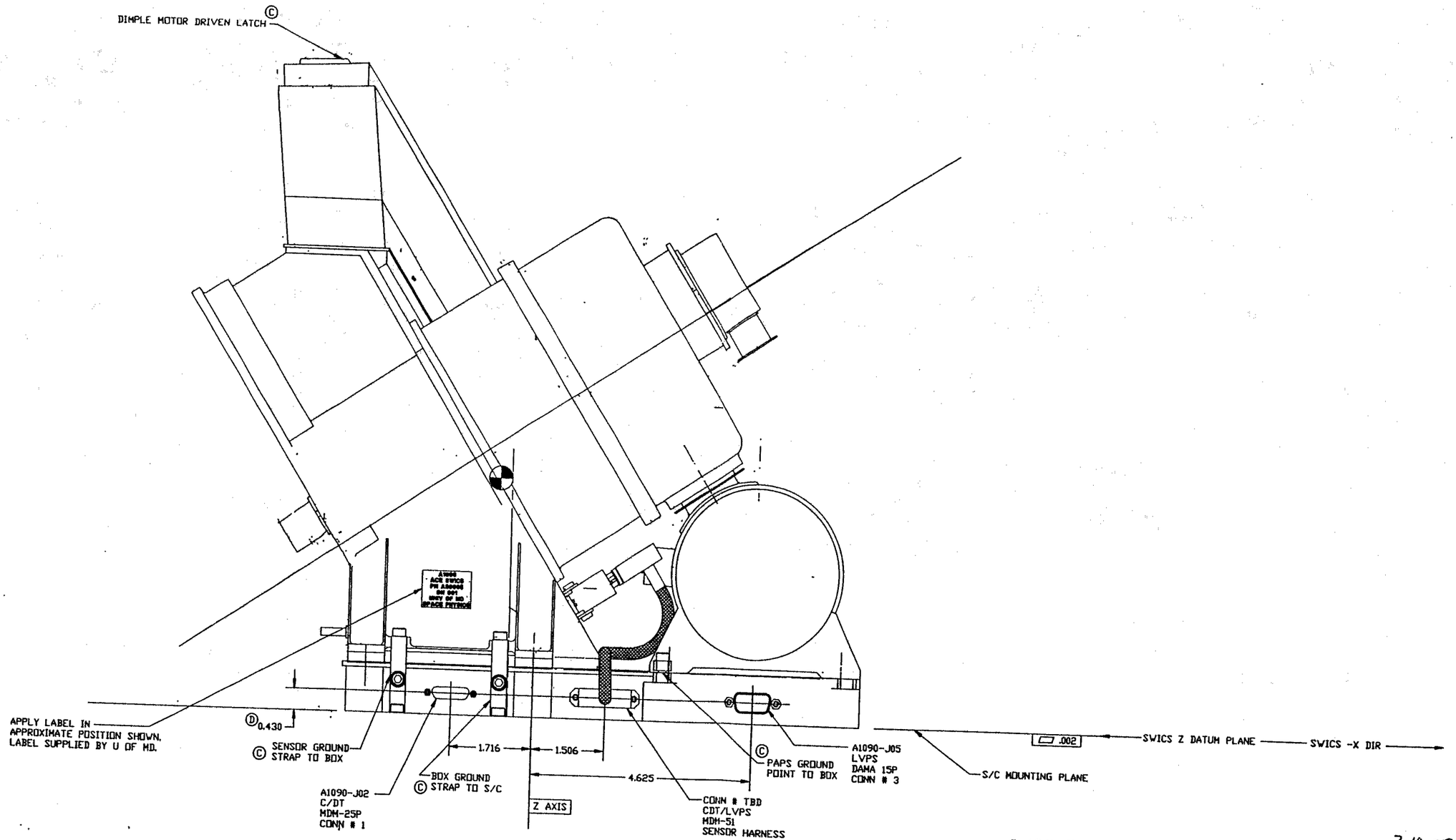
FLOATING RTNS



PRELIMINARY

ENGINEER: J.M.ROBERTS	THE JOHNS HOPKINS UNIVERSITY APPLIED PHYSICS LABORATORY
	TITLE: ACE BLOCK DIAGRAM (SWICS)

11345-9015
A7



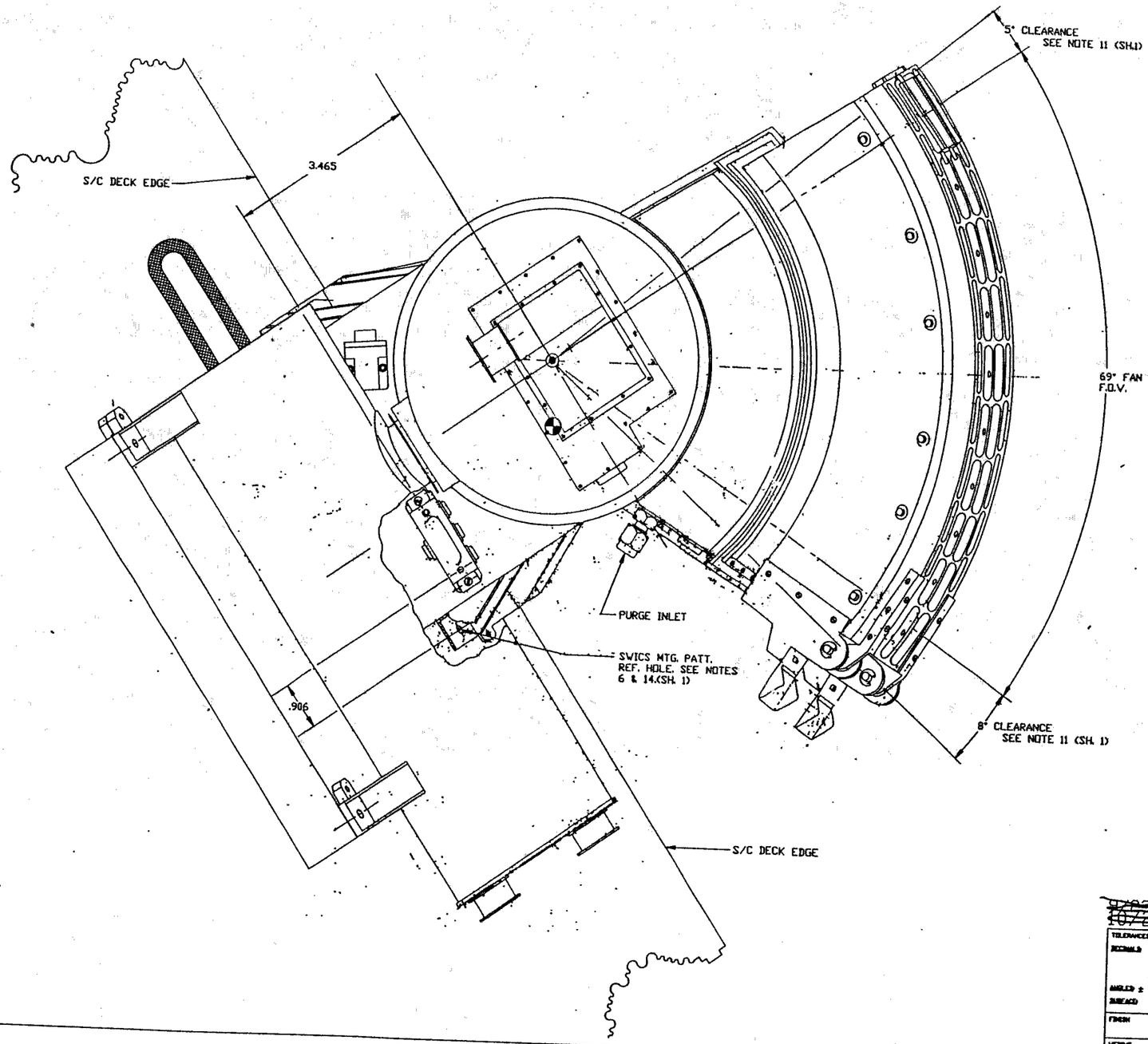
VIEW F-F

7-10-95

FILE: A20003C5

TOLERANCES UNLESS NOTED: DECIMAL .X ± .1, .XX ± .01, .XXX ± .005; ANGLES ±; SURFACE; FINISH; WEIGHT	QUANTITY; MATERIAL; DRAWN 5/3/94 CATES; APPROVED	EXTERNAL CONFIGURATION SENSOR PACKAGE	ACE SWICS
		UNIVERSITY of MARYLAND SPACE PHYSICS GROUP/PHYSICS COLLEGE PARK, MARYLAND 20742 PHONE 301-405-6814 FAX 301-314-9047	SCALE 1=1; NEXT ASSEMBLY; REVISION B; SHEET 5 OF 5; SIZE D; DRAWING NUMBER A20003

7345-9015
A6



-THERMAL BLANKET NOT SHOWN.

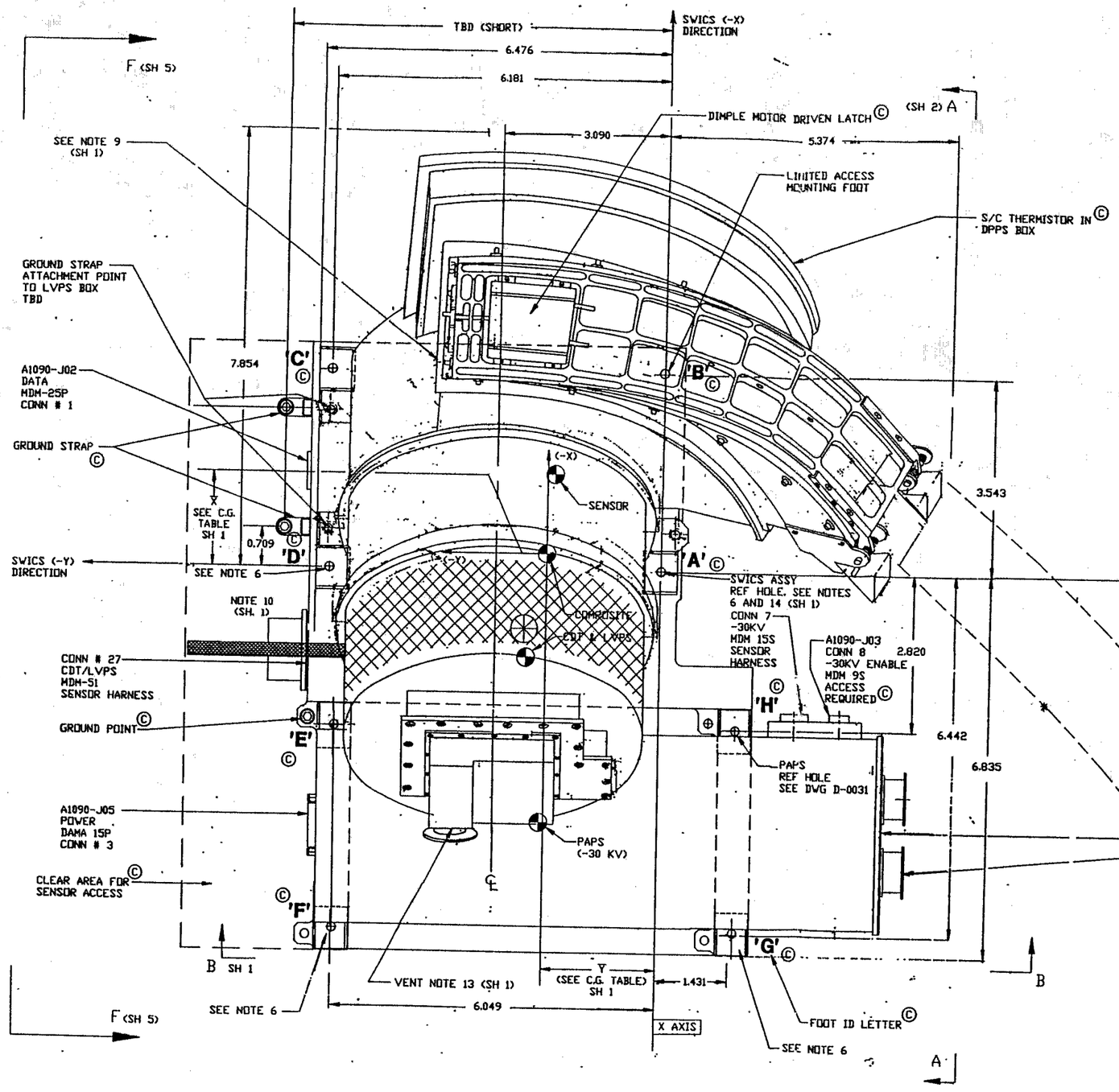
-SENSOR PACKAGE EXTERNAL ELECTRICAL WIRING HARNESS NOT SHOWN.

VIEW D-D

7-10-95

TOLERANCES UNLESS NOTED: DECIMALS .X ± . .XX ± .01 .XXX ± .005; ANGLES ±; SURFACES; FINISH; WEIGHT	QUANTITY; MATERIAL; DRAWN BY 3/30/94 JW/RTC; APPROVED BY	EXTERNAL CONFIGURATION SENSOR PACKAGE UNIVERSITY of MARYLAND SPACE PHYSICS GROUP/PHYSICS COLLEGE PARK, MARYLAND 20742 PHONE 301-405-6034 FAX 301-314-9547	ACE SWICS SCALE 1=1; NEXT ASSEMBLY REVISION D; SHEET 4 OF 5 SIZE D; DRAWING NUMBER A20003

1345-9015
AS



VIEW C-C

7-10-95

TOLERANCES UNLESS NOTED: DECIMALS .XX ± .01, .XXX ± .005; ANGLES ±; THREAD; FINISH; WEIGHT	QUANTITY; MATERIAL; DRAWN BY 3/30/94 JW/RTC; APPROVED BY	EXTERNAL CONFIGURATION SENSOR PACKAGE	ACE / SWICS
		UNIVERSITY of MARYLAND SPACE PHYSICS GROUP/PHYSICS COLLEGE PARK, MARYLAND 20742 PHONE 301-405-6214 FAX 301-314-9547	SCALE 1=1; NEXT ASSEMBLY; REVISION D; SHEET 3 OF 5; SIZE D; DRAWING NUMBER A20003

13345-9015
A4

C SH 3

D SH 4

B SH 1

+Z

PARALLEL TO S/C SPIN AXIS.

5° SEE NOTE 11,SH 1

69°

2.363 SEE NOTE 10

DEFLECTION ANGLE FOV

SEE NOTE 11,SH 1 — 3° — 4.06 — 3° — SEE NOTE 11,SH 1

DIMPLE MOTOR Ⓒ DRIVEN LATCH

.740 ACOUSTIC COVER CLEARANCE

SEE SH 4 FOR VIEW ANGLE

SEE NOTE 11, SH 1 8°

+h

INSTRUMENT COORDINATES

INST CONE AXIS

FAN ANGLE

VENT-NOTE 13 (SH 1)

DIRECTION OF CONN ENGAGEMENT

VENT-NOTE 13 (SH 1)

10.130

SEE NOTE 9

S/C PYRO CONNECTOR. CONN 19 DEMA 9P A1090-J01 ACCESS REQUIRED Ⓒ

h=0,r=0

CONN 13 MDM-9S DPPS ENABLE A1090-J04

S/C THERMISTOR LOCATED IN DPPS BOX Ⓒ

VENT-NOTE 13 (SH 1)

CONN 12 MDM-21S DPPS SENSOR HARNESS

FAN ANGLE FOV CENTER

33°

2.205

3.870

.197

13.380

Ⓒ TBD NO THERMAL ISOLATION

S/C PYRO CONNECTOR. 6.689 REF CONN 19 A1090-J01

1.654 .240 DIA BRAID

D SH 4

B SH 1

TBD (2.059) EST DIM SHOWN

1.429

6.276

.980

OLD S/C MOUNTING PLANE (ULYSSES)

.002

SWICS Z DATUM

SWICS -X DIR

DECK

CONN 5 SENSOR HARNESS MDM 51 S

THERMAL ISOLATION MOUNT 4 PLACES SEE DETAIL VIEW E-E

3.543 REF

4.291

7.477 REF

.550 REF CONN 19 A1090-J01

S/C MOUNTING PLANE

4.732

REF FOOT

4.646

2.402

PURGE INLET SWAGELOK SS 400-1-1 1/4" FITTING 1/16" PIPE THREAD TORQUE TBD ACCESS REQUIRED Ⓒ

COMPOSITE VIEW CONE CENTER, AUX & MAIN CHANNELS DEFLECTION ANGLE

E

SUPPORT STRUCTURE DWG M130-11

.394 DIA

SENSOR MOUNTING BOLT Ⓒ Ⓓ 8-32 SHCS TITANIUM ALLOY 2.00 LONG APPX TORQ 18 in lb DWG A20101

MOUNTING BOLT WASHER DWG A20102

.080

.059

.157

.197

SHEAR FORCES RECESS .020 DEEP

ISO BUSHING (EPG-G-11)

Ⓓ 1.000 THERM-ISO BLOCK .787 X .630 (EPG-G-11)

LVPS-C/DT HOUSING DWG A21300

.293 DIA

Ⓓ .161 +.003 −.001 Ⓒ DIA HOLE THRU ISO BUSHING

DETAIL VIEW E-E

SCALE 2 = 1
THERMAL ISOLATOR FOOT
4 PLACES
SENSOR ONLY

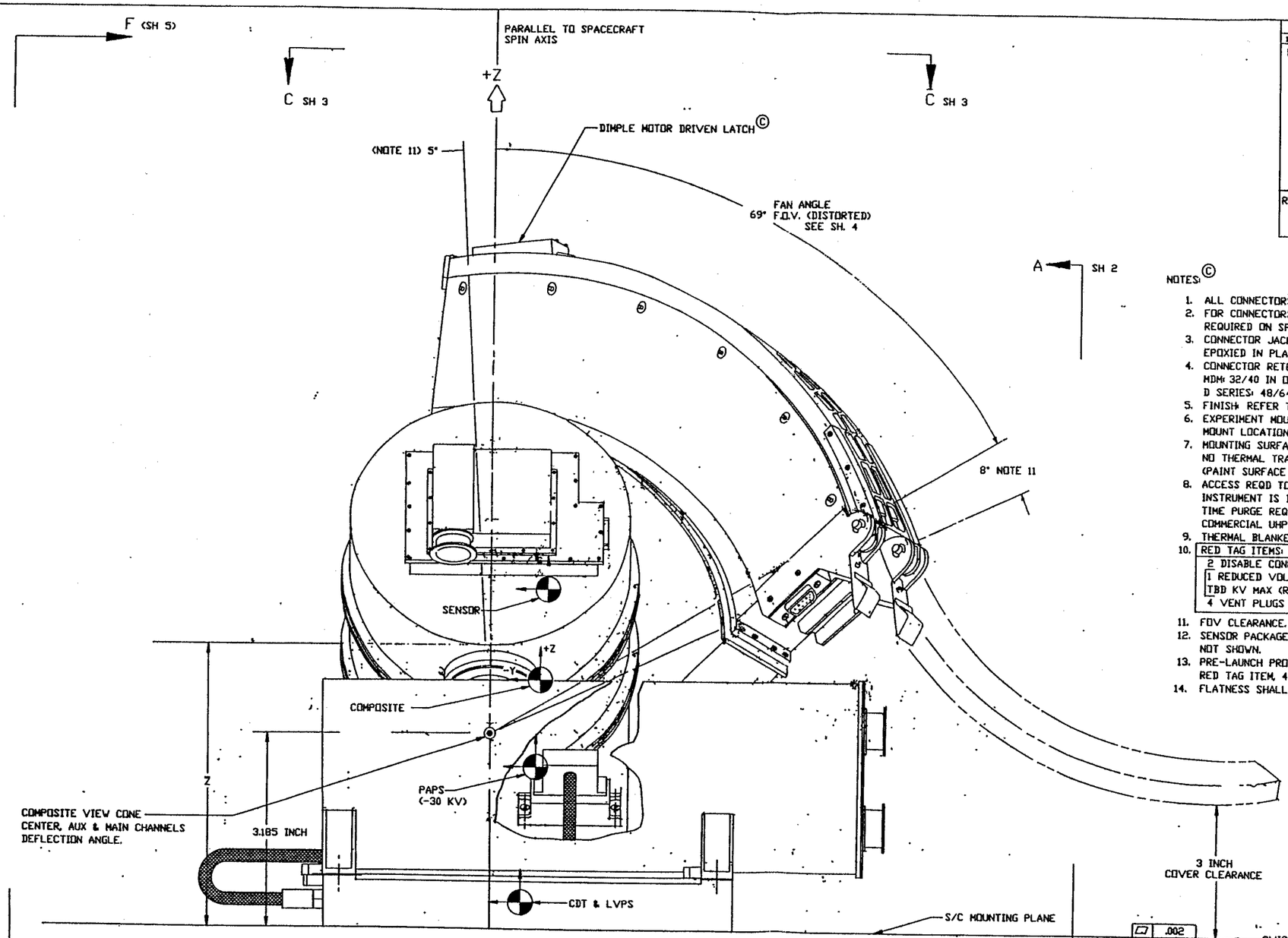
-THERMAL BLANKET PARTIALLY SHOWN
-SENSOR PACKAGE EXTERNAL ELECTRICAL WIRING HARNESS NOT SHOWN
-(-)30KV HVPS AND CDT-LVPS HOUSING ARE NOT THERMALLY OR ELECTRICALLY ISOLATED FROM THE S/C DECK.

VIEW E-E

7-10-95

TOLERANCES UNLESS NOTED: DECIMALS .XX ± .01, .XXX ± .005; ANGLES ±; BREAKS	QUANTITY	EXTERNAL CONFIGURATION SENSOR PACKAGE	ACE / SWICS
FINISH	MATERIAL	UNIVERSITY of MARYLAND SPACE PHYSICS GROUP/PHYSICS COLLEGE PARK, MARYLAND 20742	SCALE 1=1 / NEXT ASSEMBLY
WEIGHT	DRAWN BY 3/29/94 JV/RTC	PHONE 301-405-6234 FAX 301-314-9547	REVISION D / SHEET 2 OF 5
	APPROVED BY		SIZE D / DRAWING NUMBER A20003

1345-9015
A3



	REVISIONS			
DRAWN BY	LTR	DESCRIPTION	DATE	APPROVED
RTC	C	GROUND STRAPS AND GROUND POINT ADDED BOLT SPECIFICATIONS RE-PLACED WITH TBD'S ACCESS THRU THERMAL BLANKET CALLED OUT MOUNTING FEET IDENTIFIED WITH LETTERS OVERALL ACCESS ENVELOPE ELIMINATED NOTES REVISED	7/1/94	
RTC	D	8-32 WAS TBD; .430 WAS .520; 1.000 WAS .980;	1/27/95	

NOTES: ©

1. ALL CONNECTORS ARE REAR MOUNTED.
2. FOR CONNECTORS 1, 3, 8, & 19 ACCESS REQUIRED ON SPACECRAFT.
3. CONNECTOR JACK POSTS TORQUED TO VALUE & EPOXIED IN PLACE.(MDM 50/60 IN OZ; D SERIES 80/90 IN OZ)
4. CONNECTOR RETENTION TORQUES:
   MDM: 32/40 IN OZ
   D SERIES: 48/64 IN OZ
5. FINISH: REFER TO THERMAL CONTROL DWG # A20005
6. EXPERIMENT MOUNTING HOLES: 8 PLACES.
   MOUNT LOCATION 'B' HAS LIMITED VERTICAL ACCESS.
7. MOUNTING SURFACES SHALL BE UNPAINTED.
   NO THERMAL TRANSFER FILM REQUIRED.
   (PAINT SURFACE REQUIRED FOR PAPS)
8. ACCESS REQD TO PURGE PORT WHEN INSTRUMENT IS INSTALLED ON S/C. FULL TIME PURGE REQUIRED. 500 CC / MINUTE OF COMMERCIAL UHP NITROGEN (99.998% PURE)
9. THERMAL BLANKET RETAINING POINTS.
10.

RED TAG ITEMS: (NON-FLIGHT)	GREEN TAG ITEMS: (FLIGHT USE)
2 DISABLE CONNECTOR COVERS 1 REDUCED VOLTAGE CONNECTOR TBD KV MAX (RED & WHITE) 4 VENT PLUGS	2 HV ENABLE PLUGS.

11. FOV CLEARANCE.
12. SENSOR PACKAGE EXTERNAL ELECTRICAL WIRING HARNESS NOT SHOWN.
13. PRE-LAUNCH PROTECTIVE VENT PLUG PER DWG. B-0519 RED TAG ITEM, 4 REQD.-REMOVE AT THERMAL BLANKET INSTALLATION.
14. FLATNESS SHALL BE .010 OVER LONGEST DIMENSION OF SENSOR.

	MASS (Incl. thermal items)	CENTER of MASS $\bar{X}$ $\bar{Y}$ $\bar{Z}$	MOMENTS of INERTIA I_x	I_y	I_z
ACE/SWICS	6000 (grams) (13.23 lb)	-7.56, -54.08, 120.4 (mm) (-.298, -2.129, 4.740 inch) (COVER OPEN) ©	.0366 (lb ft sec^2)	.0455 (lb ft sec^2)	.0383 (lb ft sec^2)

TOLERANCES UNLESS NOTED: DECIMALS .XX ± .01, .XXX ± .005; ANGLES ±; SURFACE; FINISH; QUANTITY; MATERIAL; DRAWN BY; DATE 7-10-95

EXTERNAL CONFIGURATION SENSOR PACKAGE

UNIVERSITY of MARYLAND
SPACE PHYSICS GROUP/PHYSICS

ACE
SWICS

SCALE 1=1 | NEXT ASSEMBLY

REVISION D | SHEET 1 OF 5

7345-9015
A2