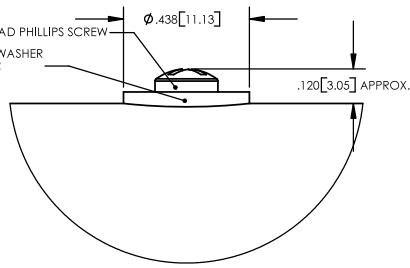
THIRD ANGLE PROJECTION

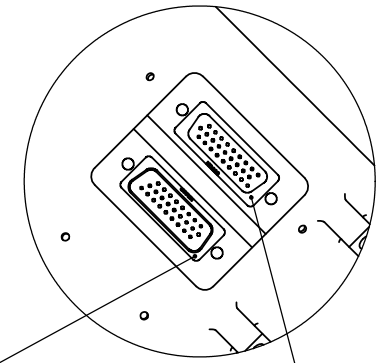
REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	AA	BASELINE RELEASE	05/12/04	
	AB	MASS PROP UPDATE, STACER LENGTH CHANGE	08/09/04	
	AC	MASS PROP UPDATE, STACER LENGTH CHANGE	01/10/05	
	AD	STACER LENGTH ADJUSTMENT	01/24/05	
	AE	THERMAL DATA UPDATE	03/04/05	

GENERAL NOTES: UNLESS OTHERWISE SPECIFIED

1. SWALES TO PROVIDE #8-32 MOUNTING FASTENERS FOR UPPER AND LOWER DECK MOUNTING. #8-32 FASTENERS ARE TO BE TORQUED TO 17 IN-LBS.
2. THERMAL BLANKETS AND EXTERNAL COATINGS PER SHEET 6.
3. DWG UNITS DUAL DIMENSIONED AS: INCHES (MM).
4. EFI AXB ASSY ASSIGNED UCB PART NUMBER THM-AXB-MEC-001.
5. ALL EXTERNAL PARTS ARE MOUNTED TO LOWER DECK MOUNT.
6. SEE INTERFACE CONTROL DOCUMENT THM-SYS-109 FOR ADDITIONAL INTERFACE REQUIREMENTS.
7. RED TAG/GREEN TAG ITEMS (ONE ENABLE PLUG CONNECTOR AND TWO REMOVABLE SAFETY PROTECTIVE COVERS) PER UCB REQUIREMENTS THM-SYS-TBD 109.
8. SPACECRAFT BUS LOWER DECK GENERAL MOUNTING FLATNESS TO BE .002".
9. SPACECRAFT BUS UPPER DECK GENERAL MOUNTING FLATNESS TO BE .005".
10. ALL TUBE MOUNTS TO BE BONDED TO TUBE WITH HYSOL 9309 EPOXY ADHESIVE.
11. THE TUBE COORDINATE SYSTEM [TCS] IS USED ON ALL DRAWINGS UNLESS OTHERWISE SPECIFIED.
12. BSP REFERS TO BOOM SYMMETRY PLANE - PLANE LOCATED DIRECTLY BETWEEN UPPER AND LOWER BOOMS AS NOTED ON SHEET 5.
13. UPPER DECK MOUNT FLANGE IS 0.125 IN ABOVE THE NOMINAL DECK TO DECK DISTANCE TO PROVIDE FOR 0.125 IN THERMAL ISOLATION IN SHIMMING. WASHERS ON SHEET 6 TO BE USED AS SHIMS.

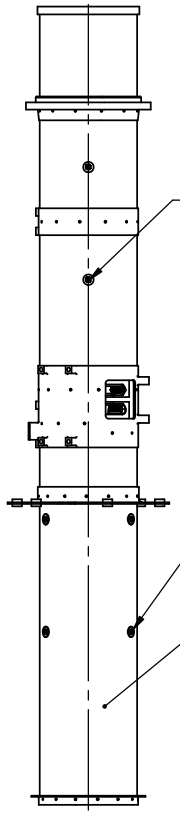


DETAIL C
SCALE 3 : 1

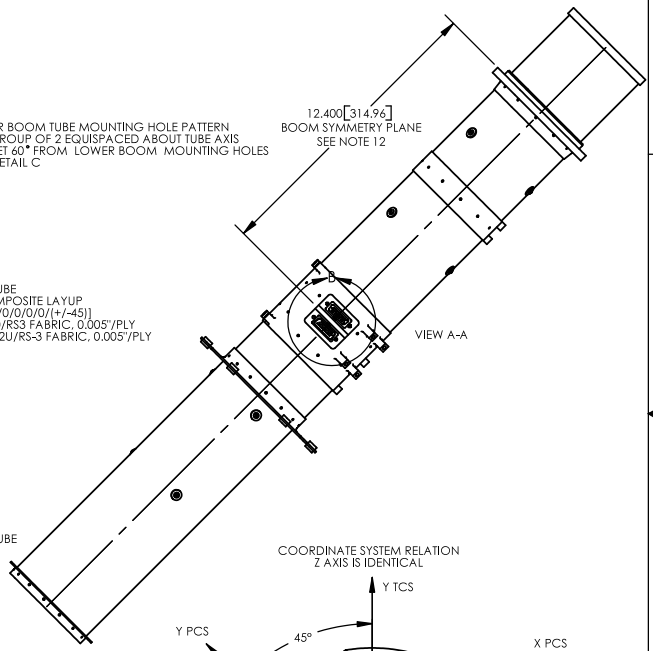


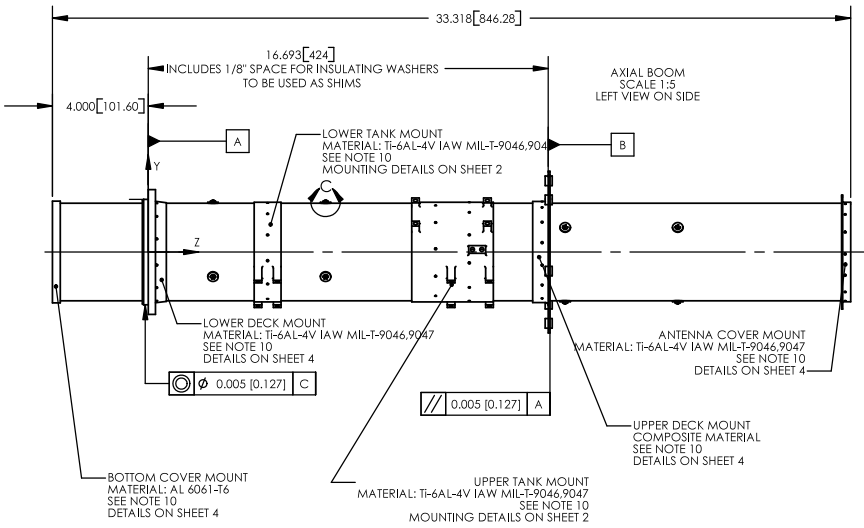
HD-CONNECTOR, BLACK, AMPLITE SERIES 190
J525 CONNECTOR AS CALLED OUT IN THM_AXB_HRN_001
UPPER BOOM CONNECTOR IS PART OF INDIVIDUAL BOOMS, INTERNAL TO TUBE
MASS INCLUDED IN SYMMETRICAL BOOM COMPONENTS PAGE 4

DETAIL B
SCALE 1 : 1

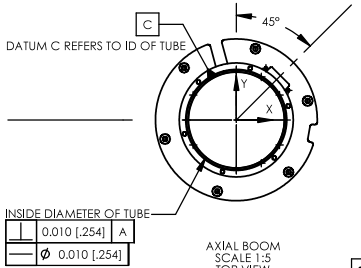


HD-CONNECTOR, BLACK, AMPLITE SERIES 190
J526 CONNECTOR AS CALLED OUT IN THM_AXB_HRN_001
LOWER BOOM CONNECTOR IS PART OF INDIVIDUAL BOOMS, INTERNAL TO TUBE
MASS INCLUDED IN SYMMETRICAL BOOM COMPONENTS PAGE 4

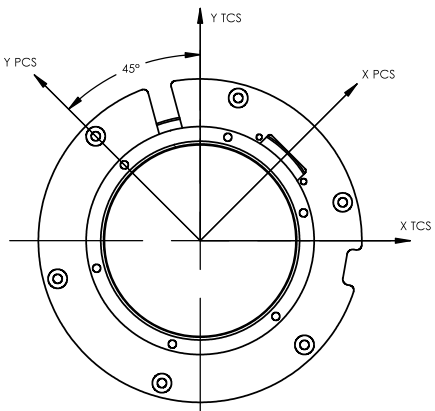




AXIAL BOOM
SCALE 1:5
LEFT VIEW ON SIDE



AXIAL BOOM
SCALE 1:5
TOP VIEW



PCS = PROBE COORDINATE SYSTEM

TCS = TUBE COORDINATE SYSTEM

SPACE SCIENCES LABORATORY
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7 GAUSS WAY
BERKELEY, CA 94720-7450
PHONE: 510.643.9234
FAX: 510.643.8302
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DIMENSIONS ARE IN INCHES
TOLERANCES (UNLESS NOTED):
FRACTIONAL ±0.062
ANGULAR: X.X ±1° X ±0.5°
X. ±0.3
X.X ±0.1
X.XX ±0.01
X.XXX ±0.005
SURFACE √32
INTERPRET GEOMETRIC TOLERANCING PER: ANSI Y14.5M-1994
MATERIAL NA
FINISH NA
DO NOT SCALE DRAWING

	NAME	DATE
MODELED	RTD	10-07-03
DRAWING	RTD	03-04-05
CHECKED		
CHARGE NO.	Booms - AXB THEMIS EFI	
COMMENTS:		

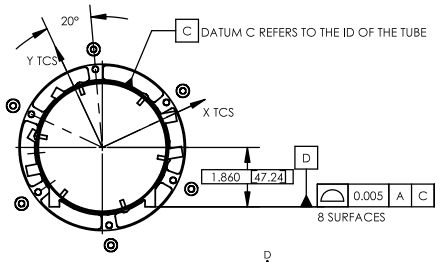
SPACE SCIENCES LABORATORY

TITLE: THEMIS AXIAL BOOM INTERFACE CONTROL DRAWING

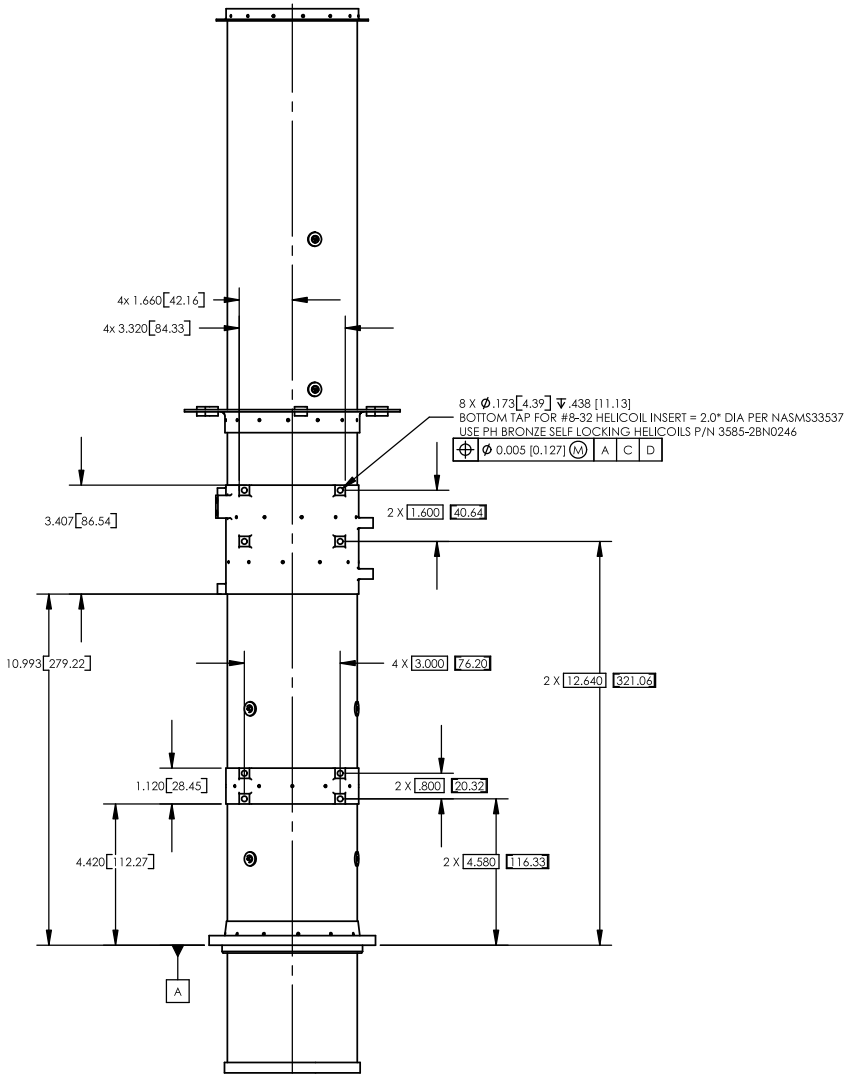
SIZE	DWG. NO.	REV
C	THM-AXB-ICD-001	AE

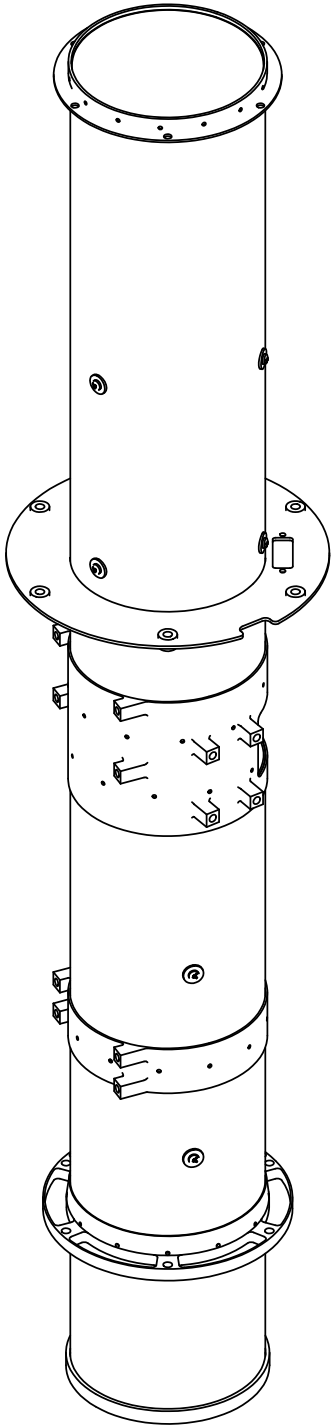
WEIGHT: LBS SHEET 1 OF 6

TOP VIEW
ANTENNA MOUNT AND TOP DECK MOUNT ARE HIDDEN FROM THIS VIEW



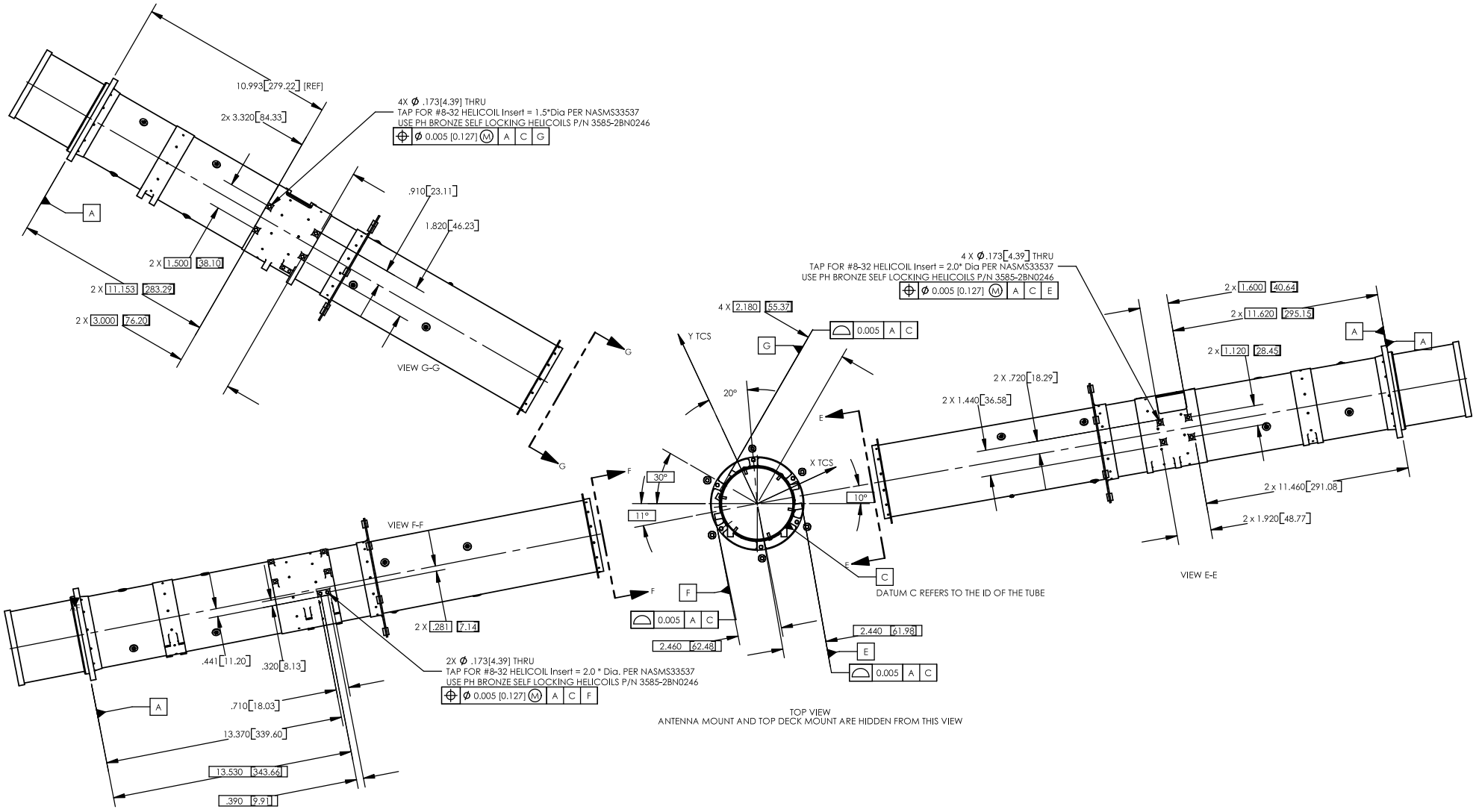
VIEW D-D





ISOMETRIC VIEW OF AXIAL BOOM TUBE

SPACE SCIENCES LABORATORY		
TITLE: THEMIS AXIAL BOOM INTERFACE CONTROL DRAWING		
SIZE C	DWG. NO. THM-AXB-MEC-001	REV AE
SCALE: 1:3		SHEET 2 OF 6



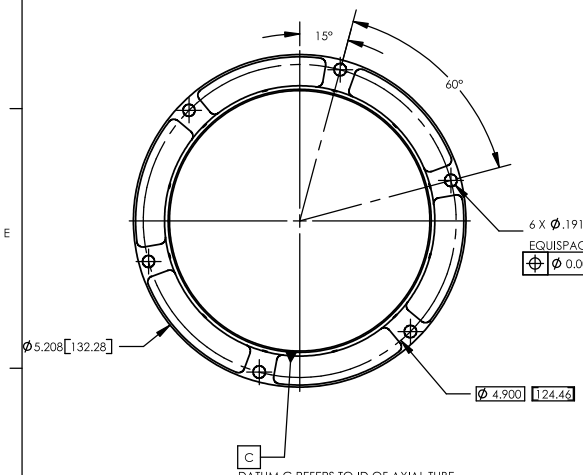
SPACE SCIENCES LABORATORY

TITLE:
THEMIS AXIAL BOOM
INTERFACE CONTROL DRAWING

SIZE	DWG. NO.	REV
C	THM-AXB-MEC-001	AE

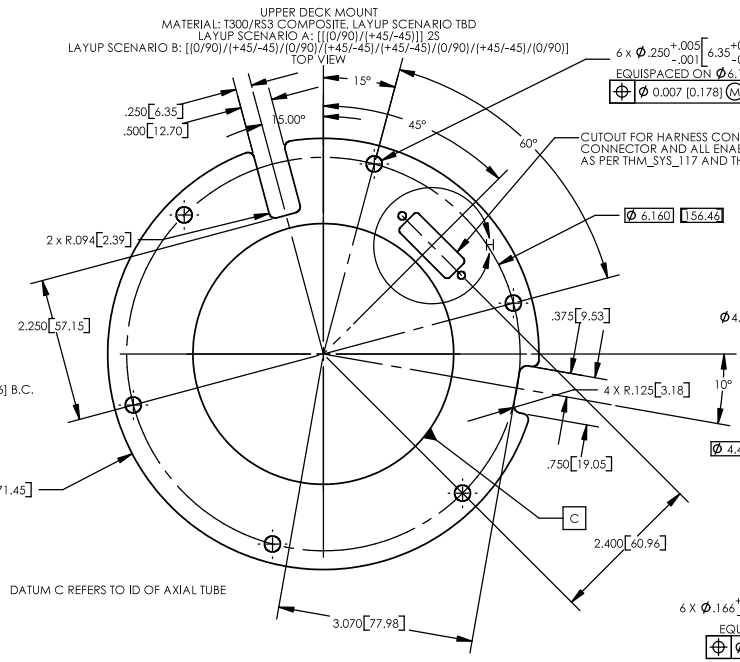
SCALE: 1:4 | SHEET 3 OF 6

LOWER DECK MOUNT
MATERIAL: TI-6AL-4V IAW MIL-T-9046,9047
TOP VIEW



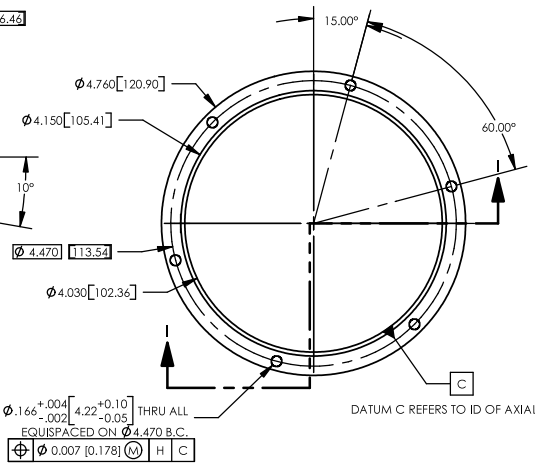
DATUM C REFERS TO ID OF AXIAL TUBE

UPPER DECK MOUNT
MATERIAL: T300/RS3 COMPOSITE, LAYUP SCENARIO TBD
LAYUP SCENARIO A: [[(0/90)/(+45/-45)]] 2S
LAYUP SCENARIO B: [(0/90)/(+45/-45)/(0/90)/(+45/-45)/(+45/-45)/(0/90)/(+45/-45)/(0/90)]
TOP VIEW



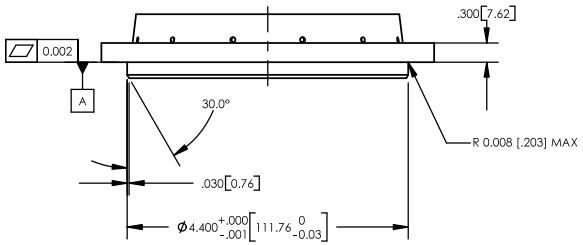
DATUM C REFERS TO ID OF AXIAL TUBE

ANTENNA MOUNT
MATERIAL: TI-6AL-4V IAW MIL-T-9046,9047
TOP VIEW

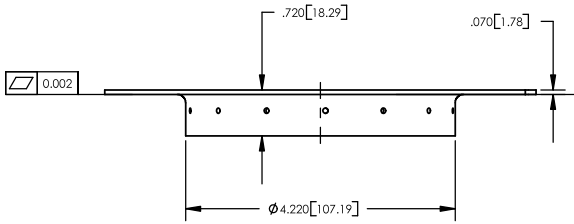


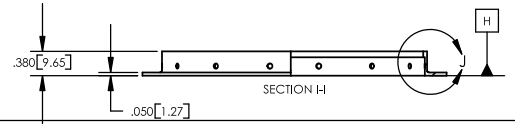
DATUM C REFERS TO ID OF AXIAL TUBE

LOWER DECK MOUNT
FRONT VIEW

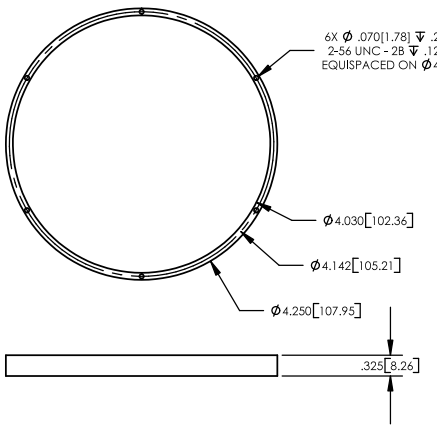


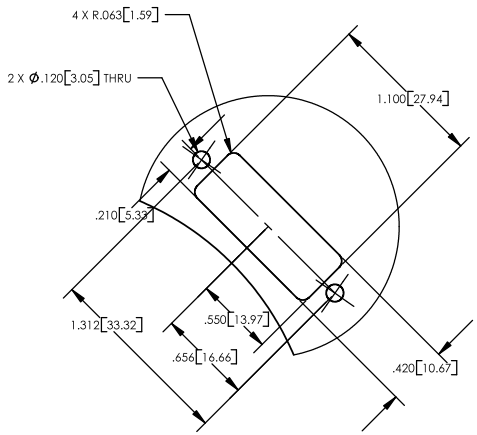
UPPER DECK MOUNT
FRONT VIEW



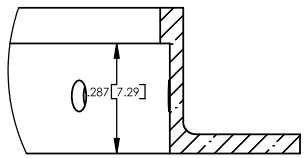


BOTTOM COVER MOUNT
MATERIAL: AL 6061-T6 ALODINE
BOTTOM VIEW





DETAIL H
SCALE 3 : 2



DETAIL J
SCALE 4 : 1

SPACE SCIENCES LABORATORY

TITLE:
THEMIS AXIAL BOOM
INTERFACE CONTROL DRAWING

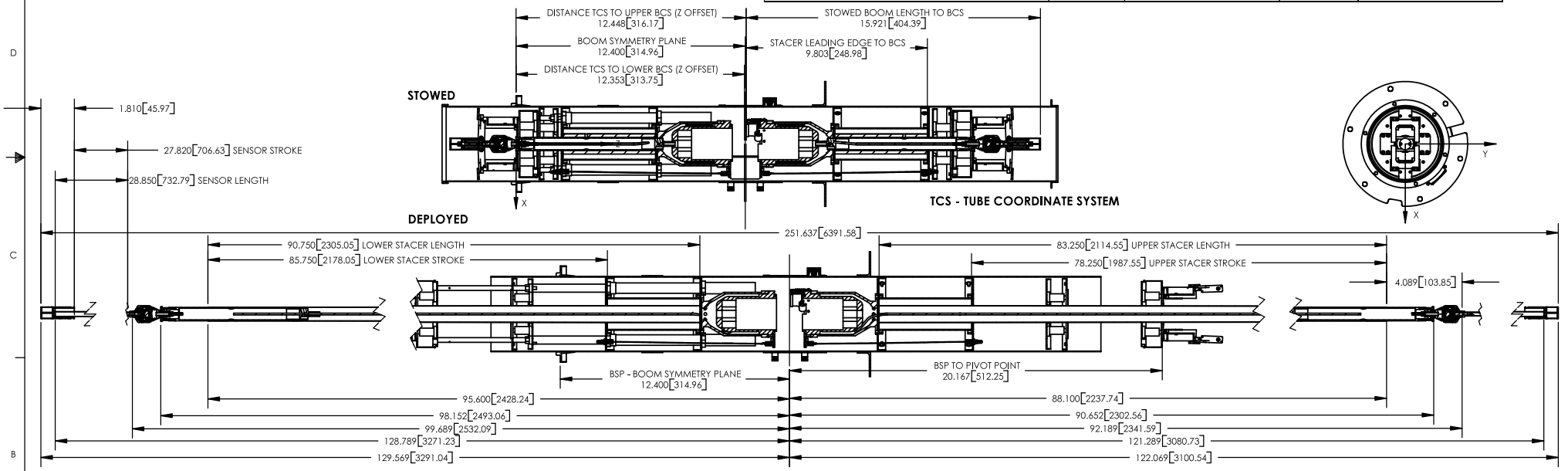
SIZE	DWG. NO.	REV
C	THM-AXB-MEC-001	AE

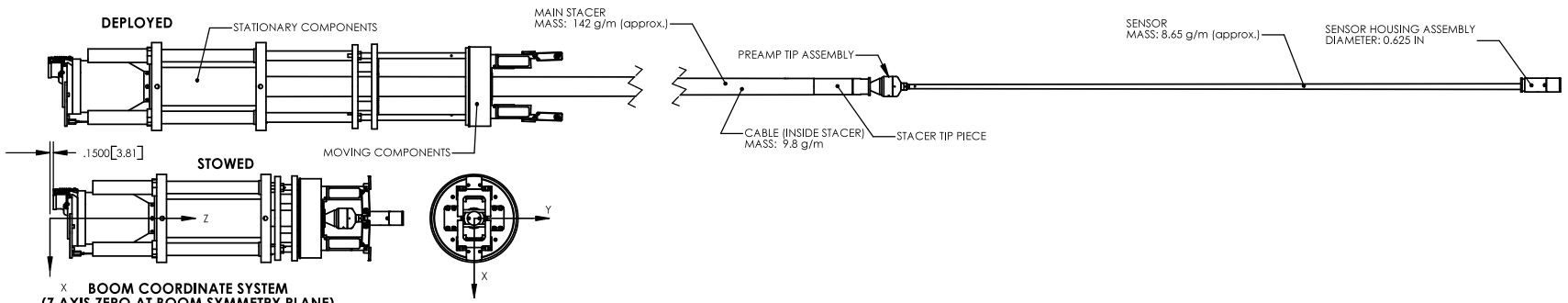
NOTES
1. INERTIA DATA FOR STATIONARY COMPONENTS, MOVING COMPONENTS, PIVOT COMPONETS, STACER, & CABLE ARE PROVIDED BY ANAYLSIS ONLY.
2. THEMIS AXIAL BOOM ASSEMBLY INCLUDES ALL COMPONENTS
3. BOOM HOUSING ASSEMBLY INCLUDES JUST COMPONENTS IN THE BOOM HOUSING ASSEMBLY (TUBE)
4. UPPER BOOM ASSEMBLY INCLUDES JUST COMPONENTS IN THE UPPER BOOM
5. LOWER BOOM ASSEMBLY INCLUDES JUST COMPONENTS IN THE LOWER BOOM
6. STATIONARY COMPONENTS INCLUDES BOOM HOUSING ASSEMBLY AND ALL STATIONARY COMPONENTS IN THE UPPER & LOWER BOOMS
7. STATIONARY COMPONENTS PER BOOM INCLUDES ALL NONMOVING COMPONENTS
8. MOVING COMPONENTS INCLUDES MOVING COMPONENTS SYMMETRICAL TO UPPER & LOWER BOOMS
9. PIVOT COMPONENTS - UPPER INCLUDES MOVING COMPONENTS NOT SYMMETRICAL TO LOWER BOOM
10. PIVOT COMPONENTS - LOWER INCLUDES MOVING COMPONENTS NOT SYMMETRICAL TO UPPER BOOM
11. PREAMP TIP ASSEMBLY INCLUDES STACER TIP PIECE, PREAMP MOUNTING HARDWARE, PREAMP AND SENSOR MOUNTING HARDWARE
12. UPPER AND LOWER TANK MOUNTS ARE INCLUDED IN THE ANALYSIS.

MAIN ASSEMBLY CALCULATIONS	MASS (kg)	CM STOWED Z DISTANCE FROM TCS Z = 0 (m)	STOWED [WRT CM] IXX (kg/m^2)	IYY (kg/m^2)	IZZ (kg/m^2)
THEMIS AXIAL BOOM ASSEMBLY	4.104	0.305	2.00E-01	2.00E-01	5.07E-03
BOOM HOUSING ASSEMBLY	0.711	0.260	3.92E-02	3.92E-02	2.02E-03
UPPER BOOM ASSEMBLY	1.691	0.508	1.59E-02	1.59E-02	1.50E-03
LOWER BOOM ASSEMBLY	1.701	0.122	1.59E-02	1.59E-02	1.50E-03
STATIONARY COMPONENTS	1.968	0.294	6.35E-02	6.35E-02	3.29E-03

BOOM CALCULATIONS	MASS (kg)	CM STOWED Z DISTANCE FROM BSP (m)	STOWED [WRT CM]* IXX (kg/m^2)	IYY (kg/m^2)	IZZ (kg/m^2)	CM DEPLOYED Z DISTANCE FROM BSP (m)	DEPLOYED [WRT CM]* IXX (kg/m^2)	IYY (kg/m^2)	IZZ (kg/m^2)
STATIONARY COMPONENTS	0.556	0.124	3.78E-03	3.78E-03	6.07E-04	-	-	-	-
MOVING COMPONENTS	0.661	0.240	5.32E-03	5.32E-03	8.28E-04	0.387	1.06E-02	1.07E-02	8.50E-04
PIVOT COMPONENTS - UPPER	0.473	0.199	1.98E-03	1.98E-03	6.50E-04	-	-	-	-
PIVOT COMPONENTS - LOWER	0.481	0.195	2.00E-03	2.00E-03	6.80E-05	-	-	-	-
STACER - UPPER	0.335	-	-	-	-	1.142	1.18E-01	1.18E-01	3.77E-05
STACER - LOWER	0.341					-1.233	1.43E-01	1.43E-01	4.07E-05
CABLE - UPPER	0.022	-	-	-	-	1.068	9.00E-03	9.00E-03	1.00E-06
CABLE - LOWER	0.024					-1.153	1.14E-02	1.14E-02	1.00E-06
PREAMP TIP ASSEMBLY - UPPER	0.093	-	-	-	-	2.262	4.97E-04	4.97E-04	6.00E-06
PREAMP TIP ASSEMBLY - LOWER	"					-2.452	"	"	"
SENSOR - UPPER	0.014	-	-	-	-	2.686	8.04E-04	8.04E-04	0.00E+00
SENSOR - LOWER	"					-2.876	"	"	"
SENSOR HOUSING ASSEMBLY - UPPER	0.009	-	-	-	-	3.094	2.00E-06	2.00E-06	0.00E+00
SENSOR HOUSING ASSEMBLY - LOWER	"	-	-	-	-	-3.284	"	"	"

AXIAL BOOM STACER PROPERTIES	Sensor		Upper Main		Lower Main	
Strip Thickness	0.0015 in	0.038 mm	0.004 in	0.102 mm	0.004 in	0.102 mm
Tip Diameter	0.188 in	4.763 mm	0.725 in	18.415 mm	0.725 in	18.415 mm
Base Diameter	0.274 in	6.960 mm	0.880 in	22.352 mm	0.900 in	22.860 mm
Equivalent Diameter	0.207 in	5.258 mm	0.840 in	21.336 mm	0.850 in	21.590 mm





SPACE SCIENCES LABORATORY

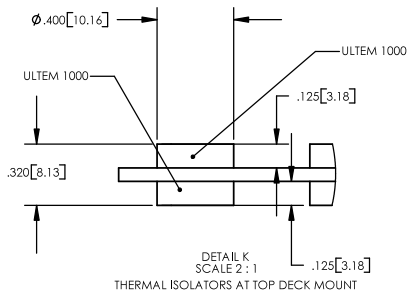
TITLE: THEMIS AXIAL BOOM INTERFACE CONTROL DRAWING

SIZE	DWG. NO.	REV
C	THM-AXB-ICD-001	AE

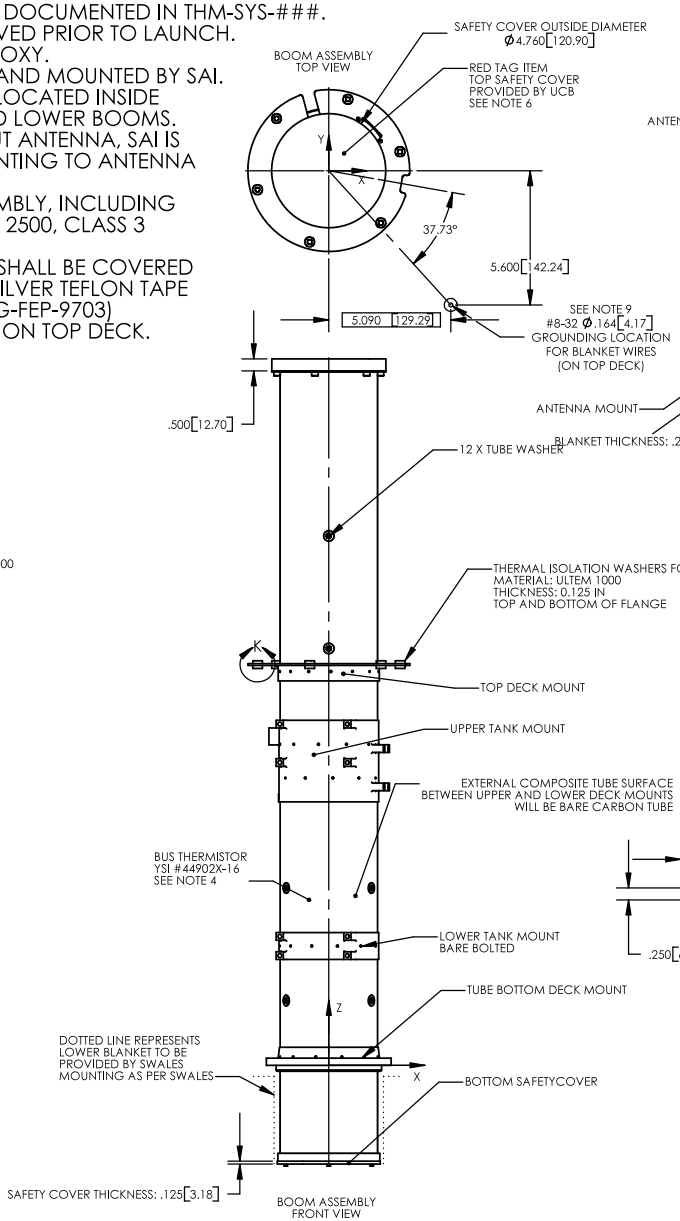
SHEET 5 OF 6

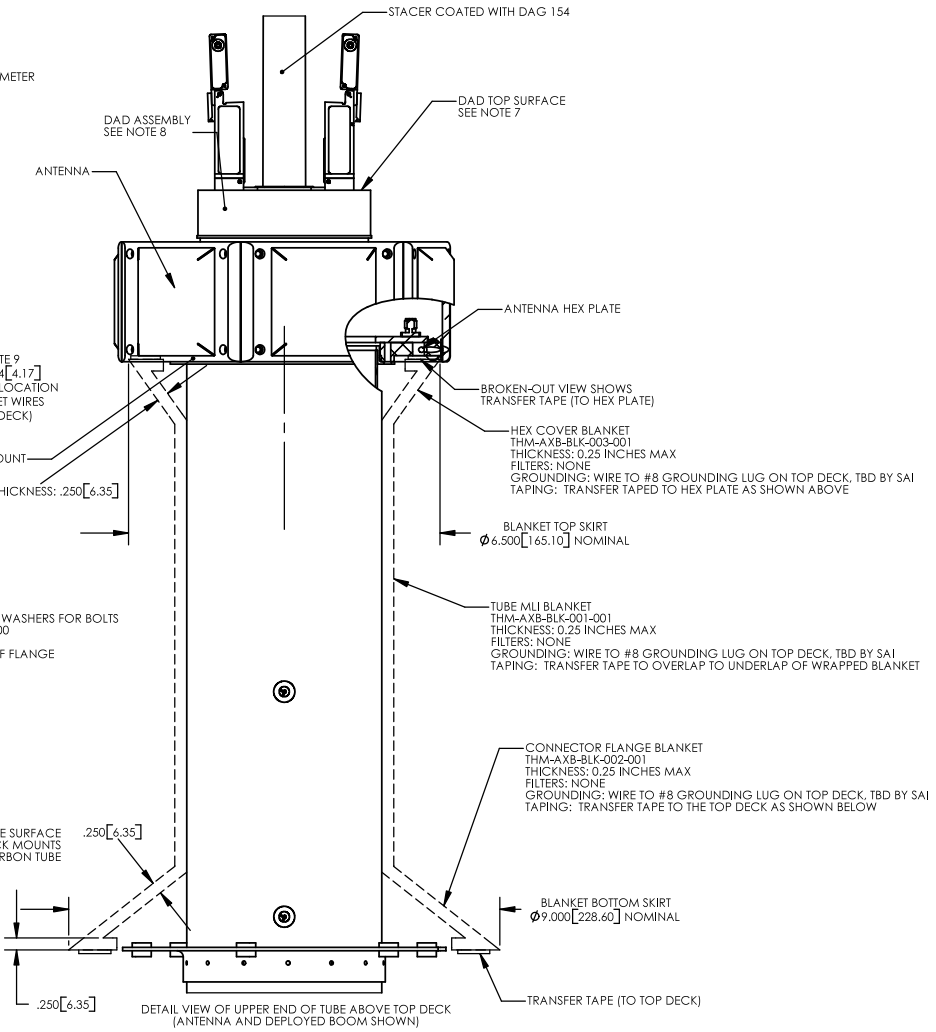
GENERAL NOTES: UNLESS OTHERWISE SPECIFIED

1. THERMAL INTERFACE CONDUCTIVITY IS DOCUMENTED IN THM-SYS-###.
2. RED TAG SAFETY COVERS TO BE REMOVED PRIOR TO LAUNCH.
3. MOUNTS BONDED WITH HYSOL 9309 EPOXY.
4. BUS MONITOR THERMISTORS SUPPLIED AND MOUNTED BY SAI.
5. THE IDPU MONITOR THERMISTORS ARE LOCATED INSIDE THE PREAMPS ON BOTH THE UPPER AND LOWER BOOMS.
6. TOP SAFETY COVER IS FOR USE WITHOUT ANTENNA, SAI IS TO PROVIDE SAFETY COVER FOR MOUNTING TO ANTENNA ONCE INSTALLED.
7. ALL EXTERIOR SURFACES OF DAD ASSEMBLY, INCLUDING DOORS, ARE COATED CLEAR ALODINE 2500, CLASS 3 PER MIL-C-5541E
8. MIN OF 50% OF TOTAL SURFACE AREA SHALL BE COVERED WITH 5 MIL PERFORATED ITO COATED SILVER TEFLON TAPE WITH 9703 ADHESIVE (5MIL-PERF-ITO-AG-FEP-9703)
9. BLANKET GROUND LOCATION SHOWN ON TOP DECK.

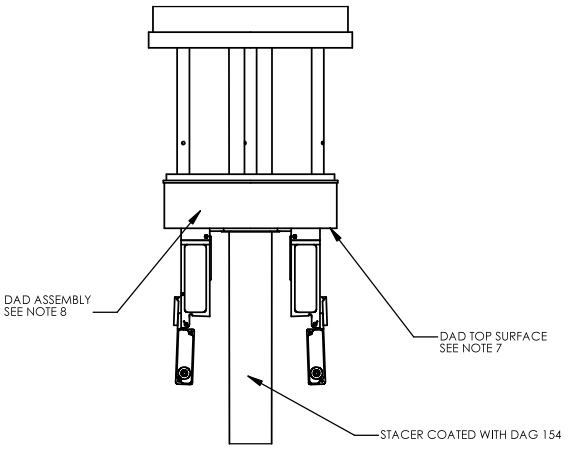


THERMAL ISOLATORS AT TOP DECK MOUNT





DETAIL VIEW OF UPPER END OF TUBE ABOVE TOP DECK
(ANTENNA AND DEPLOYED BOOM SHOWN)



DETAIL VIEW OF LOWER END OF TUBE
(DEPLOYED BOOM SHOWN)

SPACE SCIENCES LABORATORY		
TITLE: THEMIS AXIAL BOOM INTERFACE CONTROL DRAWING		
SIZE C	DWG. NO. THM-AXB-ICD-001	REV AE
		SHEET 6 OF 6