REVISION			
LTR	DESCRIPTION	DATE	APPROVED
A	OMITTED	——	——
B	REVISED OVERALL GRAPHICS FOR ADDED FEATURES AND DEFINITION; REVISED C.G., DETECTOR DETAIL & ENVELOPE/COVER DEFINED; REVISED MTG PATTERN; GENERAL INTERFACE SPECS. & UPDATES. REVISED NOTES; DEFINED CONNECTORS; DEFINED RED & GREEN TAG ITEMS; FOV ORIGIN DEFINED	MCG 6/1/94	SAT 5/31

NOTES:

1) SEPICA ESTIMATED MASS W/COVER 28.3 KG (62.88); W/O COVER 27.8 Kg (61.39); ACTUAL MEASURED (TBD).

2) MOUNTING VIA 8 (TBD), 1/4-28 TITANIUM SHCS TO UPPER DECK OF S/C. REFER TO SHEET 7 OF 10 FOR BALANCE OF MOUNTING & INTERFACE SPECIFICS.

3) C.G. LOCATIONS FROM "R": ALL VALUES +/- 15%

	X	Y	Z
LAUNCH	-275.8 (11.01)	217.2 (8.55)	193.9 (7.63)
POST COVER DEPLOYMENT	-284.4 (11.19)	217.2 (8.55)	191.9 (7.55)
END OF LIFE	-275.8 (10.83)	223.3 (8.80)	192.2 (7.56)

4) UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE FROM REFERENCE HOLE DENOTED BY "R"

5) SEPICA THERMAL SPECS. & DESCRIPTIONS- REFER TO SHEET 8 OF 10.

6) GENERAL TOLERANCES- DOES NOT APPLY TO MOUNTING PATTERN, C.G. LOCATION & CONNECTOR LOCATIONS. REFER TO SHEET 7 OF 10, NOTE 3 & NOTE 7 RESPECTIVELY.

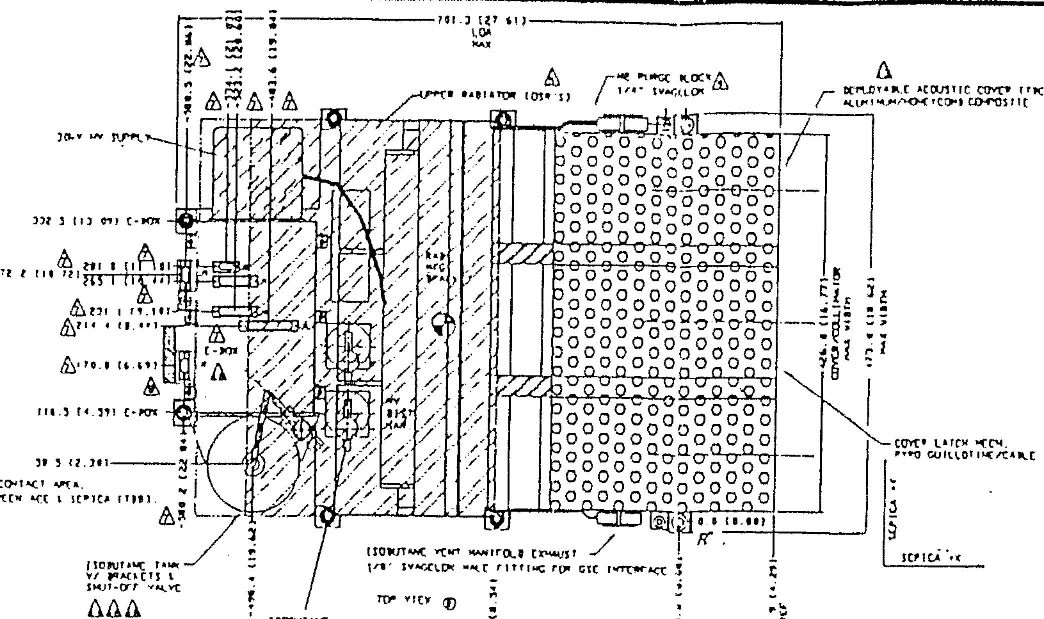
METRIC -X.X +/- 0.8mm
ENGLISH -X.XX +/- 0.03"

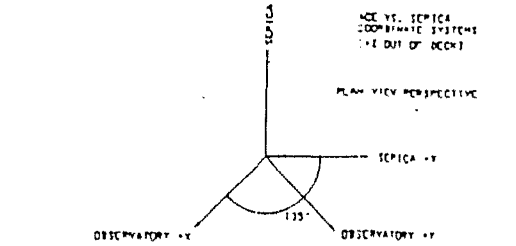
7) INTERFACE CONNECTOR DESIGNATIONS (NON- S/C INTERFACE CONNECTORS ARE TBD):

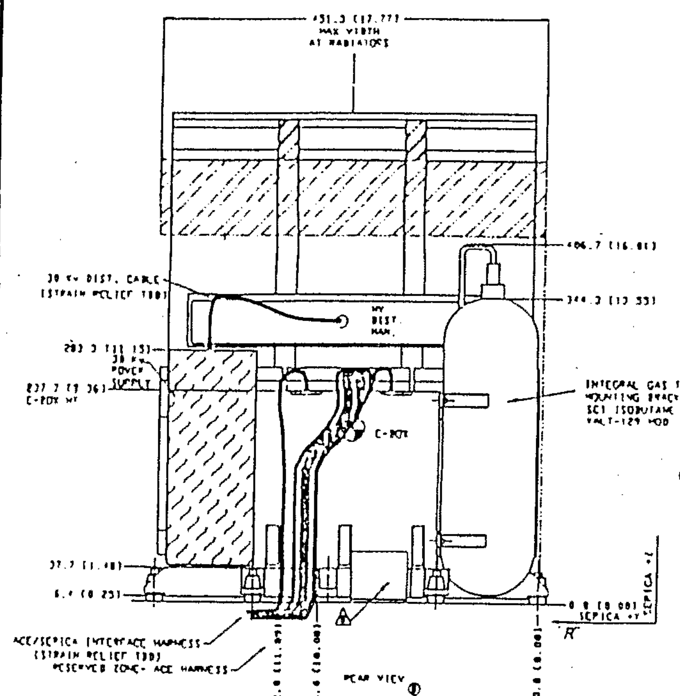
# FUNCTION	TYPE	GSFC #
J1 - POWER	D-25-P	311P409-2P-B-12
J2 - TEMP. MONITOR/TELLTALE	MD-15-P	311P407-1P-B-12
J3 - PYRO POWER	D-9-P	311P409-1P-B-12
J4 - DATA (TO DPU)	D-25-S	311P409-2S-B-12
J5 - HV ENABLE/DISABLE	D-9-S	311P409-1S-B-12
J6 - GSE TEST	MD-44-S	311P407-3S-B-12

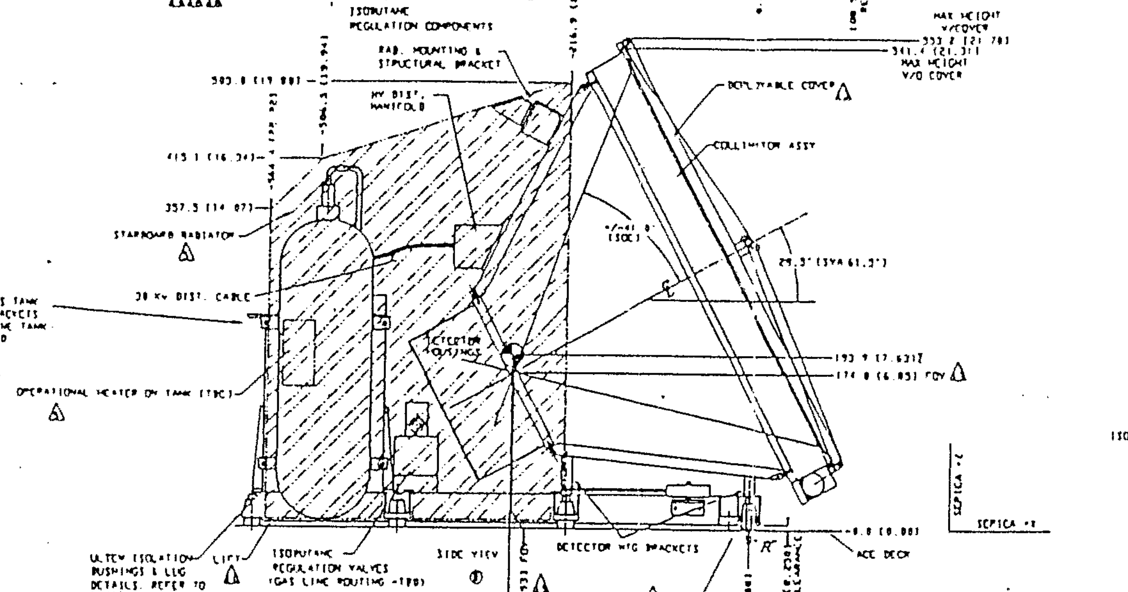
INTERFACE CONNECTORS- MECHANICAL DIMENSIONS- SEE SHEET 2 OF 10. LOCATIONAL TOLERANCE- +/-13mm (0.5") (TBC).

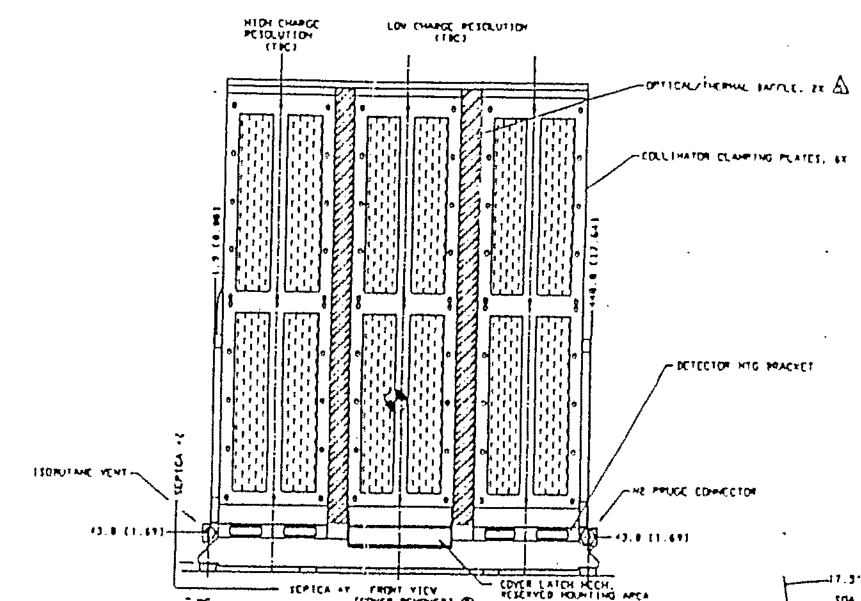
8) GND TO S/C VIA CONDUCTIVE STRAP, BY APL. APPROXIMATE CONTACT AREA- 63(2.56) X 15 (.59) CONTACT AREA. SECURE WITH 3 #8-32 SHCS TO UPPER DECK OF S/C (TBC). MAXIMUM ELECTRICAL RESISTANCE BETWEEN ACE & SEPICA (TBD).











9) INSTRUMENT GAS PURGE REQUIREMENTS:

GAS TYPE - UHP GRADE 5.0 (99.999% PURE) DRY N2
FLOW RATE - (TBD) RESTRICTOR BLOCK BY UNH-SSC.

FITTING AT INSTRUMENT - SWAGELOK # SS-400 MALE END
TUBING MATERIAL/SIZE- 1/4" TUBE, POLYETHYLENE
FLOW TYPE - CONTINUOUS WHEN NOT IN HUMIDITY AND TEMPERATURE CONTROLLED ENVIRONMENT. WHEN RELATIVE HUMIDITY EXCEEDS 50% AND/OR SENSOR TEMP. IS 5 DEG BELOW AMBIENT, PURGE MUST BE MAINTAINED OR SENSOR MUST BE STORED IN A CLOSED CONTAINER WITH DESICCANT (SILICA GEL PACKETS). UNDER CIRCUMSTANCES WHERE IT IS NOT POSSIBLE TO MAINTAIN PURGE OR CONTROLLED STORAGE IS NOT PRACTICAL, A MAXIMUM OF 18 HOURS WITHOUT PURGE OR ENVIRONMENTAL CONTROL IS PERMISSIBLE.

10) REFER TO SHEET 4 OF 10 FOR SEPICA LIFTING HARDWARE DESCRIPTIONS & PROCEDURE. FOR LIFTING W/O HOIST, SEPICA IS A 2 MAN LIFT ONLY. LIFT AT BASE PLATE ONLY.

11) REFER TO SHEET 1 OF 10 FOR ADDITIONAL SEPICA NOTES.

12) REFER TO SHEET 3 OF 10 FOR MECHANICAL DETAILS NOT SHOWN HERE.

13) REFER TO SHEET 5 OF 10 FOR A DESCRIPTION OF THE DEPLOYABLE COVER. IF A DEPLOYABLE COVER IS DEEMED UNNECESSARY, A RED TAG DUST COVER OF THE SAME GENERAL ENVELOPE WILL BE PROVIDED.

14) REFER TO SHEET 6 OF 10 TO REVIEW THE ISOBUTANE GAS REGULATION SYSTEM FLOW DIAGRAM. ALL PLUMBING RUNS AND COMPONENT LOCATIONS NOT SHOWN ARE (TBD).

15) SHEETS 9 & 10 ARE RESERVED FOR ADDITIONAL DETAILS & SPECIFICATIONS AS REQUIRED

16) RED & GREEN TAG ITEMS:

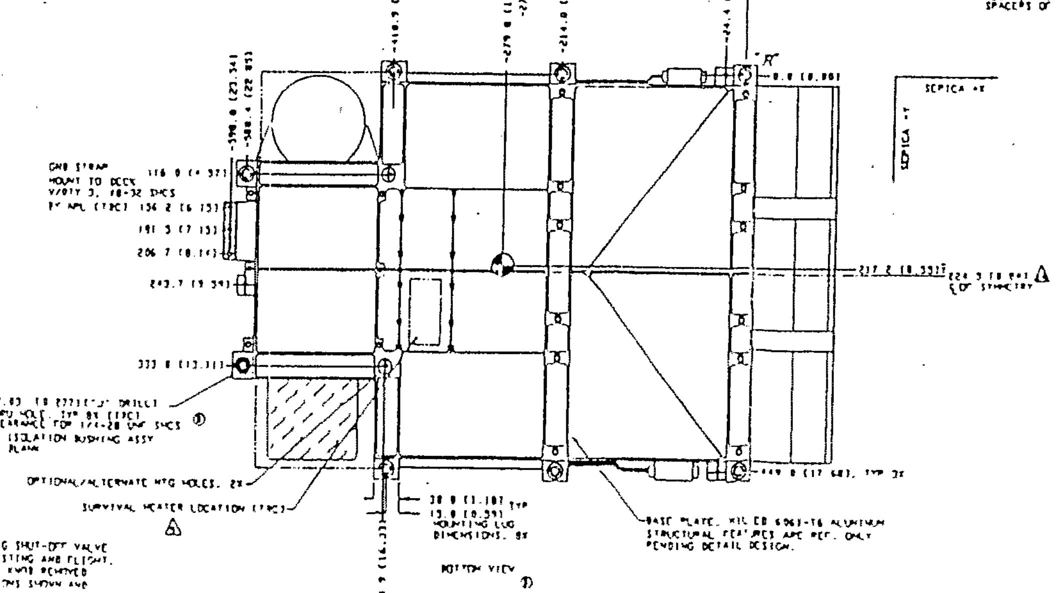
RED TAG ITEMS- J5 CONNECTOR PLUG
J1, J2, J3, J4 CONNECTOR SAVERS
ISOBUTANE SHUT-OFF VALVE KNOB
ISOBUTANE SHUT-OFF VALVE OUTLET CAP- 1/4" SWAGELOK BLANK
GREEN TAG (FLIGHT) ITEMS-
J6 TEST CONNECTOR COVER
P/C TEST VENT PORT, 1/4" SWAGELOK BLANK CAP
P/C LAB PURGE TEE, 1/8" SWAGELOK BLANK CAP
DEPLOYABLE COVER

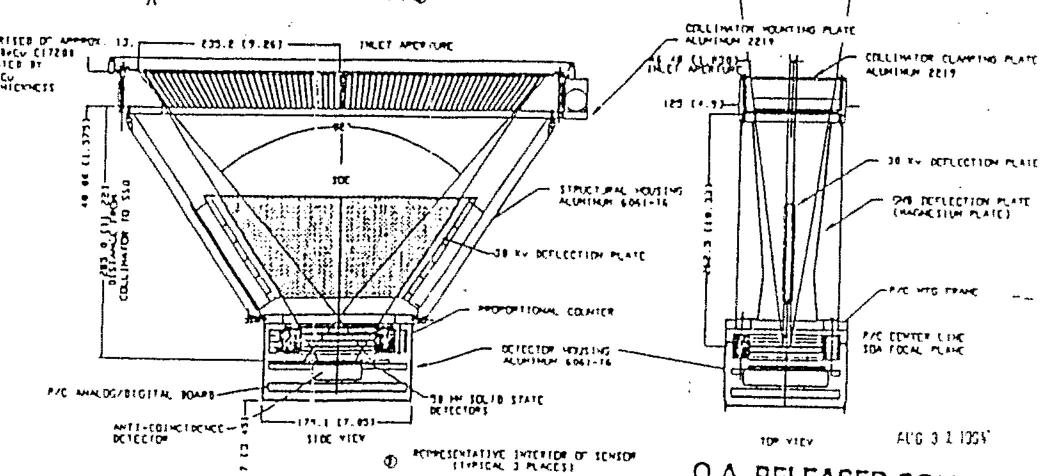
17) SEPICA IS SHIPPED WITH CONNECTOR SAVERS AT J1, J2, J3 & J4. THESE ITEMS ARE TO REMAIN IN PLACE UNTIL FINAL INTEGRATION WITH ACE HARNESS IS PERFORMED

18) FOR SHIPPING SAFETY OF THE GAS SYSTEM (W/ OR W/O ISOBUTANE PRESENT), THE RED TAG SHUT-OFF VALVE KNOB WILL BE IN PLACE AND SECURED SHUT, AND THE VALVE OUTLET CAPPED. FOR T/V TESTING AND FLIGHT, THE OUTLET CAP WILL BE REMOVED, LINE MATED, SHUT-OFF VALVE SECURED OPEN AND THE KNOB REMOVED

19) FIELD OF VIEW ORIGIN IS REFERRED TO AS "FOV" AND IS DEFINED AT THE X & Z LOCATIONS SHOWN AND Y DIRECTION CENTER LINE OF SYMMETRY.

20) REFER TO SEPICA SITE, DOCUMENT # 7343-1013 FOR ADDITIONAL CLARIFICATION





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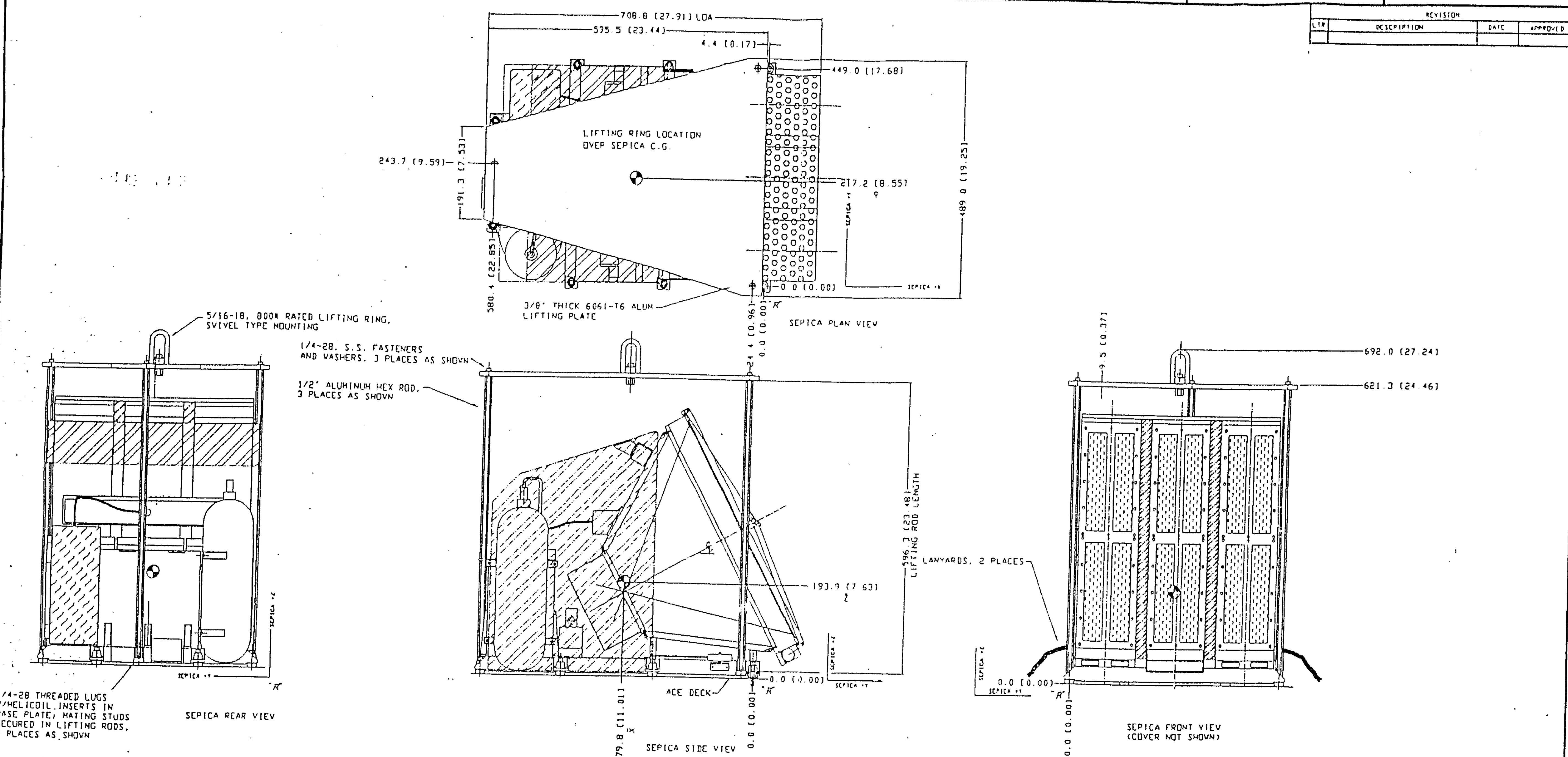
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS: ANGLES XX DEC XXX DEC FRACTIONS; GEOMETRIC CONTROLS PER ANSI Y14.5 1982	ACTN	INIT	DATE	UNIVERSITY OF NEW HAMPSHIRE SPACE SCIENCE CENTER - SERB DURHAM, N.H. 03824
	ENG.	HSG	5/?/94	
	CHK'D	HSG	5/?/94	
	MFG.			
	INSTRUMENT: SEPICA			DESCRIPTION: INTERFACE CONTROL DRAWING ACE/SEPICA - INSTRUMENT OVERALL LAYOUT
MACH. FIN / MATERIAL	SIZE: D	ASST NO		REF. DWG NO / UNH DWG NO: ICD-D-0371-2 / REV: P



NOTES:

1) UNLESS REPRESENTED AS A COMPONENT DIMENSION, ALL MEASUREMENTS ARE FROM "R".

2) SEPICA MASS EST: 28.5 Kg (62.7#); MEASURED (TBC).
LIFTING HARDWARE EST. WEIGHT- 15# MAX.
TOTAL HOIST LOAD - 78# MAX.

3) LIFTING ASSEMBLY RATED LOAD 75#, PROOF TEST LOAD 150# MINIMUM.

4) ALL LIFTING HARDWARE (RED TAG ITEMS) SHOWN SUPPLIED BY UNH-SSC.

5) ALL LIFTING FASTENERS AND LIFTING RING TO BE TORQUE CHECKED PRIOR TO USE:
1/4-28 - TORQUE TO 100 IN-LBS
5/16-18 - TORQUE TO 130 IN-LBS

6) IN ADDITION TO LIFTING POINT, SEPICA WILL BE STEADIED BY TWO WIRE ROPE LANYARDS TO CONTROL INSTRUMENT ORIENTATION DURING INSTALLATION.

7) LIFTING HARDWARE INSTALLATION PROCEDURE:

1) INSTALL LIFTING RODS WITH DELRIN WASHERS INTO 3 BASE PLATE LIFTING LUGS. SECURE WITH 1/2" OPEN END WRENCH

2) CAREFULLY POSITION LIFTING PLATE ONTO 3 LIFTING RODS AND SECURE WITH 3, 1/4-28 SHCS AND WASHERS. TORQUE TO SPECIFIED VALUE.

3) CONFIRM TORQUE ON THE LIFTING RING TO SPECIFIED VALUE

4) INSTALL WIRE ROPE LANYARDS AT LOCATIONS SHOWN.

5) SEPICA IS NOW PREPARED FOR LIFTING ONTO ACE. ATTACH HOIST TO LIFTING RING, CONTROL SEPICA WITH 3 OPERATORS MINIMUM: ONE HOIST OPERATOR, 2 LANYARD OPERATORS.

6) FOLLOWING ALIGNMENT OF BASE PLATE AND ACE MOUNTING PATTERN, INSTALL A MINIMUM OF 3 MOUNTING FASTENERS PRIOR TO REMOVAL OF LIFTING HARDWARE. REFER TO SEPICA SIIS AND ICD SHEETS 2 & 7 FOR FASTENER SPECIFICS.

8) THIS SHEET OF THE SEPICA ICD PACKAGE IS REV. B FOR INITIAL RELEASE TO BE CONSISTENT WITH THE BALANCE OF THE PACKAGE. THERE ARE NO RELEASES AT REVISIONS 'Z' OR 'A' FOR THIS SHEET.

9) LOCATIONAL & SIZE TOLERANCES (EXCEPT FOR C.G. SEE SHEET 2 OF 10):

METRIC: M.M +/- 0.8mm
ENGLISH: X.XX +/- 0.032"

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SEE NOTE 9

UNITS MM/(IN)	ACTN	INIT	DATE	
TOLERANCES UNLESS OTHERWISE NOTED: ANGLES +/- .25 DEG; METRIC M.M +/- 0.25mm, M.MM +/- 0.1mm; ENGLISH .XX +/- .01", .XXX +/- .004"	CHG.	MSG		UNIVERSITY OF NEW HAMPSHIRE SPACE SCIENCE CENTER - SERD DURHAM, N.H. 03824
	CHK'D			
	MFG			
	INSTRUMENT: SEPICA			DESCRIPTION: LIFTING HARDWARE ASSEMBLY

NOTES:

1) CHANGES TO SEPICA C.G. LOCATION ARE AS SHOWN IN Z & X DIRECTIONS. DUE TO SYMMETRY, NO CHANGE IN Y IS PREDICTED.

2) THE TOTAL MASS OF THE DEPLOYABLE COVER & MECHANISM FOLLOWS:

COVER- 500g PORTION JETTISONED
MECHANISM- 200g

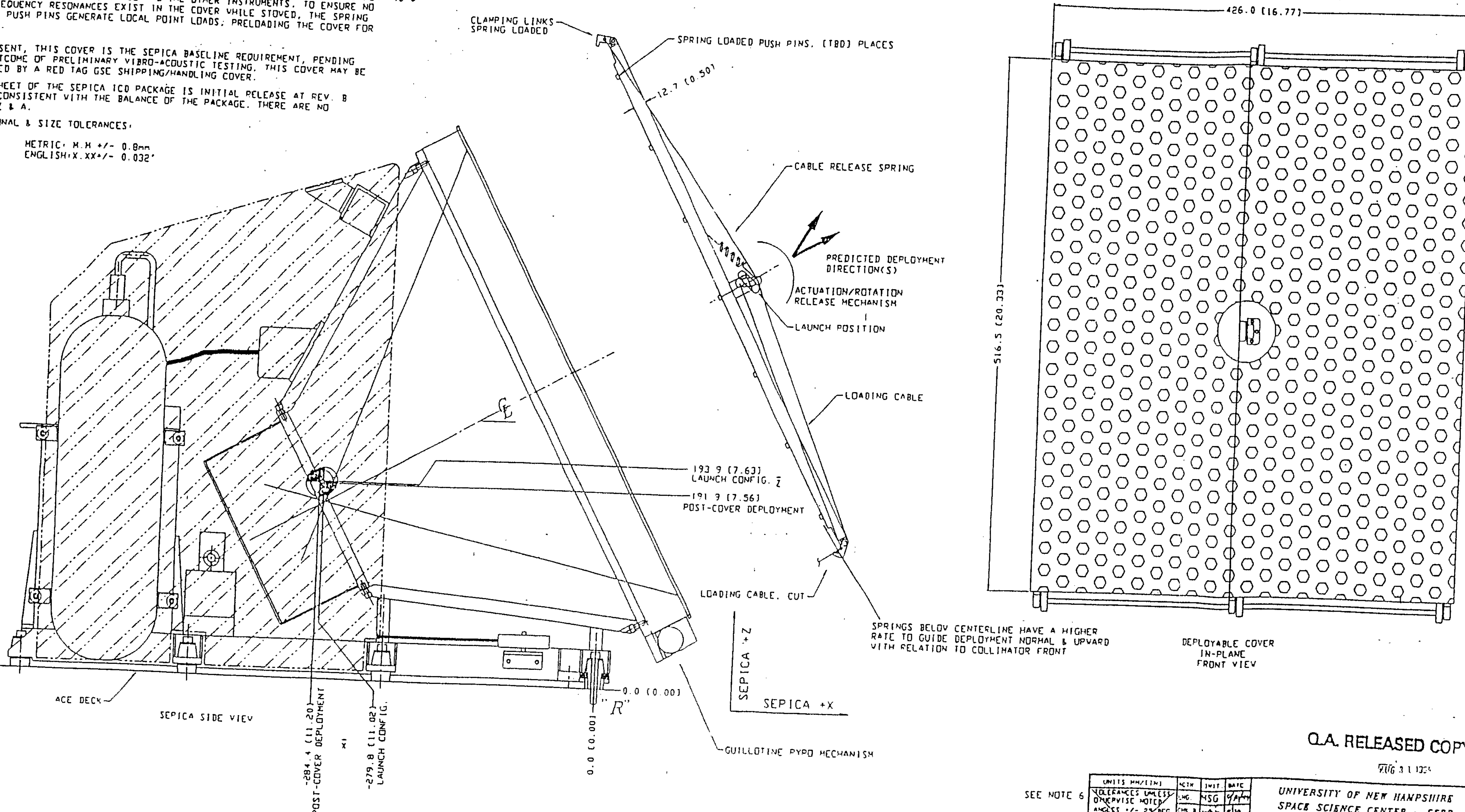
3) THE COVER IS PROPOSED AS A ONE PIECE ALUMINUM HONEYCOMB OR HIGH PERFORMANCE PLASTIC PLATE WITH ACTUATION LINKAGES, CABLES AND SPRINGS MOUNTED INTEGRALLY. THE COVER IS SECURED VIA A WIRE ROPE 'LOADING' CABLE IN HIGH TENSION TO THE PYRO ACTUATED GUILLOTINE CUTTER. FIRING THE PYRO RELEASES THE LOADING CABLE & CLAMPING LINKS, ALLOWING THE CAPTIVE PUSH PINS TO JETTISON THE COVER. THE VARIED SPRING RATE OF THE PUSH PINS ENSURES THAT THE COVER DEPLOYS FORWARD & UPWARD, AWAY FROM SEPICA, ACE AND THE OTHER INSTRUMENTS. TO ENSURE NO LOW FREQUENCY RESONANCES EXIST IN THE COVER WHILE STOWED, THE SPRING LOADED PUSH PINS GENERATE LOCAL POINT LOADS, PRELOADING THE COVER FOR LAUNCH.

4) AT PRESENT, THIS COVER IS THE SEPICA BASELINE REQUIREMENT, PENDING THE OUTCOME OF PRELIMINARY VIBRO-ACOUSTIC TESTING. THIS COVER MAY BE REPLACED BY A RED TAG GSE SHIPPING/HANDLING COVER.

5) THIS SHEET OF THE SEPICA ICD PACKAGE IS INITIAL RELEASE AT REV. B TO BE CONSISTENT WITH THE BALANCE OF THE PACKAGE. THERE ARE NO REV'S Z & A.

6) LOCATIONAL & SIZE TOLERANCES:

METRIC: M.M +/- 0.8mm
ENGLISH: X.XX +/- 0.032"



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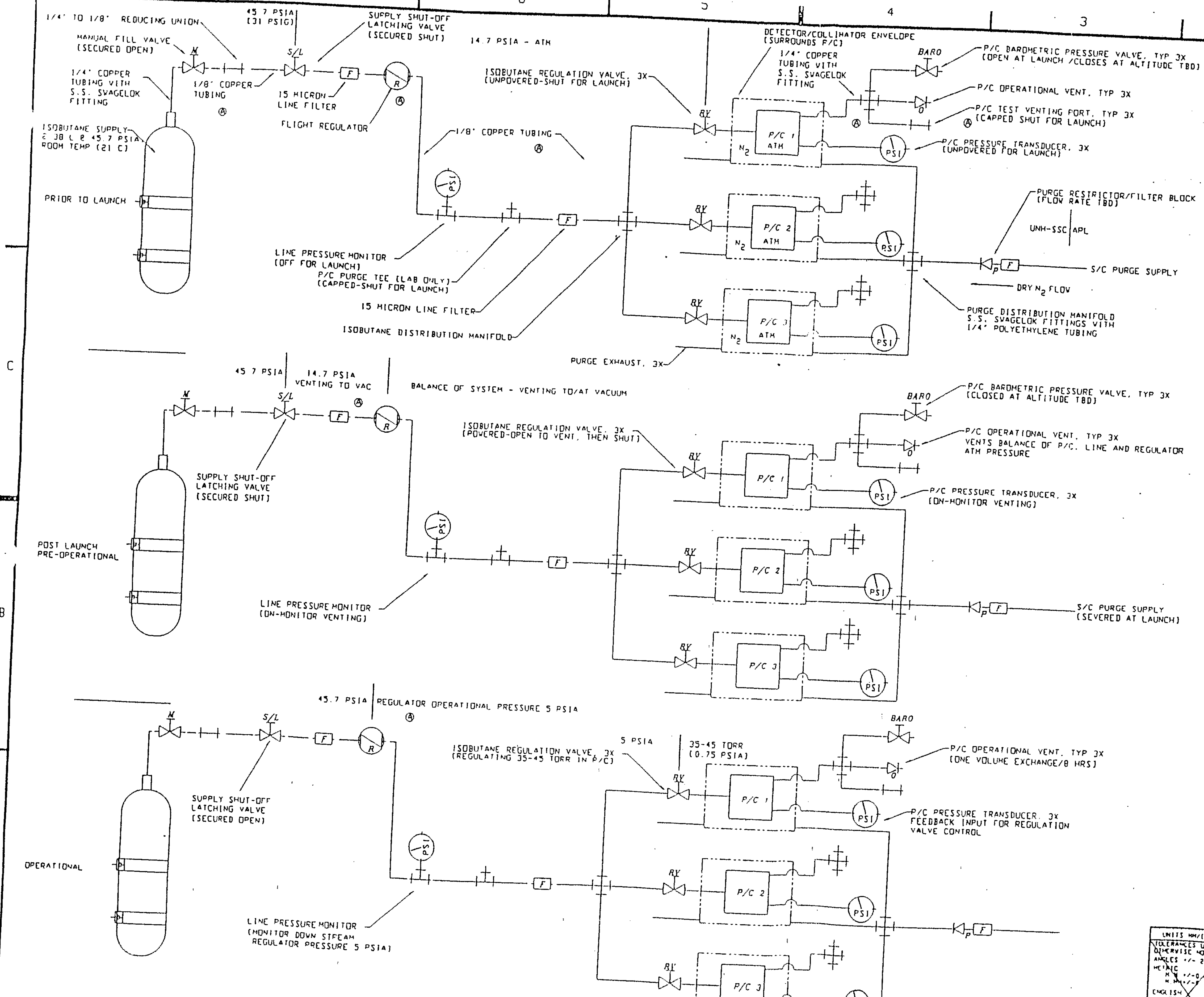
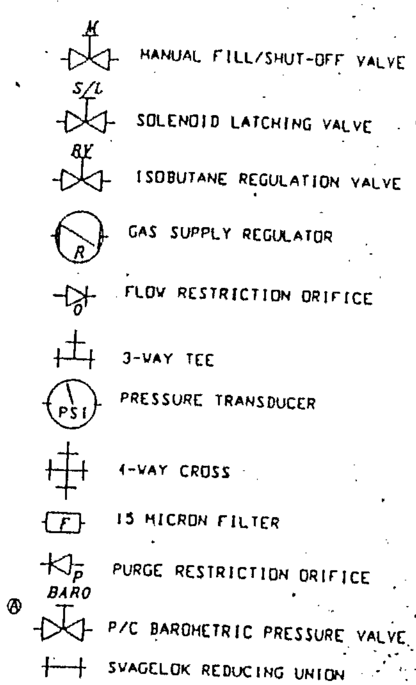
SEE NOTE 6

UNITS MM/(IN)	ACTN	INIT.	DATE	UNIVERSITY OF NEW HAMPSHIRE SPACE SCIENCE CENTER - SERB DURHAM, N.H. 03824
TOLERANCES UNLESS OTHERWISE NOTED	ENG.	MSG		
ANGLES +/- 25 DEG	CHK'D			
METRIC	MFG.			
ENGLISH	INSTRUMENT: SEPICA			DESCRIPTION: DEPLOYABLE COVER CONCEPT



REVISION			
LTR	DESCRIPTION	DATE	APPROVED
A	[illegible]	8/4/94 MSG	
B	[illegible]	[illegible]	SAT

SYMBOL KEY



PROPERTIES OF ISOBUTANE	
CHEMICAL FORMULA	C_4H_{10}
LIQUID DENSITY	0.55 kg/L
GAS SPEC. VOL.	405.8 L/kg
VAPOR PRESSURE	3.1 bar (45.4 psia)
MOLECULAR WT.	0.058124 kg
MOLE VOL. GAS	22.414 L

SEPICA GAS SUPPLY & P/C SPECIFICS	
TANK VOLUME	2.38 L
ISOBUTANE MASS	1.311 kg
MOLES PRESENT	22.56
VOLUME AT ATM	506 L (532)
VOLUME AT 40 TORR	9,650 L
VOLUME PER P/C	0.163 L
VOLUME 3 P/C'S	0.49 L
EX. RATE PER P/C	0.34 CC/MIN(1X/8HR)
TOTAL EX. RATE	1 CC/MIN
GAS SUPPLY LIFE	18.4 YRS.

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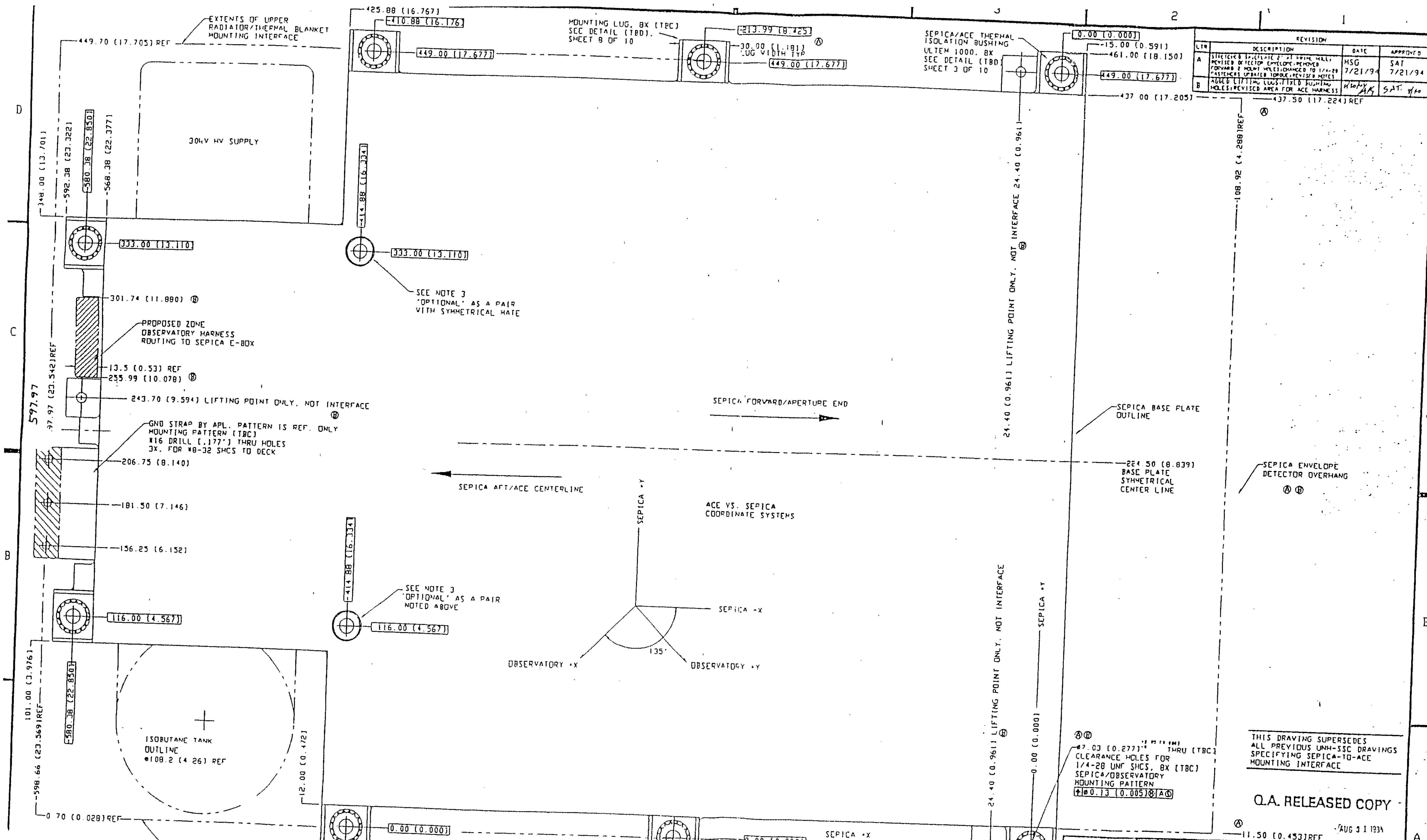
UNITS MM/(IN)	ACTN.	INIT	DATE	UNIVERSITY OF NEW HAMPSHIRE SPACE SCIENCE CENTER - SERB DURHAM, N.H. 03824
TOLERANCES UNLESS OTHERWISE NOTED: ANGLES +/- 25 DEG METRIC X.X +/-0.25mm X.XX +/- 1mm ENGLISH XX +/- .01" XXX +/- .004"	ENG.	MSG	[illegible]	
	CHK'D	MSG	[illegible]	
	MFG			
MACH. FIN. ✓	INSTRUMENT: SEPICA			DESCRIPTION: ISOBUTANE & PURGE SYSTEM GAS FLOW DIAGRAM
MATERIAL	SIZE: D	ASSY. NO.	REF. DWG. NO.	UNH DWG. NO.: ICD-D-0371-6 — REV.: B

REVISION			
LTR	DESCRIPTION	DATE	APPROVED
A	[illegible] REVISED DETECTOR ENVELOPE; REMOVED FORWARD 2 MOUNT HOLES; CHANGED TO 1/4-28 FASTENERS; UPDATED TORQUE; REVISED NOTES	MSG 7/21/94	SAT 7/21/94
B	ADDED LIFTING LUGS; FIXED BUSHING HOLES; REVISED AREA FOR ACE HARNESS	[illegible]	SAT. [illegible]



EXTENTS OF UPPER RADIATOR/THERMAL BLANKET MOUNTING INTERFACE
449.70 (17.705) REF
425.88 (16.767)
410.88 (16.176)
MOUNTING LUG, 8X (TBC) SEE DETAIL (TBD), SHEET 8 OF 10
213.99 (8.425)
30.00 (1.181) LUG WIDTH TYP
449.00 (17.677)
SEPICA/ACE THERMAL ISOLATION BUSHING ULTEM 1000, 8X SEE DETAIL (TBD) SHEET 3 OF 10
0.00 (0.000)
15.00 (0.591)
461.00 (18.150)
437.00 (17.205)
437.50 (17.224) REF
108.92 (4.288) REF
30KV HV SUPPLY
348.00 (13.701)
592.38 (23.322)
580.38 (22.850)
568.38 (22.377)
414.88 (16.334)
333.00 (13.110)
SEE NOTE 3 'OPTIONAL' AS A PAIR WITH SYMMETRICAL MATE
301.74 (11.880)
PROPOSED ZONE OBSERVATORY HARNESS ROUTING TO SEPICA E-BOX
13.5 (0.53) REF
255.99 (10.078)
243.70 (9.594) LIFTING POINT ONLY, NOT INTERFACE
597.97 (23.542) REF
GND STRAP BY APL. PATTERN IS REF. ONLY MOUNTING PATTERN (TBC) #16 DRILL (.177") THRU HOLES 3X, FOR #8-32 SHCS TO DECK
206.75 (8.140)
181.50 (7.146)
156.25 (6.152)
SEPICA FORWARD/APERTURE END
SEPICA AFT/ACE CENTERLINE
24.40 (0.961) LIFTING POINT ONLY, NOT INTERFACE 24.40 (0.961)
SEPICA BASE PLATE OUTLINE
224.50 (8.839) BASE PLATE SYMMETRICAL CENTER LINE
SEPICA ENVELOPE DETECTOR OVERHANG
ACE VS. SEPICA COORDINATE SYSTEMS
SEPICA +Y
SEPICA +X
OBSERVATORY +X
OBSERVATORY +Y
135°
SEE NOTE 3 'OPTIONAL' AS A PAIR NOTED ABOVE
116.00 (4.567)
101.00 (3.976)
598.66 (23.569) REF
ISOBUTANE TANK OUTLINE ø108.2 (4.26) REF
12.00 (0.472)
0.70 (0.028) REF
STARBOARD RADIATOR EXTENTS
24.40 (0.961) LIFTING POINT ONLY, NOT INTERFACE
0.00 (0.000)
ø7.03 (0.277) THRU (TBC) CLEARANCE HOLES FOR 1/4-28 UNF SHCS, 8X (TBC) SEPICA/OBSERVATORY MOUNTING PATTERN
ø0.13 (0.005) A
THIS DRAWING SUPERSEDES ALL PREVIOUS UNH-SSC DRAWINGS SPECIFYING SEPICA-TO-ACE MOUNTING INTERFACE
11.50 (0.453) REF
-12.00 (0.472)
PRIME HOLE DATUM -A-

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NOTES:

1) REFER TO SHEET 1 OF 10 FOR ADDITIONAL SEPICA NOTES.

2) MOUNTING FASTENERS: 1/4-28 UNJF-3A, SHCS, TITANIUM ALLOY 6AL-4V, QTY 8 @ 1.75" LONG, SPS TECHNOLOGIES P/N 56462V-428-28 Ⓐ

3) WHERE NOTED 'OPTIONAL', ADDITIONAL MOUNTING LOCATIONS ARE RESERVED PENDING DETAIL DESIGN

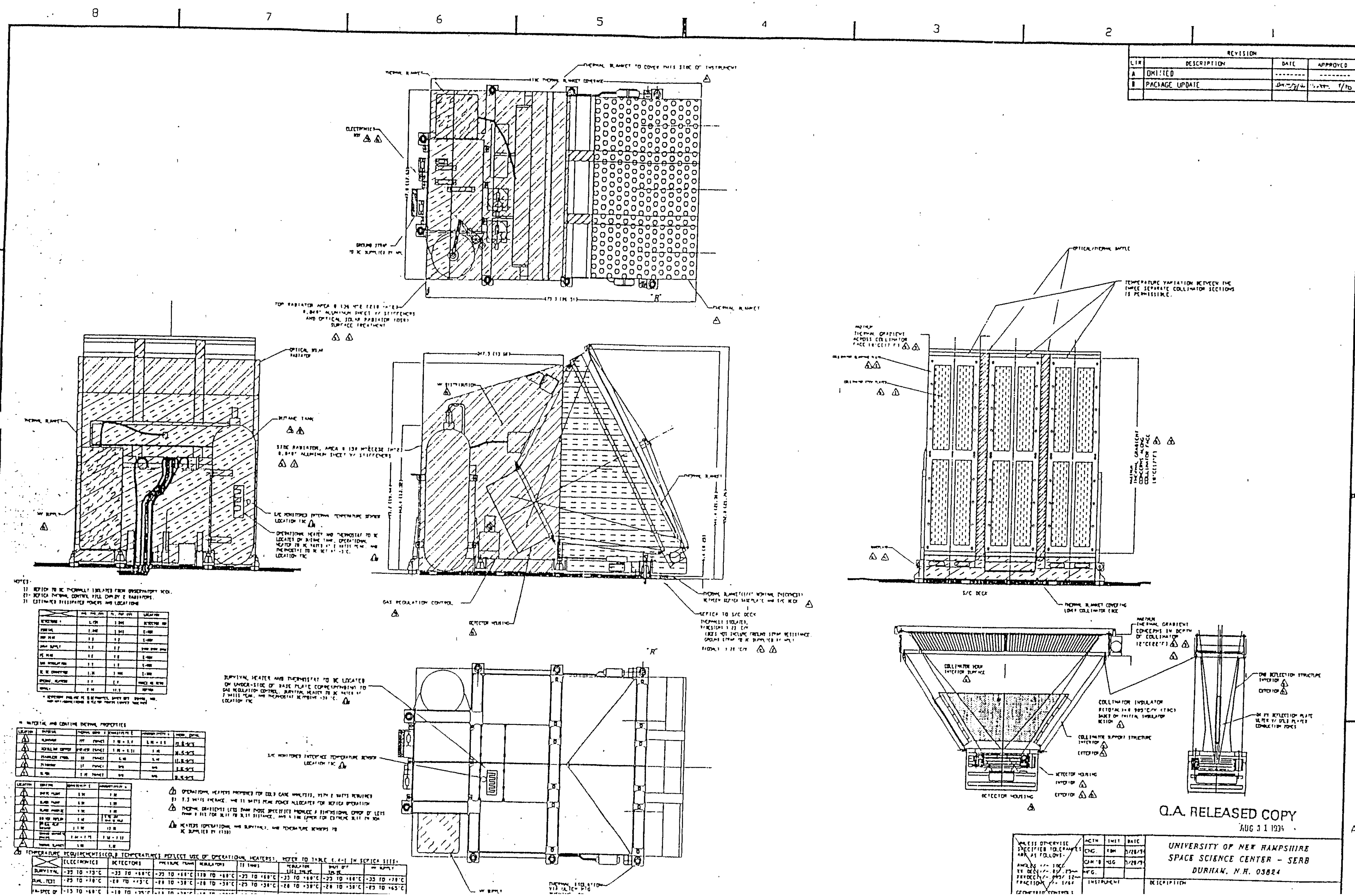
Ⓐ 4) MOUNT WITH ANSI TYPE B PLAIN, 300 SERIES S.S. WASHERS AND TORQUE TO 100 IN-LBS (TBC) WITH A 3/16" HEX DRIVER. RETORQUE 24 HRS AFTER INITIAL INSTALLATION, PRIOR TO AND FOLLOWING ALL TESTING, AND WITHIN 10 DAYS OF LAUNCH TO ACOUNT FOR ULTEM BUSHING CREEP.

Ⓐ 5) ULTEM ISOLATION BUSHINGS ARE PERMANENTLY FIXED TO THE MOUNTING LUGS. REPLACEMENT DUE TO HANDLING OR OTHER DAMAGE IS TO BE PERFORMED ONLY BY UNH-SSC PERSONNEL

UNITS MM/(IN)	ACTN.	INIT	DATE
TOLERANCES UNLESS OTHERWISE NOTED: ANGLES +/- .25 DEG METRIC X.X +/-0.25mm X.XX +/-0.1mm ENGLISH .XX +/-.01" .XXX +/-.004"	ENG.	MSG	
	CHK'D	MSG	
	MFG.		
	INSTRUMENT: SEPICA		

UNIVERSITY OF NEW HAMPSHIRE
SPACE SCIENCE CENTER - SERD
DURHAM, N.H. 03824

DESCRIPTION: ICD ACE/SEPICA - BASE PLATE PLAN VIEW INTERFACE MOUNTING PATTERN



REVISION
LTR
DESCRIPTION
DATE
APPROVED
A
OMITTED
B
PACKAGE UPDATE
THERMAL BLANKET TO COVER THIS SIDE OF INSTRUMENT
GAS REGULATION CONTROL
DETECTOR HOUSING
S/C DECK
DETECTOR TO S/C DECK
COLLIMATOR INSULATOR
DETECTOR HOUSING
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AUG 3 1 1994
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS:
GEOMETRIC CONTROLS
ACTN
INIT
DATE
ENG.
CHK'D
MFG.
INSTRUMENT
DESCRIPTION
UNIVERSITY OF NEW HAMPSHIRE
SPACE SCIENCE CENTER - SERB
DURHAM, N.H. 03824