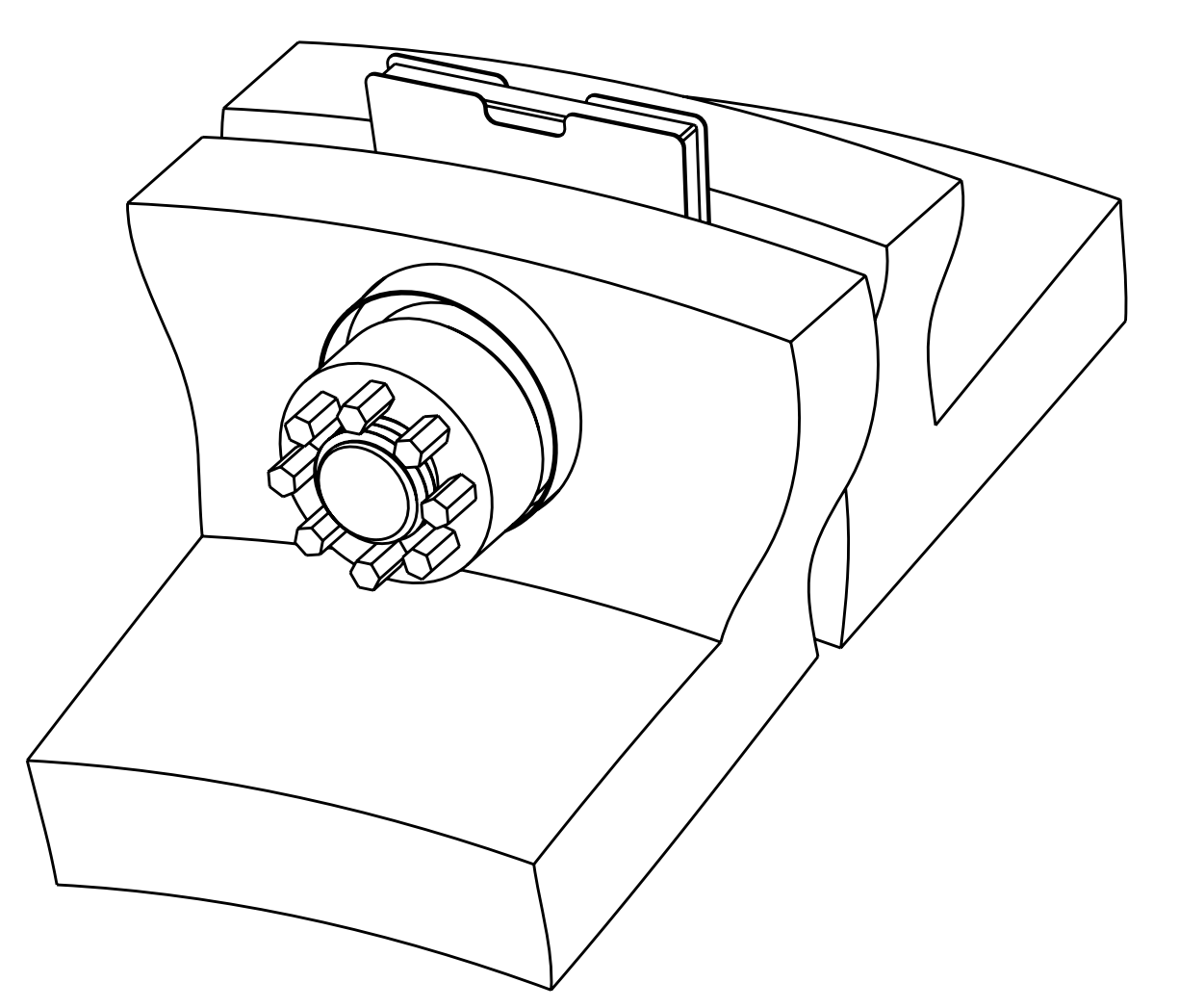


- NOTES**
1. DRAWING PREPARED IN ACCORDANCE WITH ASME Y14.100-2004.
 2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994.
 3. DIMENSIONS ARE IN INCHES
 4. MAGNETIC PERMEABILITY NOT TO EXCEED 1.02 AS TESTED BY A SEVERN INDICATOR. AVAILABLE FROM:
SEVERN ENGINEERING
AUBURN, ALABAMA 36830
WWW.SEVERNENGINEERING.COM
 - 5 SHIM SIZES DEPENDENT ON LOCATION AT ASSEMBLIES SE140-003, SE100-002, AND SE100-001. CUT AT CUT LINES AS REQUIRED.
 - 6 FASTENER PRELOAD REQUIREMENT SEE SPEC NCSX-CSPEC-185-02-00
 - 7 OPTIONAL SUPERNUT ON BOTH SIDES OF THRU BOLT CONFIGURATION USE F/N 15 IN PLACE OF F/N 16, F/N 12 IN PLACE OF F/N 17 & 18.
 - 8 LUBRICATE MATING SURFACE OF F/N 17 & 18 WITH F/N 19, JL-G GRAPHITE.
 - 9 SE140-040 SHIM PLATE WILL BE USED IN PLACE OF SE140-041 ON C-C FLANGE JOINT. SEE DRAWING SE100-001.



2, 4 MCWF FLANGE TAPPED STUD KIT
SCALE NOTED

1, 3 MCWF FLANGE THRU STUD KIT
SCALE NOTED

1, 3 MCWF FLANGE THRU STUD KIT (OPTIONAL)
SCALE NOTED

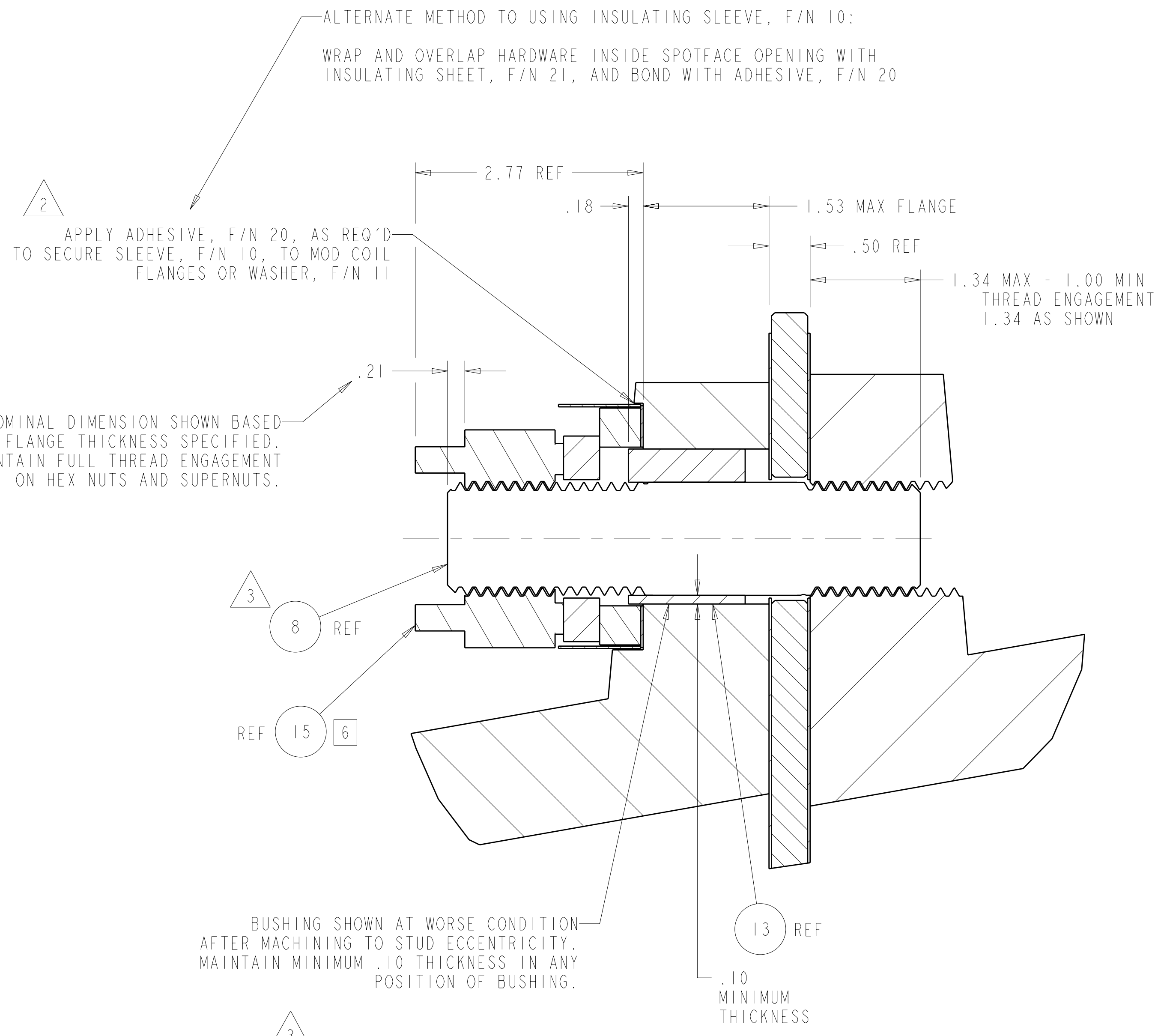
QTY	UNIT	DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
21		INSULATING SHEET	G-10CR SHEET .015 THICK	JJ ORLY, INC CLARK, NJ 07066 732-382-4500 WWW.JJORLY.COM	21
20		ADHESIVE	CTD-540	COMPOSITE TECHNOLOGY DEVELOPMENT, INC LAFAYETTE, CO 80026 303-664-0394 WWW.CTD-MATERIALS.COM	20
19		LUBRICANT	JL-G GRAPHITE	SUPERBOLT, INC CARNEGIE, PA 15106 412-279-1149 WWW.SUPERBOLT.COM	19
18		MALE SPHERICAL WASHER			18
17		FEMALE SPHERICAL WASHER			17
16		1-3/8" -6 UNC HEX NUT	UNS S66286 (A286) OR UNS S20910 (NITRONIC 50) DEPENDING ON COST/AVAIL	ASTM A453 GRADE 660B OR ASTM A276	16
15		1-3/8" -6 SUPER NUT	S-02200	SUPERBOLT, INC CARNEGIE, PA 15106 412-279-1149 WWW.SUPERBOLT.COM	15
14		SHIM PLATE ASSY			14
13		BUSHING			13
12		FLAT WASHER			12
11		FLAT WASHER			11
10		INSULATING SLEEVE			10
9		INSULATING WASHER			9
8		1-3/8" X 5.75LG STUD			8
7		1-3/8" X 8.50LG STUD			7
6		1-3/8" X 5.60LG STUD			6
5		1-3/8" X 8.00LG STUD			5
4		MCWF FLANGE TAPPED STUD KIT			4
3		MCWF FLANGE THRU STUD KIT			3
2		MCWF FLANGE TAPPED STUD KIT			2
1		MCWF FLANGE THRU STUD KIT			1

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
4	NOTE 9 AND SPEC IN NOTE 6. PER ECN # 5332	GM	05/08	MC		05/08						
4	THREAD ENGAGEMENT NOTE FOR ALL NUTS. ADDED											
4	JL-G GRAPHITE WAS MOLYBDATE POWDER. ADDED											
4	IDENTIFYING NOS -16, -19, -20, -21, F/N 19.											
4	F/N 14; SE140-041 WAS SE140-040-1; CORRECTED											
3	AND ADDITIONAL VIEWS. PER ECN # 5287	GM	10/07	MC		10/07						
3	ADDED F/N 3, 4, AND 7, 8. ADDED SHEET 3											
2	METHODS ON SHEET 2. ECN# 5244.	GM	07/07	MC	DW	07/07						
2	GRINDING NOTE AND ADDITIONAL INSULATING											
2	ADDED OPTIONAL THRU BOLT CONFIGURATION.											
2	ADHESIVE, F/N 16, AND INS SHEET, F/N 17.											
2	SUPERNUT, F/N 11, WASHER, F/N 8, SLEEVE, F/N 6.											
2	DELETED 12 PT NUT & SHIM BUSHING. ADDED											
1	REVISED MATL AND NOTES PER ECN-5232	DW	3/07	MC								
0	ORIGINAL ISSUE	GM	02/07									

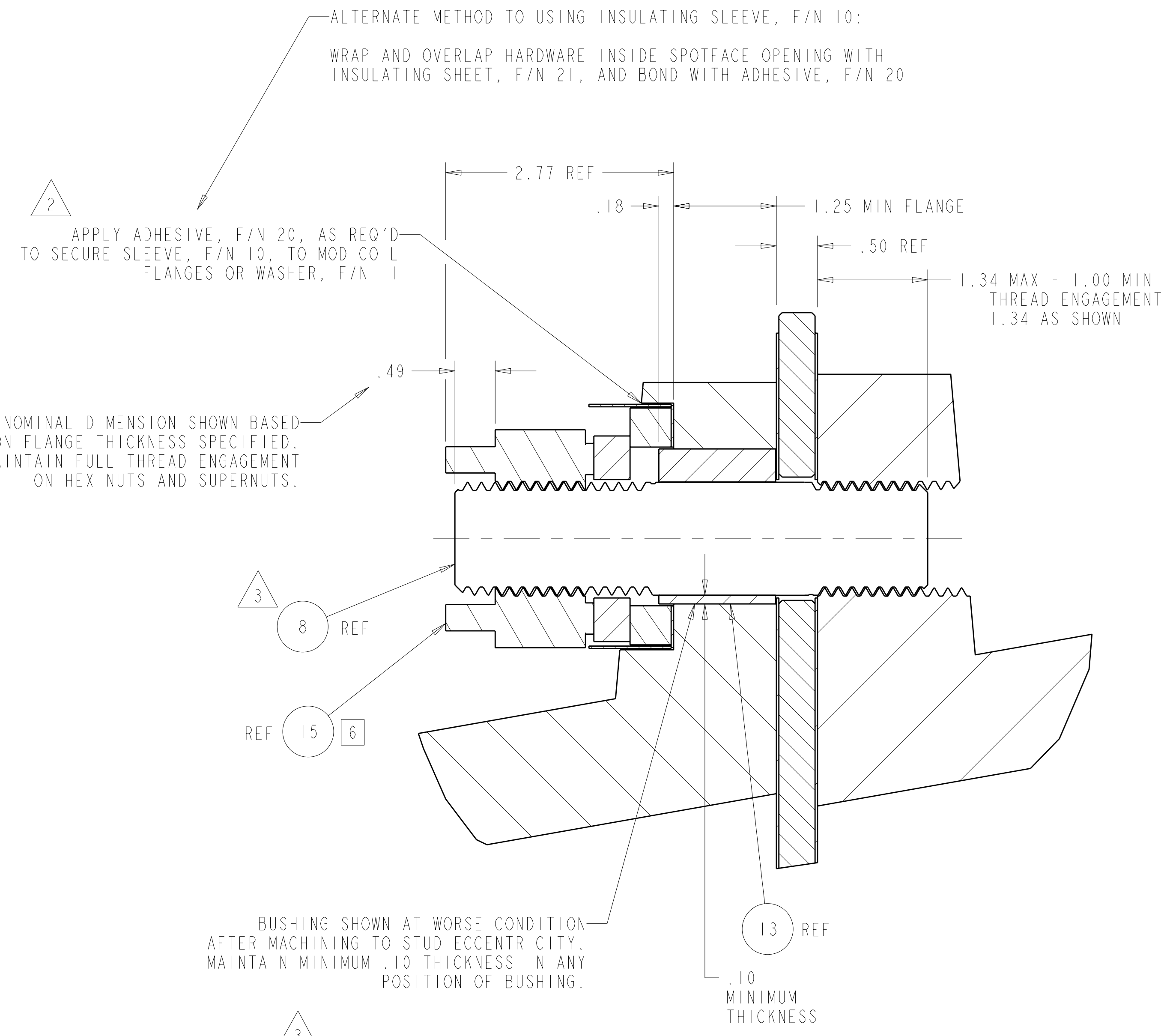
SCALE NOTED				DES: D WILLIAMSON 02/07	Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee					
TOLERANCES UNLESS OTHERWISE SPECIFIED				DRW: G MCGINNIS 02/07	UT-BATTELLE					
FRACTIONS ±.01				CHK: M COLE 02/07	PROJECT NAME: NATIONAL COMPACT STELLARATOR EXPERIMENT					
XX DECIMALS ±.005				SECT: :	MCWF FLANGE STUD KITS					
XXX DECIMALS ±.0015				DEPT: :						
ANGLES ±0°15'				CR: :						
BREAK SHARP EDGES OR MAX				REQ: :						
FINISH: .125 UNLESS OTHERWISE SPECIFIED				REV: :						
PPPL DRFT J SIEGEL 02/07				VERSION NO. 6	PLANT ORNL	BLDG 5700	FL 3	SHT OF 3	TYPE A	CLASS U
DRAWING APPROVALS DATE				RELEASE LEVEL Fabrication	SE140-190					
				REV 4						

P THIS DRAWING PRODUCED ON PRO-ENGINEER

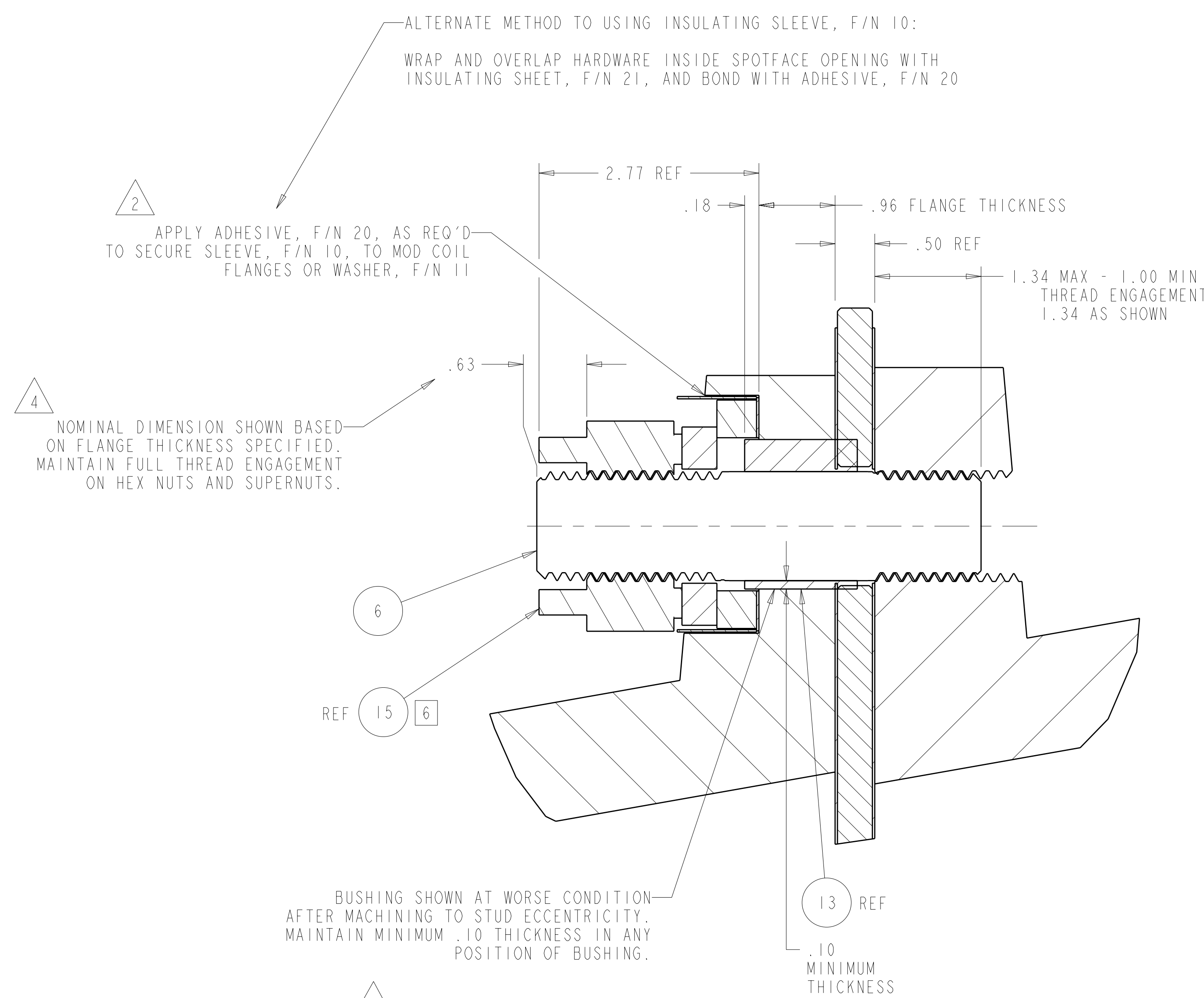
NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, IS MADE AS TO THE ACCURACY, COMPLETENESS OR USEFULNESS OF THE INFORMATION OR STATEMENTS CONTAINED IN THESE DRAWINGS, OR THAT THE USE OR DISCLOSURE OF ANY INFORMATION, APPARATUS, METHOD OR PROCESS DISCLOSED IN THESE DRAWINGS MAY NOT INFRINGE PRIVATE RIGHTS OF OTHERS. NO LIABILITY IS ASSUMED WITH RESPECT TO THE USE OF, OR FOR DAMAGES RESULTING FROM THE USE OF, ANY INFORMATION, APPARATUS, METHOD OR PROCESS DISCLOSED IN THESE DRAWINGS. DRAWINGS MADE AVAILABLE FOR INFORMATION TO BIDDER ARE NOT TO BE USED FOR OTHER PURPOSES, AND ARE TO BE RETURNED UPON REQUEST OF THE FORWARDING CONTRACTOR.



-4 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER -MAXIMUM FLANGE THICKNESS 1.53 SHOWN
SCALE 1.00



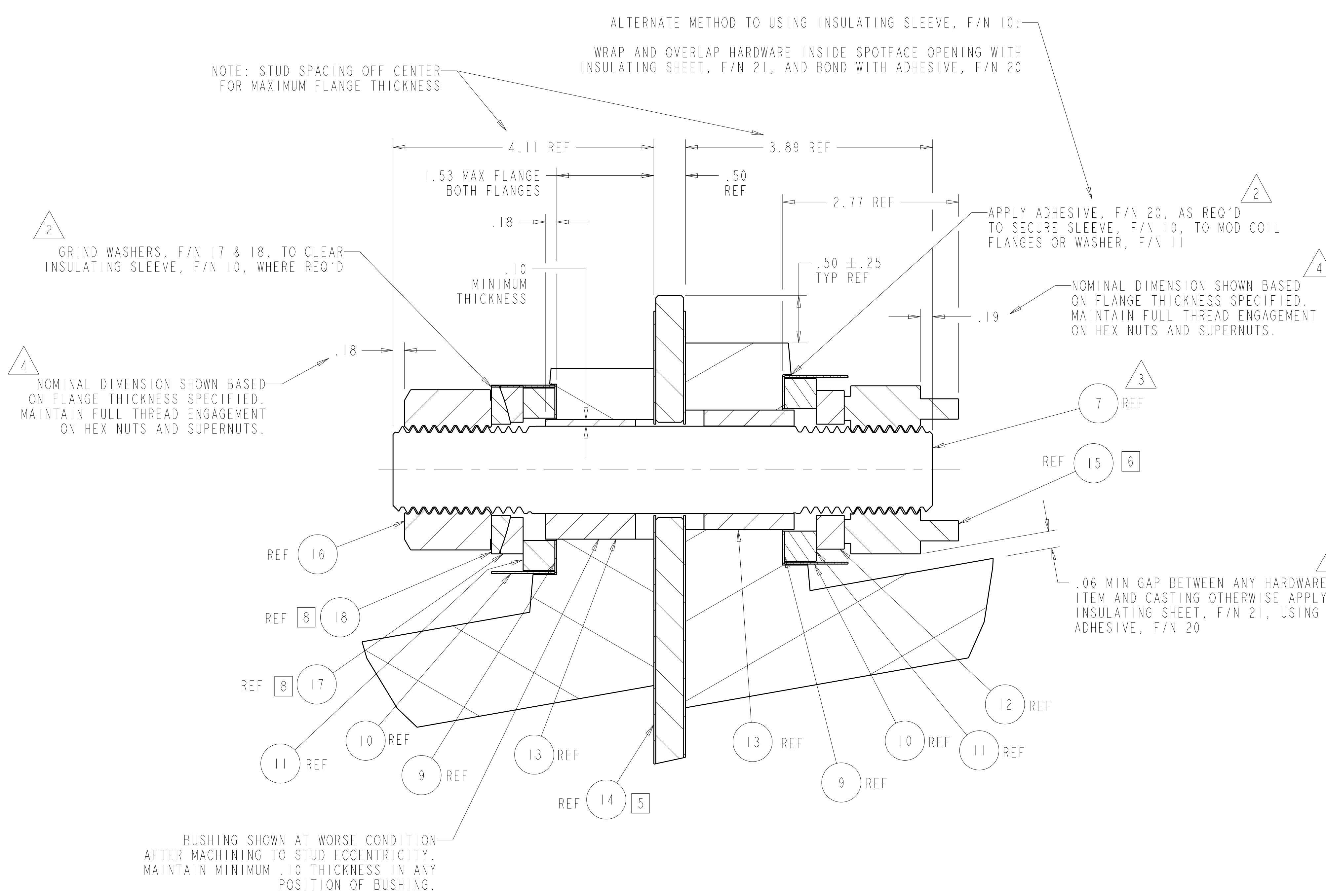
-4 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER -MINIMUM FLANGE THICKNESS 1.25 SHOWN
SCALE 1.00



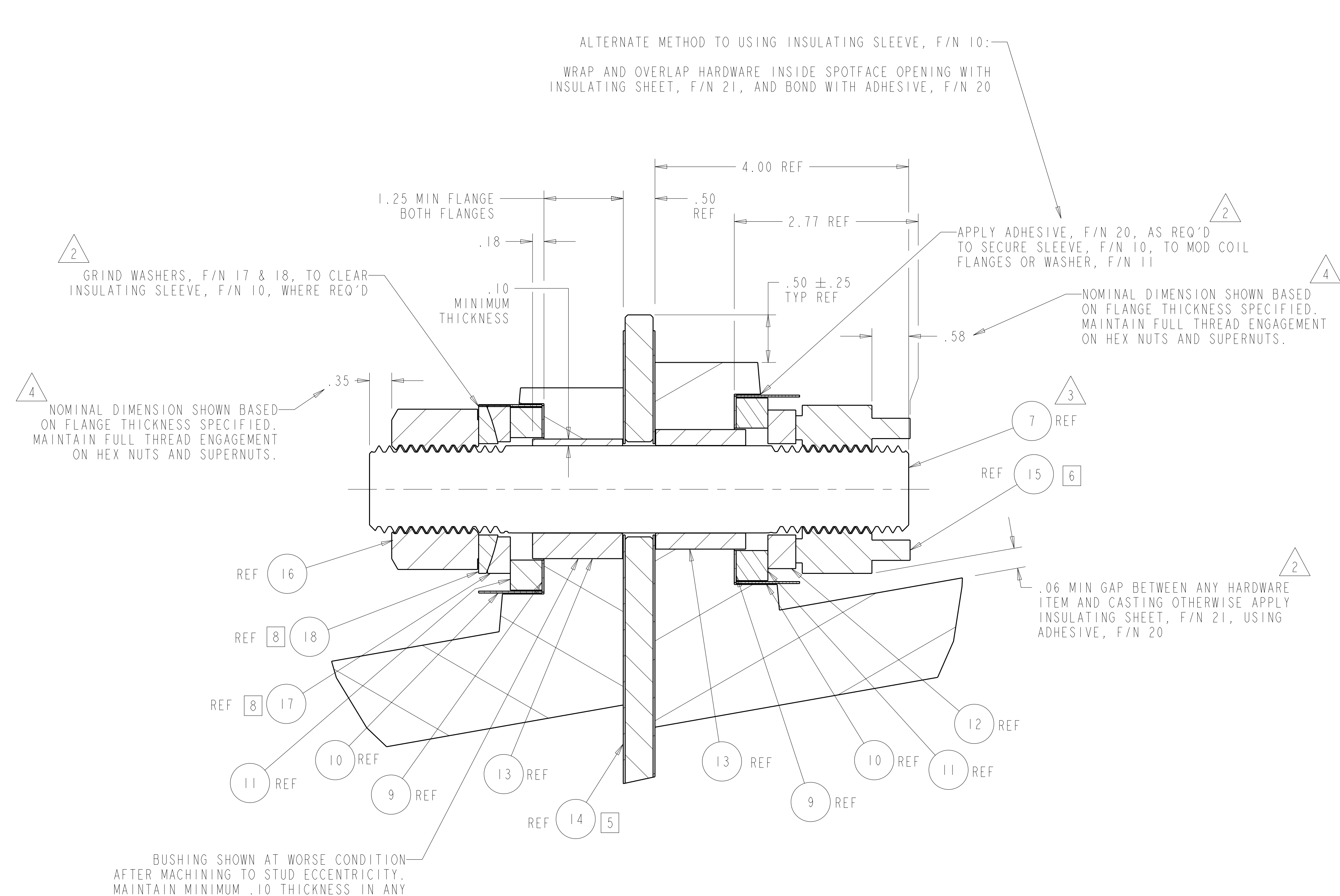
-2 TAPPED BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THINNER -FLANGE THICKNESS .96 SHOWN
SCALE 1.00

RELEASED FOR FABRICATION / INSTALLATION
PPPL Drafting

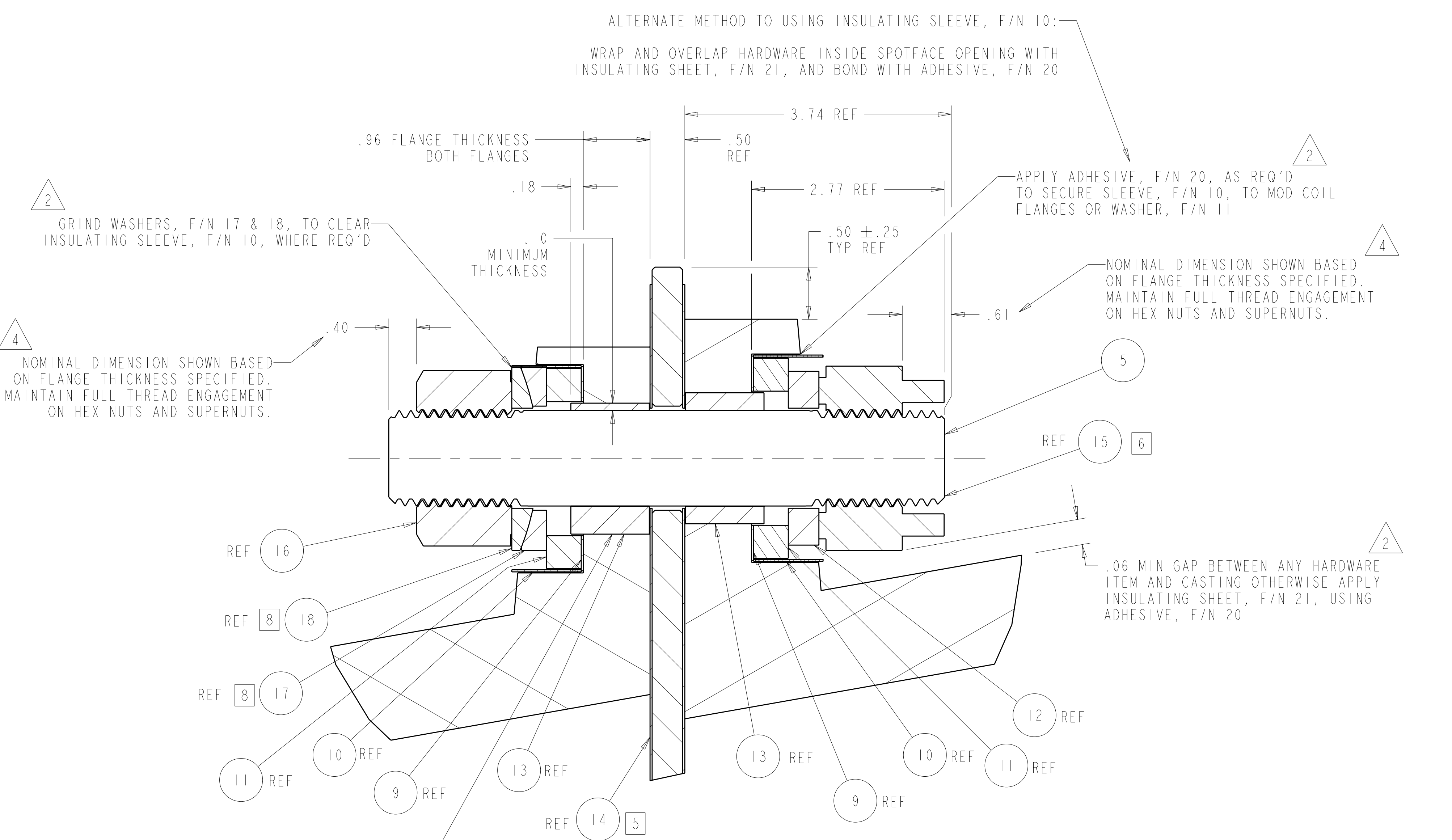
Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee									
PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT									
MCWF FLANGE STUD KITS									
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS		
6	ORNL	5700	3	2	3	A	U		
RELEASE LEVEL		SE140-190					REV		4
Fabrication									



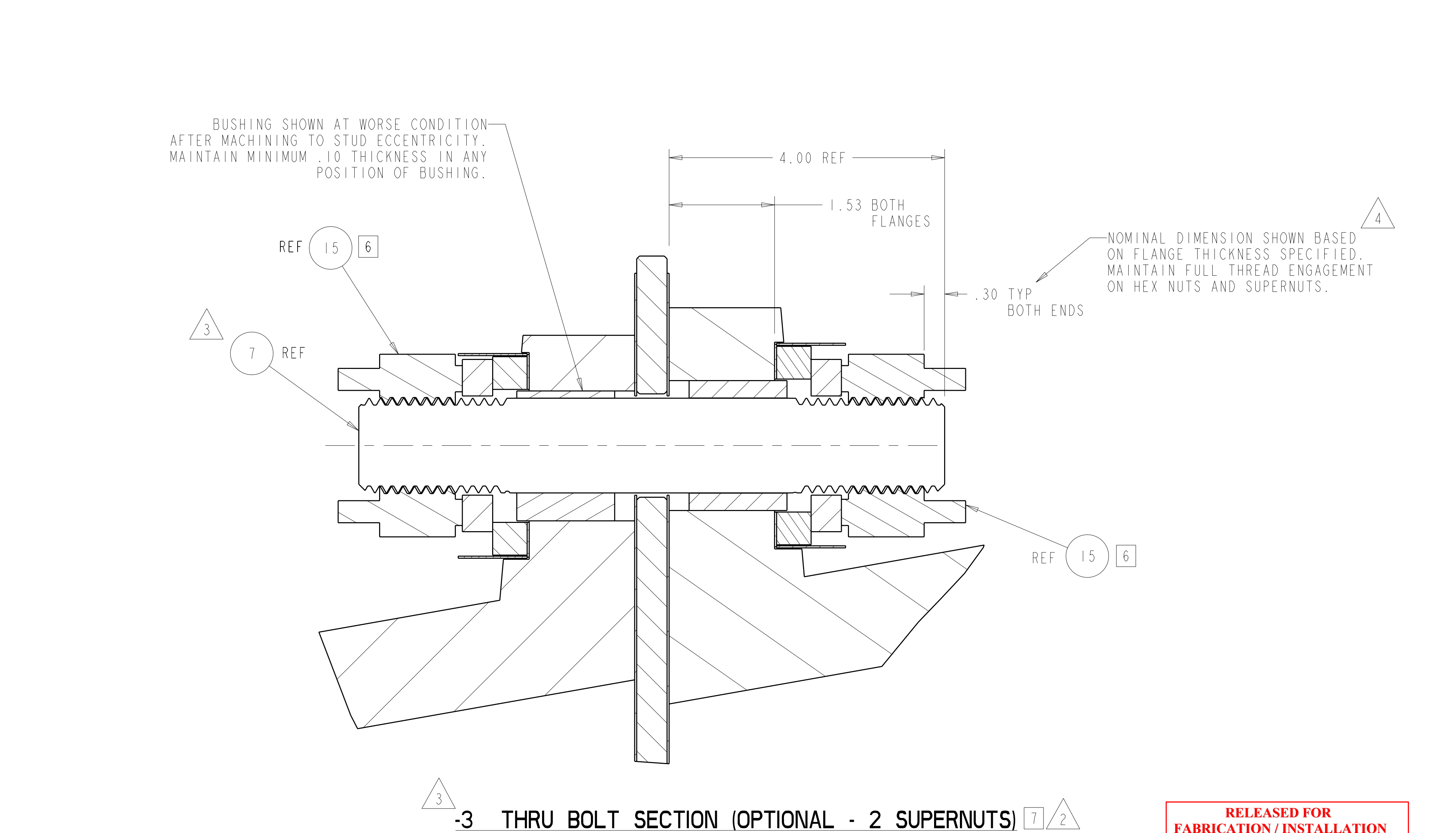
-3 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER -MAXIMUM FLANGE THICKNESS 1.53 SHOWN
SCALE 1.00



-3 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THICKER -MINIMUM FLANGE THICKNESS 1.25 SHOWN
SCALE 1.00



-1 THRU BOLT SECTION - FOR FLANGE THICKNESS 1.25 AND THINNER -FLANGE THICKNESS .96 SHOWN
SCALE 1.00



-3 THRU BOLT SECTION (OPTIONAL - 2 SUPERNUTS) SHOWN AT MAXIMUM FLANGE THICKNESS
SCALE 1.00

RELEASED FOR FABRICATION / INSTALLATION
PPPL Drafting

Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee									
PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT									
TITLE MCWF FLANGE STUD KITS									
VERSION NO. 6	PLANT ORNL	BLDG 5700	FL 3	SHT OF 3	TYPE A	CLASS U	REV 4		
RELEASE LEVEL Fabrication		SE140-190							

01-190-131