

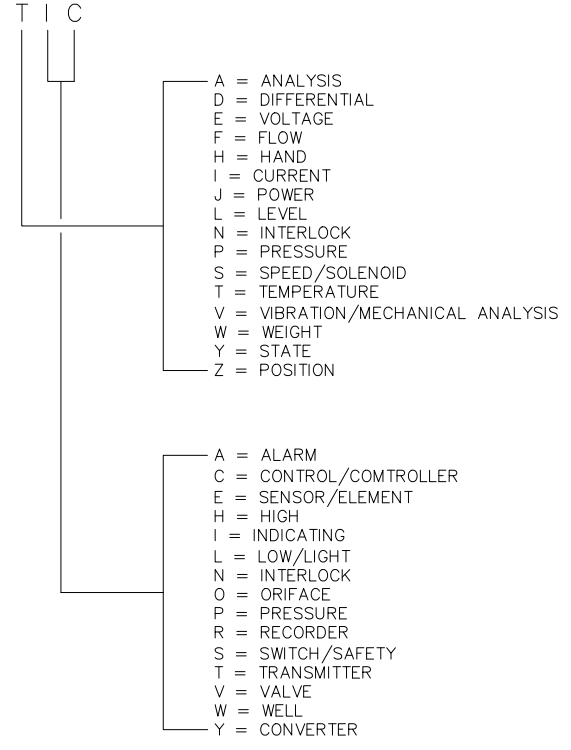
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REVISIONS				
REV.	ECN	REVISION DESCRIPTION:	BY:	DATE:
13		AS BUILT FOR ORIGINAL CMS ORS INSTALLED IN SERIES UPSTREAM OF NEW ORS	CMC	2-20-19

GRAPHICAL SYMBOLS

- BALL VALVE
- MANUAL VALVE
- VALVE (NORMALLY CLOSED)
- BUTTERFLY VALVE
- NEEDLE VALVE
- 3-WAY VALVE
- WATER PURGE VALVE
- CONTROL (BALL) VALVE W/DIAPHRAGM ACTUATOR
- CONTROL VALVE W/DIAPHRAGM ACTUATOR
- CONTROL BUTTERFLY VALVE
- CHECK VALVE
- PRESSURE REGULATOR (SELF CONTAINED)
- BACK PRESSURE REGULATOR (SELF CONTAINED)
- SOLENOID VALVE
- 3-WAY SOLENOID VALVE
- VALVE OPERATOR WITH ATTACHED ELECTRO-PNEUMATIC CONVERTER
- PRESSURE RELIEF VALVE
- STRAINER
- FLANGE CONNECTION
- CAP
- REDUCER
- FLOW RESTRICTION ORIFICE
- FILTER
- FLOW OR SIGHT GLASS
- VARIABLE AREA FLOW METER
- RUPTURE DISC
- CONE FILTER
- INTERLOCK
- CONVERTER CURRENT TO PNEUMATIC
- PILOT LIGHT
- DUAL TEMPERATURE ELEMENT WITH THERMOWELL
- SURFACE MOUNTED TEMPERATURE ELEMENT
- ELECTRICAL SIGNAL
- INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)
- INSTRUMENT AIR

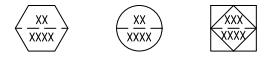
INSTRUMENT AND VALVE LETTER IDENTIFICATION



GENERAL INSTRUMENT OR FUNCTION SYMBOLS

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR
DISCRETE INSTRUMENTS			
SHARED DISPLAY, SHARED CONTROL			
COMPUTER FUNCTION			
PROGRAMMABLE LOGIC CONTROLLER			

NORMALLY INACCESSIBLE OR BEHIND PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOLS BUT WITH DASHED HORIZONTAL LINE, I.E.



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN:

TOLERANCES:

DECIMALS: .1 ANGLES: 30°

FRACTIONS: 1/16, 1/8, 3/16, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8

SURFACE FINISH: 125

REMOVE ALL BURRS AND BREAK SHARP EDGES: 0.5

SURFACE TEXTURE TO BE IN ACCORDANCE WITH LATEST ANSI B46.1

INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL

DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994

THIRD ANGLE PROJECTION

DESIGNED: M. CAMPBELL DATE: 4-21-17

DRAWN: M. CAMPBELL DATE: 4-21-17

CHECKED: DATE:

LEVEL 3: DATE:

LEVEL 2: DATE:

LEVEL 1: DATE:

QA APPROVED: DATE:

VACUUM: DATE:

QA LEVEL: 3 CHANGE PROCEDURE NO: 3

SMS PROCEDURE: ORNL / SNS

ORIGINATING FACILITY AND DOCUMENT NUMBER

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SPALLATION NEUTRON SOURCE

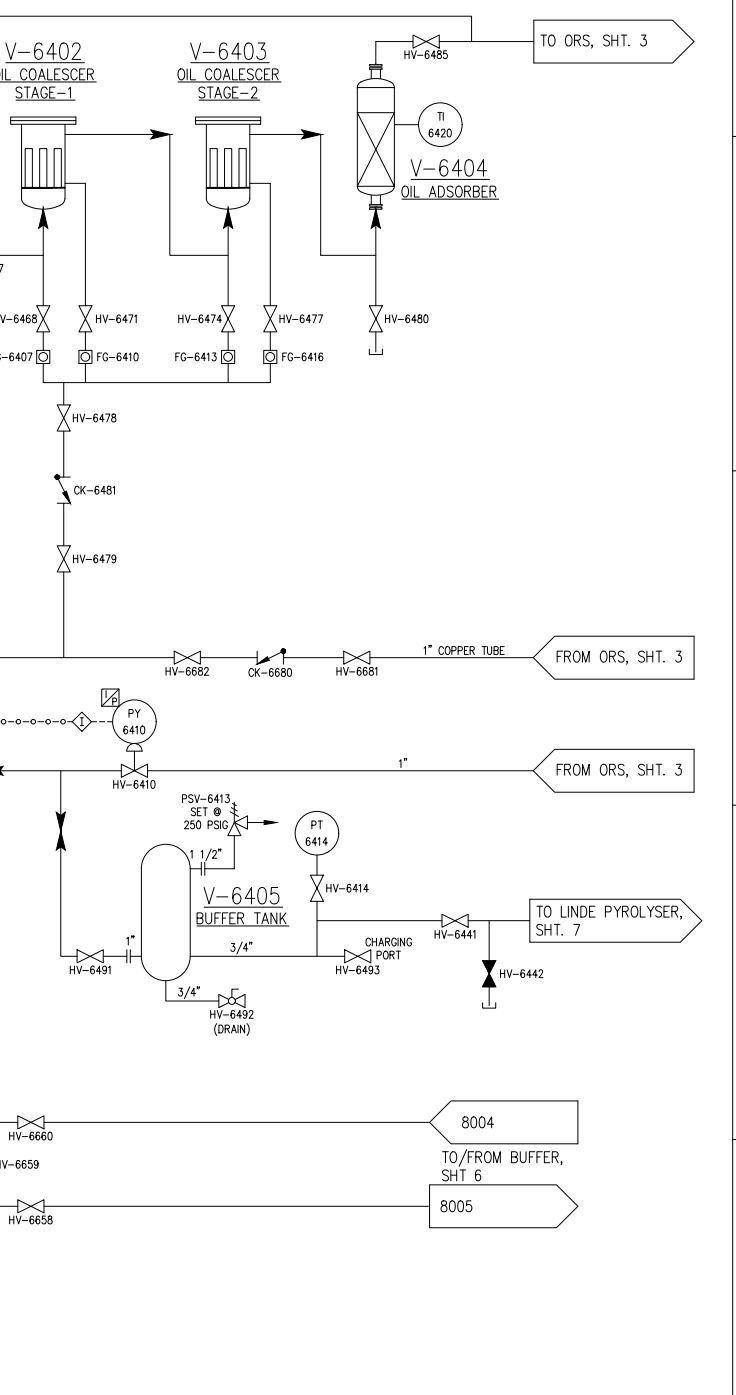
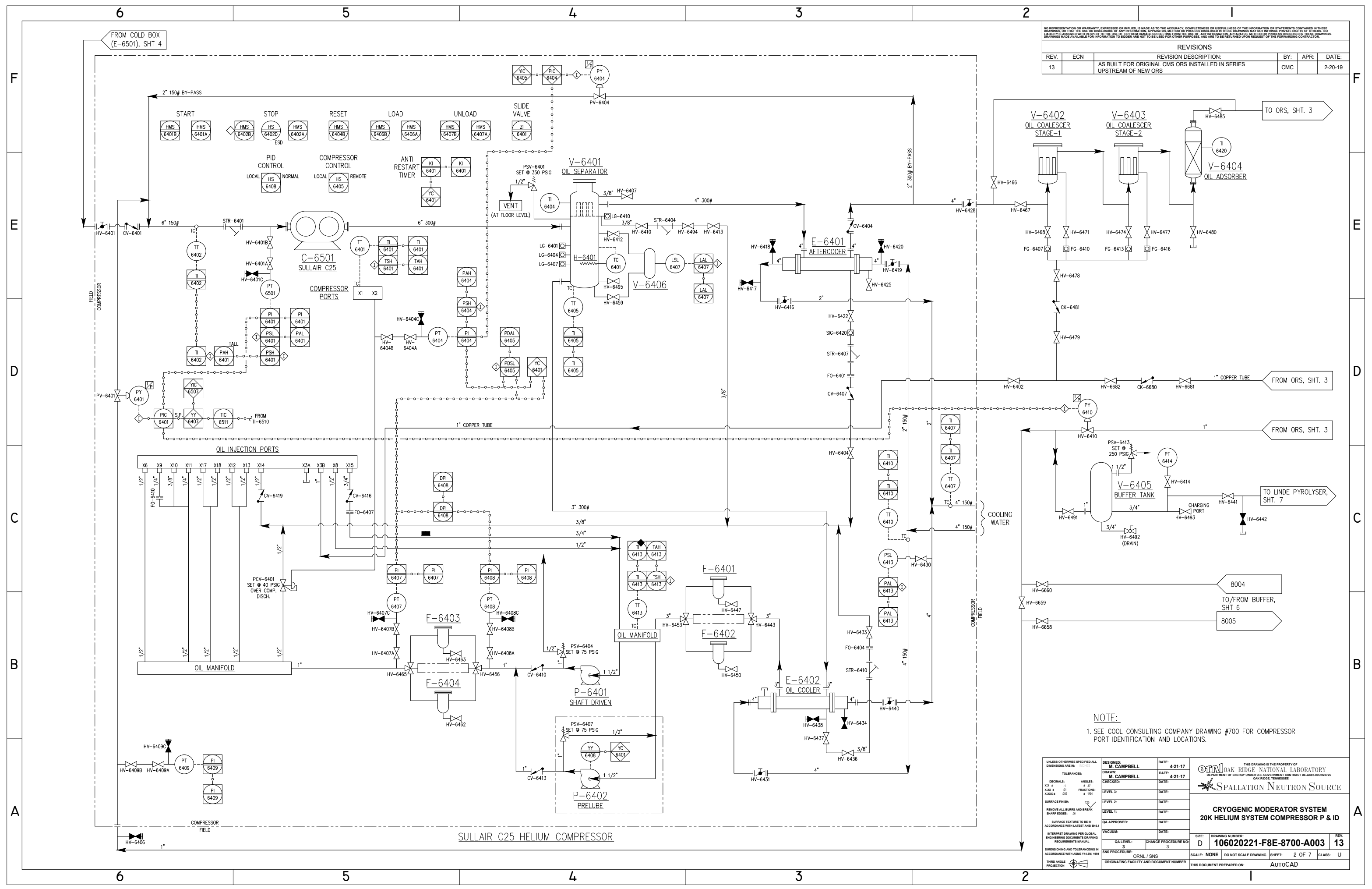
CRYOGENIC MODERATOR SYSTEM 20K HELIUM SYSTEM P & ID LEGEND

SIZE: D DRAWING NUMBER: 106020221-F8E-8700-A003 REV: 13

SCALE: NONE DO NOT SCALE DRAWING SHEET: 1 OF 7 CLASS: U

THIS DOCUMENT PREPARED ON: AUTOCAD

REVISIONS				
REV.	ECN	REVISION DESCRIPTION:	BY:	DATE:
13		AS BUILT FOR ORIGINAL CMS ORS INSTALLED IN SERIES UPSTREAM OF NEW ORS	CMC	2-20-19



NOTE:
1. SEE COOL CONSULTING COMPANY DRAWING #700 FOR COMPRESSOR PORT IDENTIFICATION AND LOCATIONS.

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN:	DESIGNED BY: M. CAMPBELL	DATE: 4-21-17
TOLERANCES:	DRAWN BY: M. CAMPBELL	DATE: 4-21-17
DECIMALS: .1	CHECKED BY:	DATE:
ANGLES: 1/2	LEVEL 3:	DATE:
FRACTIONS: 1/16	LEVEL 2:	DATE:
XXX.X .005	LEVEL 1:	DATE:
SURFACE FINISH: (1) 125	QA APPROVED:	DATE:
(2) REMOVE ALL BURRS AND BREAK SHARP EDGES: (3)	VACUUM:	DATE:
SURFACE TEXTURE TO BE IN ACCORDANCE WITH LATEST ANSI B46.1	QA LEVEL: 3	CHANGE PROCEDURE NO: 3
INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL:	SMS PROCEDURE: ORNL / SNS	ORIGINATING FACILITY AND DOCUMENT NUMBER:
DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994	THIRD ANGLE PROJECTION	

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**CRYOGENIC MODERATOR SYSTEM
 20K HELIUM SYSTEM COMPRESSOR P & ID**

DRAWING NUMBER: **106020221-F8E-8700-A003** REV: **13**

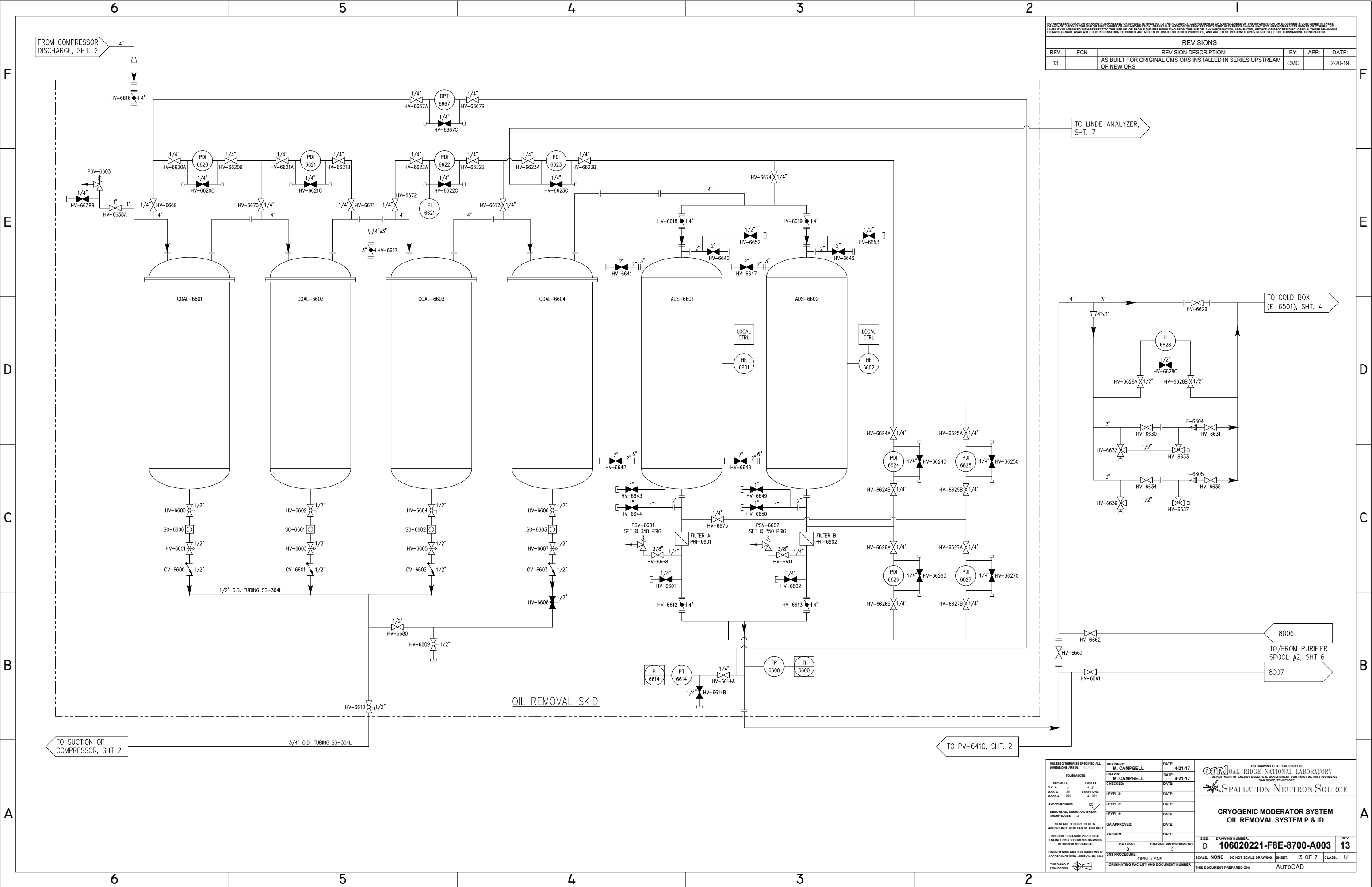
SCALE: NONE DO NOT SCALE DRAWING SHEET: 2 OF 7 CLASS: U

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SULLAIR C25 HELIUM COMPRESSOR

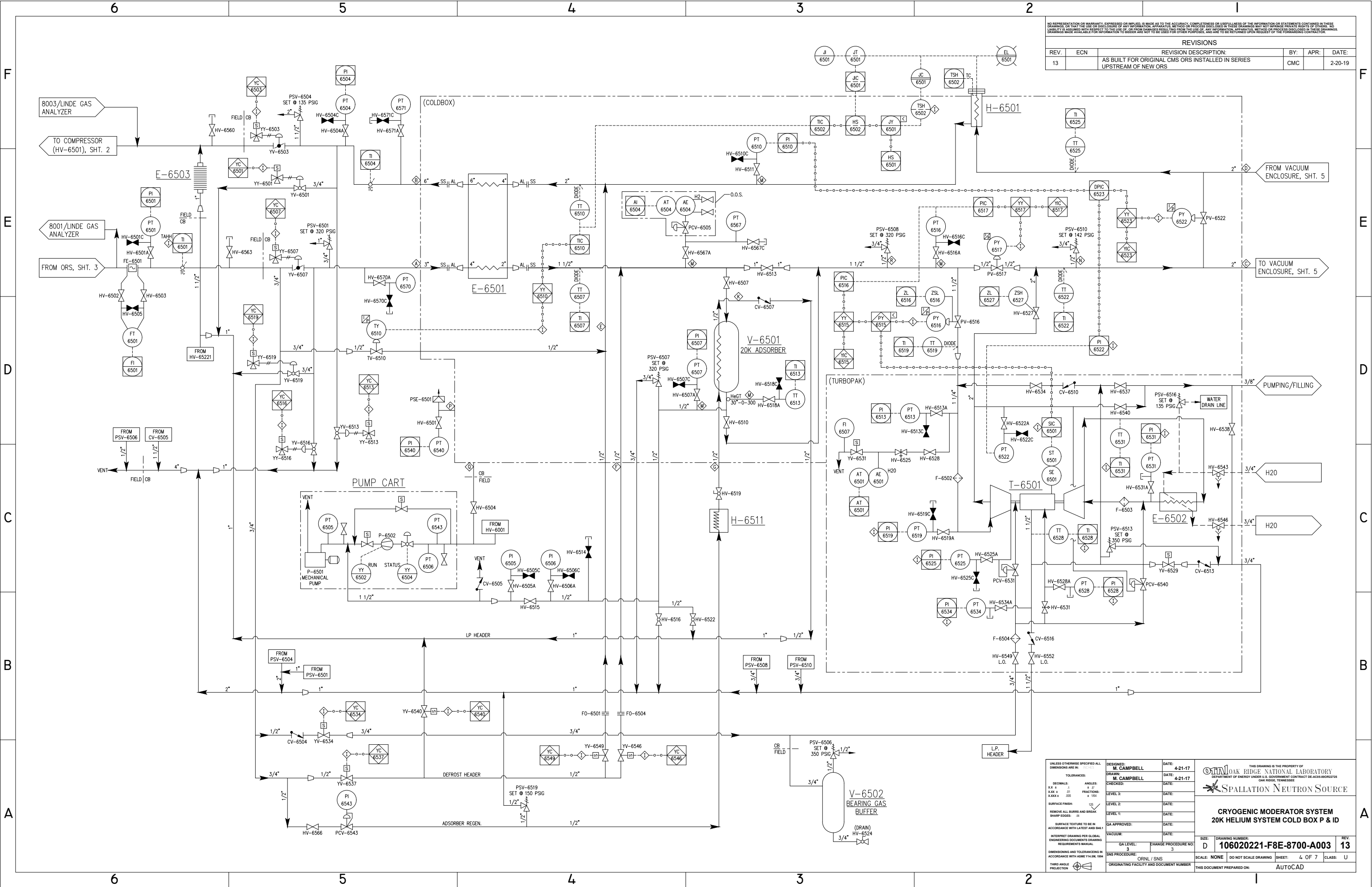
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TOLERANCES:	DRAWN: M. CAMPBELL	DATE: 4-21-17	
DECIMALS: .1	CHECKED:	DATE:	CRYOGENIC MODERATOR SYSTEM OIL REMOVAL SYSTEM P & ID
ANGLES: 30°	LEVEL 3:	DATE:	
FRACTIONS: 1/16	LEVEL 2:	DATE:	
1/32	LEVEL 1:	DATE:	
REMOVE ALL BURRS AND BREAK SHARP EDGES:	QA APPROVED:	DATE:	SIZE: D DRAWING NUMBER: 106020221-F8E-8700-A003 SCALE: NONE DO NOT SCALE DRAWING SHEET: 3 OF 7 CLASS: U
SURFACE FINISH: 125	VACUUM:	DATE:	ORNL / SNS ORIGINATING FACILITY AND DOCUMENT NUMBER THIS DOCUMENT PREPARED ON: AUTOCAD
SURFACE TEXTURE TO BE IN ACCORDANCE WITH LATEST ANSI B46.1	QA LEVEL: 3	CHANGE PROCEDURE NO: 3	REV: 13
INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL:	SMS PROCEDURE:	ORNL / SNS	
DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994	THIRD ANGLE PROJECTION		

REVISIONS				
REV.	ECN	REVISION DESCRIPTION:	BY:	DATE:
13		AS BUILT FOR ORIGINAL CMS ORS INSTALLED IN SERIES UPSTREAM OF NEW ORS	CMC	2-20-19



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TOLERANCES:	M. CAMPBELL	4-21-17
DECIMALS: .01	DRAWN BY:	DATE:
ANGLES: 30°	M. CAMPBELL	4-21-17
FRACTIONS: 1/16	CHECKED BY:	DATE:
XXX.X .005		
SURFACE FINISH:	LEVEL 3:	DATE:
REMOVE ALL BURRS AND BREAK SHARP EDGES:	LEVEL 2:	DATE:
INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL:	LEVEL 1:	DATE:
DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994	QA APPROVED:	DATE:
THIRD ANGLE PROJECTION	DATE:	
	QA LEVEL:	CHANGE PROCEDURE NO:
	3	3
	SMS PROCEDURE:	ORNL / SNS
	ORIGINATING FACILITY AND DOCUMENT NUMBER	

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 OAK RIDGE, TENNESSEE

SPALLATION NEUTRON SOURCE

**CRYOGENIC MODERATOR SYSTEM
 20K HELIUM SYSTEM COLD BOX P & ID**

SIZE: DRAWING NUMBER: REV:
 D 106020221-F8E-8700-A003 13

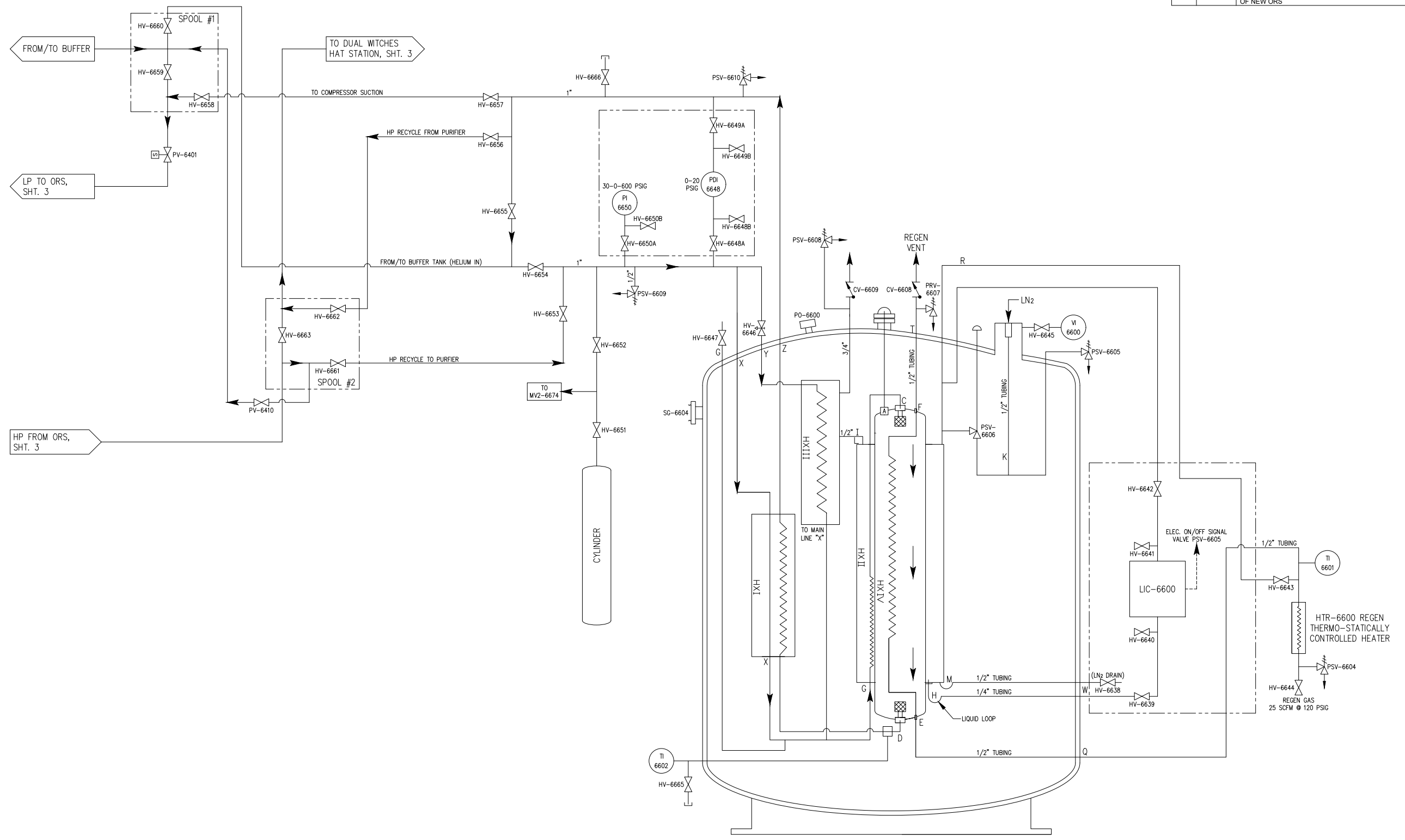
SCALE: NONE DO NOT SCALE DRAWING SHEET: 4 OF 7 CLASS: U

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13		AS BUILT FOR ORIGINAL CMS ORS INSTALLED IN SERIES UPSTREAM OF NEW ORS	CMC		2-20-19



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TOLERANCES:	M. CAMPBELL	4-21-17
DECIMALS:	M. CAMPBELL	4-21-17
ANGLES:		
XX.X # 1		
XXX.X # 01		
XXXX.X # 005		
SURFACE FINISH:	LEVEL 3:	DATE:
REMOVE ALL BURRS AND BREAK SHARP EDGES:	LEVEL 2:	DATE:
	LEVEL 1:	DATE:
SURFACE TEXTURE TO BE IN ACCORDANCE WITH LATEST ANSI B46.1:	QA APPROVED:	DATE:
INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL:	VACUUM:	DATE:
DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994:	QA LEVEL:	CHANGE PROCEDURE NO:
THIRD ANGLE PROJECTION:	SMS PROCEDURE:	ORNL / SNS
	ORIGINATING FACILITY AND DOCUMENT NUMBER:	

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SPALLATION NEUTRON SOURCE

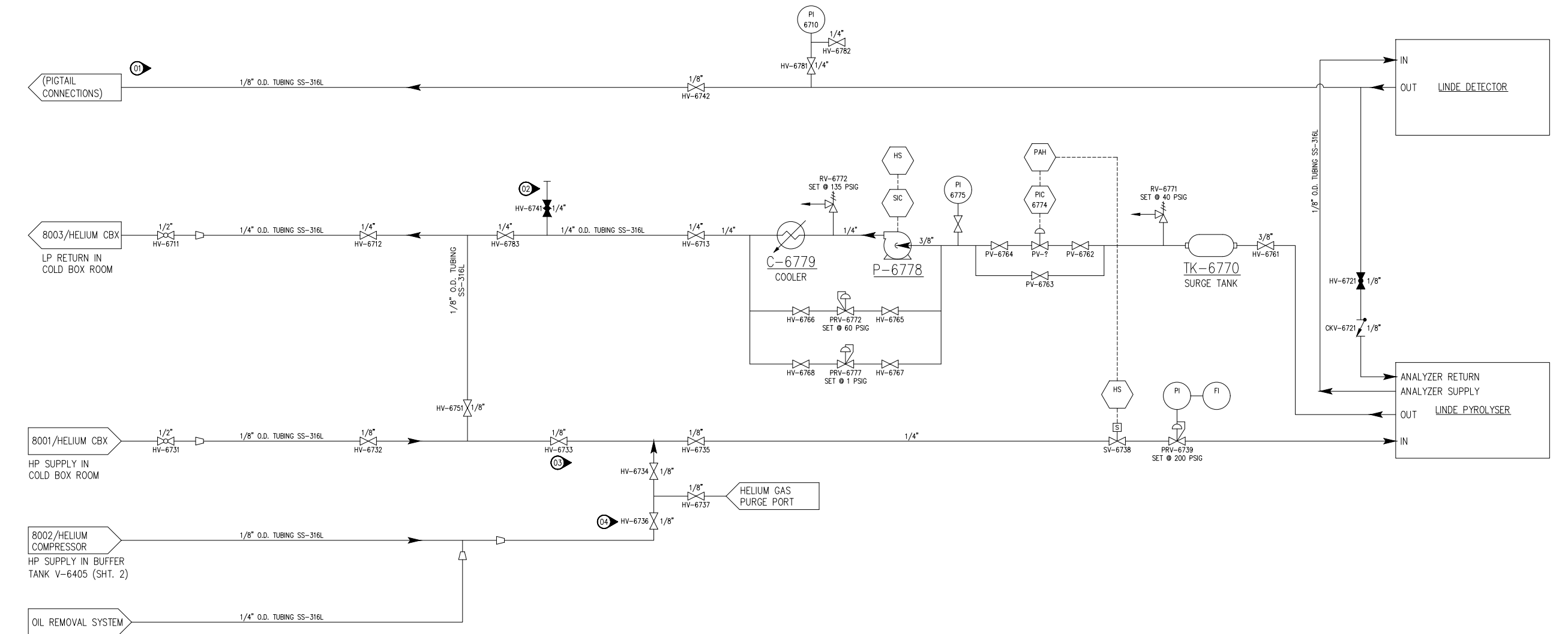
**CRYOGENIC MODERATOR SYSTEM
 20K HELIUM SYSTEM
 MODEL 60-360:HELIUM PURIFIER P & ID**

SIZE:	DRAWING NUMBER:	REV.
D	106020221-F8E-8700-A003	13
SCALE:	DO NOT SCALE DRAWING	SHEET: 6 OF 7
CLASS:		U

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- NOTES:**
1. VENT TUBES MUST BE COILED VERTICAL LOOPS, IN 6 INCH DIAMETER (5 TIMES) TO PREVENT BACK STREAM.
 2. CONNECTION FOR VACUUM PUMP, KF-25 FLANGE AT END WITH BLANK, WHEN NOT USING.
 3. TWO VALVES HAVE TO BE LESS THAN 50 MM APART.
 4. HV6732 AND HV6736 SHALL NOT BE OPEN AT THE SAME TIME DURING MEASUREMENT. ONE SHALL BE LOCKED CLOSED WHEN THE OTHER ONE IS OPEN.

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TOLERANCES:	DRAWN BY: M. CAMPBELL	DATE: 4-21-17	
DECIMALS: 1	CHECKED BY:	DATE:	CRYOGENIC MODERATOR SYSTEM 20K REFRIGERATION SYSTEM LINDE ANALYZER P & ID
ANGLES: 0	LEVEL 3:	DATE:	
FRACTIONS: 1/16	LEVEL 2:	DATE:	
XXX.X 0.05	LEVEL 1:	DATE:	
SURFACE FINISH: 125	QA APPROVED:	DATE:	DRAWING NUMBER: 106020221-F8E-8700-A003 REV: 13
REMOVE ALL BURRS AND BREAK SHARP EDGES: 0	SMS PROCEDURE: ORNL / SNS	DATE:	
SURFACE TEXTURE TO BE IN ACCORDANCE WITH LATEST ANSI B46.1	ORIGINATING FACILITY AND DOCUMENT NUMBER	DATE:	SCALE: NONE DO NOT SCALE DRAWING SHEET: 7 OF 7 CLASS: U
INTERPRET DRAWING PER GLOBAL ENGINEERING DOCUMENTS DRAWING REQUIREMENTS MANUAL:			THIS DOCUMENT PREPARED ON: AUTOCAD
DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994			
THIRD ANGLE PROJECTION			