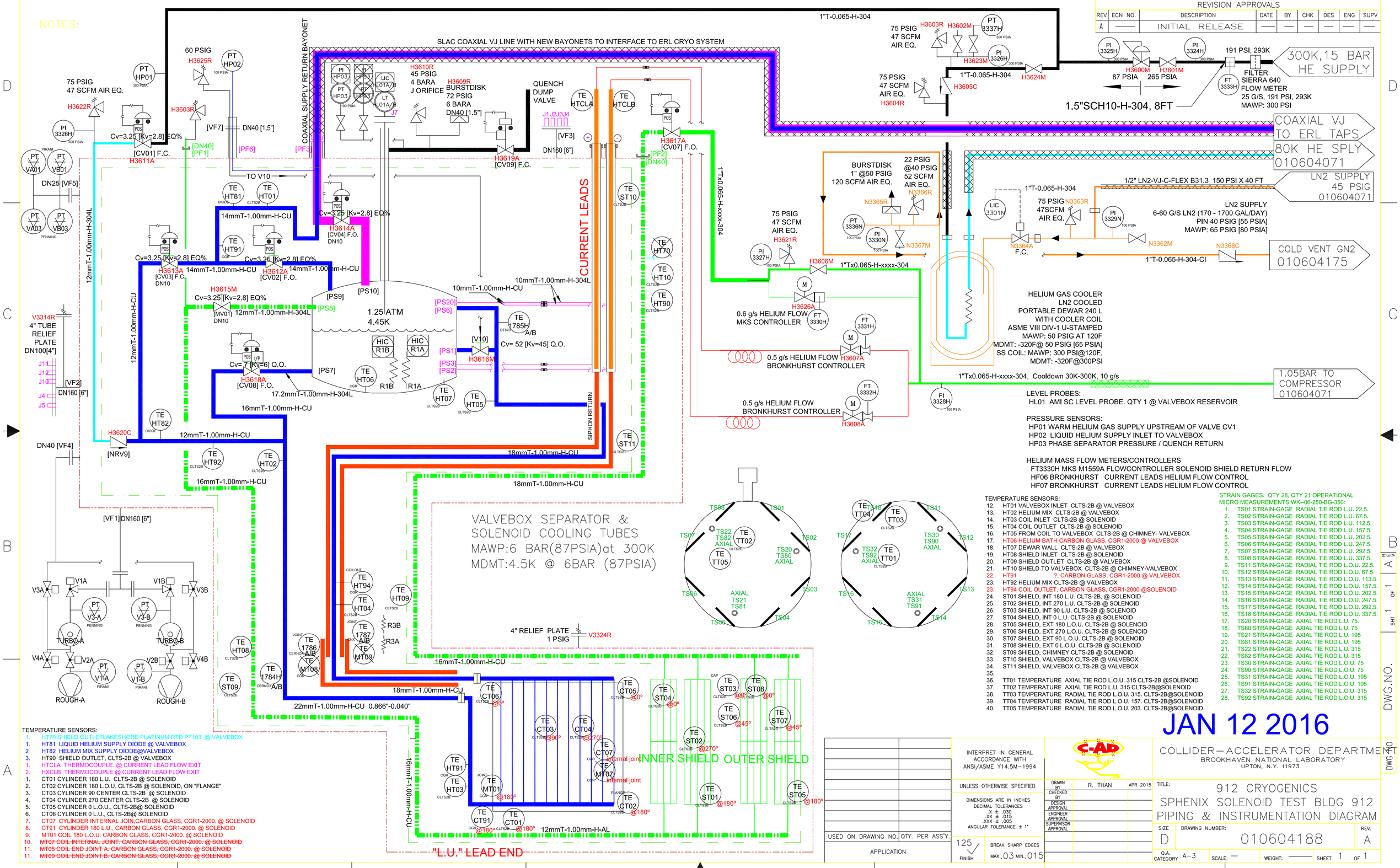
NOTES:

REVISION APPROVALS								
REV	ECN NO.	DESCRIPTION	DATE	BY	CHK	DES	ENG	SUPV
A	—	INITIAL RELEASE	—	—	—	—	—	—



LEVEL PROBES:
HL01 AMI SC LEVEL PROBE. QTY 1 @ VALVEBOX RESERVOIR

PRESSURE SENSORS:
HP01 WARM HELIUM GAS SUPPLY UPSTREAM OF VALVE CV1
HP02 LIQUID HELIUM SUPPLY INLET TO VALVEBOX
HP03 PHASE SEPARATOR PRESSURE / QUENCH RETURN

HELIUM MASS FLOW METERS/CONTROLLERS
FT3330H MKS M1559A FLOWCONTROLLER SOLENOID SHIELD RETURN FLOW
HF06 BRONKHURST CURRENT LEADS HELIUM FLOW CONTROL
HF07 BRONKHURST CURRENT LEADS HELIUM FLOW CONTROL

TEMPERATURE SENSORS:
12. HT01 VALVEBOX INLET CLTS-2B @ VALVEBOX
13. HT02 HELIUM MIX CLTS-2B @ VALVEBOX
14. HT03 COIL INLET CLTS-2B @ SOLENOID
15. HT04 COIL OUTLET CLTS-2B @ SOLENOID
16. HT05 FROM COIL TO VALVEBOX CLTS-2B @ CHIMNEY- VALVEBOX
17. HT06 HELIUM BATH CARBON GLASS, CGR1-2000 @ VALVEBOX
18. HT07 DEWAR WALL CLTS-2B @ VALVEBOX
19. HT08 SHIELD INLET CLTS-2B @ SOLENOID
20. HT09 SHIELD OUTLET CLTS-2B @ VALVEBOX
21. HT10 SHIELD TO VALVEBOX CLTS-2B @ CHIMNEY-VALVEBOX
22. HT91 ?, CARBON GLASS, CGR1-2000 @ VALVEBOX
23. HT92 HELIUM MIX CLTS-2B @ VALVEBOX
24. HT94 COIL OUTLET, CARBON GLASS, CGR1-2000 @SOLENOID
25. ST01 SHIELD, INT 180 L.U. CLTS-2B, @ SOLENOID
26. ST02 SHIELD, INT 270 L.U. CLTS-2B @ SOLENOID
27. ST03 SHIELD, INT 90 L.U. CLTS-2B @ SOLENOID
28. ST04 SHIELD, INT 0 L.U. CLTS-2B @ SOLENOID
29. ST05 SHIELD, EXT 180 L.O.U. CLTS-2B @ SOLENOID
30. ST06 SHIELD, EXT 270 L.O.U. CLTS-2B @ SOLENOID
31. ST07 SHIELD, EXT 90 L.O.U. CLTS-2B @ SOLENOID
32. ST08 SHIELD, EXT 0 L.O.U. CLTS-2B @ SOLENOID
33. ST09 SHIELD, CHIMNEY CLTS-2B @ SOLENOID
34. ST10 SHIELD, VALVEBOX CLTS-2B @ VALVEBOX
35. ST11 SHIELD, VALVEBOX CLTS-2B @ VALVEBOX
36. TT01 TEMPERATURE AXIAL TIE ROD L.O.U. 315 CLTS-2B @SOLENOID
37. TT02 TEMPERATURE AXIAL TIE ROD L.U. 315 CLTS-2B@SOLENOID
38. TT03 TEMPERATURE RADIAL TIE ROD L.O.U. 315. CLTS-2B@SOLENOID
39. TT04 TEMPERATURE RADIAL TIE ROD L.O.U. 157. CLTS-2B@SOLENOID
40. TT05 TEMPERATURE RADIAL TIE ROD L.O.U. 203. CLTS-2B@SOLENOID

STRAIN GAGES. QTY 28, QTY 21 OPERATIONAL
MICRO MEASUREMENTS WK--06-250-BG-350:
1. TS01 STRAIN-GAGE RADIAL TIE ROD L.U. 22.5.
2. TS02 STRAIN-GAGE RADIAL TIE ROD L.U. 67.5.
3. TS03 STRAIN-GAGE RADIAL TIE ROD L.U. 112.5.
4. TS04 STRAIN-GAGE RADIAL TIE ROD L.U. 157.5.
5. TS05 STRAIN-GAGE RADIAL TIE ROD L.U. 202.5.
6. TS06 STRAIN-GAGE RADIAL TIE ROD L.U. 247.5.
7. TS07 STRAIN-GAGE RADIAL TIE ROD L.U. 292.5.
8. TS08 STRAIN-GAGE RADIAL TIE ROD L.U. 337.5.
9. TS11 STRAIN-GAGE RADIAL TIE ROD L.O.U. 22.5.
10. TS12 STRAIN-GAGE RADIAL TIE ROD L.O.U. 67.5.
11. TS13 STRAIN-GAGE RADIAL TIE ROD L.O.U. 113.5.
12. TS14 STRAIN-GAGE RADIAL TIE ROD L.O.U. 157.5.
13. TS15 STRAIN-GAGE RADIAL TIE ROD L.O.U. 202.5.
14. TS16 STRAIN-GAGE RADIAL TIE ROD L.O.U. 247.5.
15. TS17 STRAIN-GAGE RADIAL TIE ROD L.O.U. 292.5.
16. TS18 STRAIN-GAGE RADIAL TIE ROD L.O.U. 337.5.
17. TS20 STRAIN-GAGE AXIAL TIE ROD L.U. 75.
18. TS80 STRAIN-GAGE AXIAL TIE ROD L.U. 75
19. TS21 STRAIN-GAGE AXIAL TIE ROD L.U. 195
20. TS81 STRAIN-GAGE AXIAL TIE ROD L.U. 195
21. TS22 STRAIN-GAGE AXIAL TIE ROD L.U. 315
22. TS82 STRAIN-GAGE AXIAL TIE ROD L.U. 315
23. TS30 STRAIN-GAGE AXIAL TIE ROD L.O.U. 75
24. TS90 STRAIN-GAGE AXIAL TIE ROD L.O.U. 75
25. TS31 STRAIN-GAGE AXIAL TIE ROD L.O.U. 195
26. TS91 STRAIN-GAGE AXIAL TIE ROD L.O.U. 195
27. TS32 STRAIN-GAGE AXIAL TIE ROD L.O.U. 315
28. TS92 STRAIN-GAGE AXIAL TIE ROD L.O.U. 315

TEMPERATURE SENSORS:
1. ~~HT70 SHIELD OUTLETLAKESHORE PLATINUM RTD PT103. @ VALVEBOX~~
1. HT81 LIQUID HELIUM SUPPLY DIODE @ VALVEBOX
2 HT82 HELIUM MIX SUPPLY DIODE@VALVEBOX
3. HT90 SHIELD OUTLET, CLTS-2B @ VALVEBOX
1. HTCLA THERMOCOUPLE. @ CURRENT LEAD FLOW EXIT
2. HXCLB THERMOCOUPLE @ CURRENT LEAD FLOW EXIT
1. CT01 CYLINDER 180 L.U. CLTS-2B @ SOLENOID
2. CT02 CYLINDER 180 L.O.U. CLTS-2B @ SOLENOID, ON "FLANGE"
3. CT03 CYLINDER 90 CENTER CLTS-2B @ SOLENOID
4. CT04 CYLINDER 270 CENTER CLTS-2B @ SOLENOID
5. CT05 CYLINDER 0 L.O.U., CLTS-2B@ SOLENOID
6. CT06 CYLINDER 0 L.U., CLTS-2B@ SOLENOID
7. CT07 CYLINDER INTERNAL JOIN,CARBON GLASS, CGR1-2000. @ SOLENOID
8. CT91 CYLINDER 180 L.U., CARBON GLASS, CGR1-2000. @ SOLENOID
9. MT01 COIL 180 L.O.U. CARBON GLASS, CGR1-2000. @ SOLENOID
10. ~~MT07 COIL INTERNAL JOINT. CARBON GLASS, CGR1-2000. @ SOLENOID~~
11. ~~MT08 COIL END JOINT A. CARBON GLASS, CGR1-2000. @ SOLENOID~~
11. ~~MT09 COIL END JOINT B. CARBON GLASS, CGR1-2000. @ SOLENOID~~

JAN 12 2016

USED ON DRAWING NO.	QTY. PER ASS'Y.
APPLICATION	

INTERPRET IN GENERAL ACCORDANCE WITH ANSI/ASME Y14.5M-1994

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X ± .030
.XX ± .015
.XXX ± .005
ANGULAR TOLERANCE ± 1°

125 FINISH
BREAK SHARP EDGES
MAX. .03 MIN. .015

C-AD

DRAWN BY	R. THAN	APR 2015
CHECKED BY		
DESIGN APPROVAL		
ENGINEER APPROVAL		
SUPERVISOR APPROVAL		

COLLIDER–ACCELERATOR DEPARTMENT
BROOKHAVEN NATIONAL LABORATORY
UPTON, N.Y. 11973

TITLE: 912 CRYOGENICS
SPHENIX SOLENOID TEST BLDG 912
PIPING & INSTRUMENTATION DIAGRAM

SIZE D | DRAWING NUMBER: 010604188 | REV. A
Q.A. CATEGORY A–3 | SCALE: — | WEIGHT: — | SHEET 1 OF 1

DWG.NO. 010604188 REV A SHT 1 OF 1

AutoCAD