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FINAL LEAK TESTING PROCEDURE

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ENGINEERING NOTE		D32221	M5283	1 of 4
AUTHOR	DEPARTMENT	LOCATION	DATE	
MARTIN FONG	MECHANICAL	B29C	1/8/79	
PROGRAM - PROJECT - JOB				
DOUBLET III NBIS				
VACUUM VESSEL				
TITLE				
FINAL LEAK TESTING PROCEDURE				

AFTER MODIFICATIONS TO THE NBIS VACUUM VESSEL, THE VESSEL WILL BE LEAK TESTED ONE MORE TIME. THE ASSEMBLY SHOP WILL PERFORM MOST OF THE WORK UNDER DON COYLE'S SUPERVISION. ADDITIONAL EFFORT WILL BE PROVIDED BY JACK HARVEY OF MECHANICAL TECHNOLOGY.

THIS LEAK TESTING WILL IMPROVE OVER THE PREVIOUS TEST (SEE M5241). THE RESPONSE TIME OF THE LEAK DETECTION SYSTEM TO HELIUM IN-LEAKAGE IS SHORTENED. THIS IS DONE BY ADDING A 6" DIFFUSION PUMP WITH THE HELIUM MASS SPECTROMETER IS CONNECTED TO THE FOREPRESSURE SIDE OF THE DIFFUSION PUMP. A VARIAN SMART GAGE FOR MONITORING THE PERCENT OF NITROGEN GAS IS ALSO ADDED.

PROCEDURE

1. THE ASSEMBLY SHOP WILL CLEAN AND ASSEMBLE THE VESSEL IN BUILDING 6.
2. JACK HARVEY AND THE ASSEMBLY SHOP WILL WORK TOGETHER IN SETTING UP THE PUMPING AND TEST EQUIPMENTS AS IN FIGURE 1.
3. ROUGH THE VESSEL DOWN TO THE 10-50 MICRON RANGE WITH THE KINNEY KC 110.
4. START UP DIFFUSION PUMP.
5. OPEN 6" GATE VALVE TO THE DIFFUSION PUMP SLOWLY.

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6. VALVE OFF THE KC110 ROUGHING PUMP AND SHUT IT DOWN.
7. START UP LEAK DETECTOR PUMPING SYSTEM.
8. AFTER THE SYSTEM HAS ATTAINED BASE PRESSURE, THE LEAK DETECTOR IS OPENED SLOWLY TO THE FORE-PRESSURE OF THE DIFFUSION PUMP.
9. VALVE OFF THE DIFFUSION PUMP'S FORE PUMP WHEN THE LEAK DETECTOR IS PUMPING SATISFACTORY ON THE DIFFUSION PUMP.
10. CALIBRATE THE LEAK DETECTOR PER MANUFACTURER'S OPERATION MANUAL.
11. LEAK DETECTOR RESPONSE TIME
 - a. NOTE HELIUM BACKGROUND VALUE.
 - b. OPEN SENSITIVITY CALIBRATOR AT SPOOL #3.
 - c. NOTE TIME IT TAKES THE LEAK DETECTOR TO RESPONSE TO THE HELIUM INPUT.
 - d. NOTE THE VALUE FOR THE SENSITIVITY CALIBRATOR.
 - e. CLOSE THE SENSITIVITY CALIBRATOR AT SPOOL #3.
 - f. VALVE ON FORE PUMP TO PUMP OUT THE HELIUM.
12. LEAK TESTING THE VESSEL
 - a. VALVE OFF THE FORE PUMP.
 - b. NOTE HELIUM BACKGROUND VALUE.
 - c. SPRAY HELIUM OVER EACH WELD JOINT. IF THERE IS NO LARGE LEAK, NOTE THE HIGHEST STEADY VALUE.

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- d. HOOD THE VACUUM VESSEL BY SECTIONS AND FILL WITH HELIUM. WAIT AT LEAST TEN TIMES THE RESPONSE TIME IN # 11 AND NOTE THE STEADY VALUE ON THE LEAK DETECTOR.
- e. VALVE ON THE FORE PUMP.
- f. SHUT DOWN THE LEAK DETECTOR.
13. CLOSE THE 6" GATE VALVE
14. SHUT DOWN THE 6" DIFFUSION PUMP.
15. SPOIL VACUUM BY ADMITTING DRY NITROGEN GAS INTO VESSEL SLOWLY. (SET REGULATOR AT 15-20 psig)
16. DISSASSEMBLE VESSEL AND PROTECT WITH PLASTIC SHEETS AND WOOD STRIPS.

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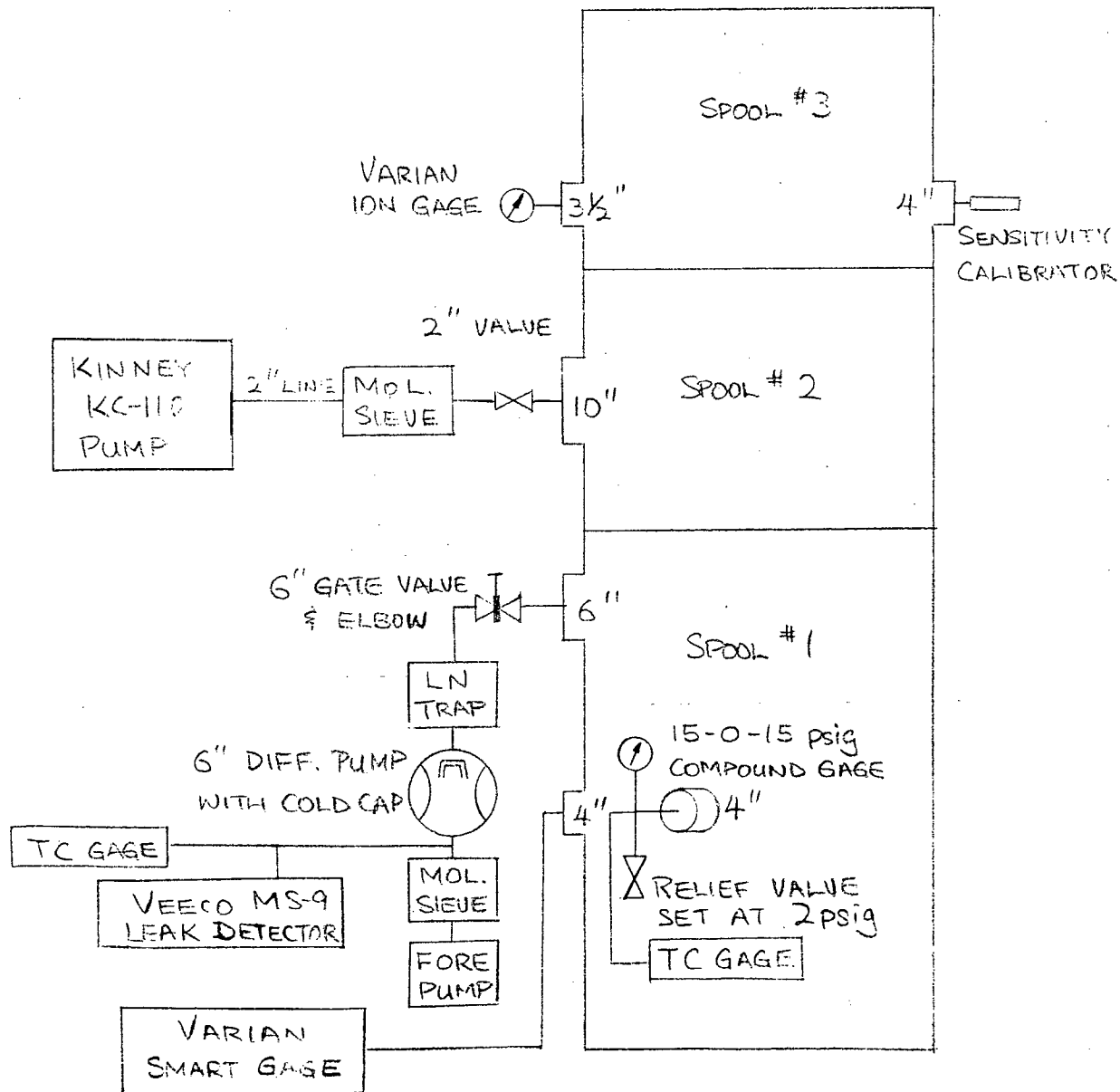
M FONG

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DOUBLET III NBIS VACUUM TANK LEAK DETECTION SET-UP



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