

PORTSMOUTH GASEOUS
DIFFUSION PLANT

EMEF-HEU-110
Revision 1

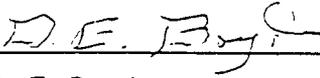
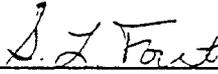
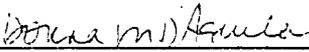
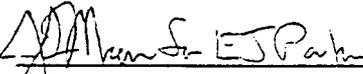
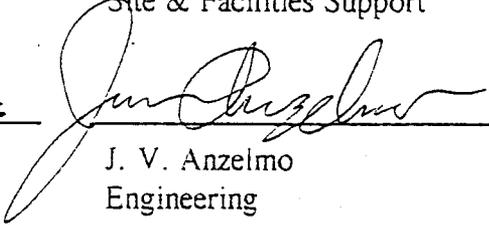
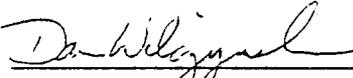
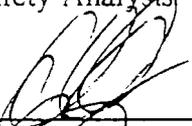
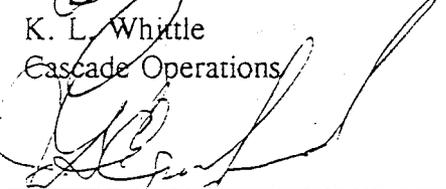
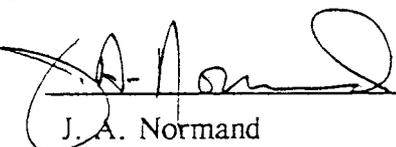
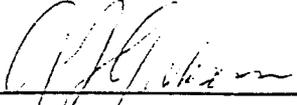
Shutdown Highly Enriched Uranium Cascade Surveillance and Maintenance Plan

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Shutdown Highly Enriched Uranium Cascade Surveillance and Maintenance Plan

Cell Buffer Monitoring and Buffer Gas Sampling and Analyses

The following activities apply when the automatic buffering system has been installed and is operational. See Table 1 "Checklist Summary" and Table 2 "Building Layout of Cells/Units Covered."

- a. Operations personnel will respond to any automatic buffer system alarms and log and record any abnormalities or problems.
- b. When alarms are not functioning, Operations personnel will check and record the pressure on two different cells in each unit once per shift per operating procedure XP4-CO-CA2162 (latest revision)⁽¹⁾ utilizing X-326 Buffered Unit Utility Sheets for Shutdown Cells
- c. Buffer gas sampling and analyses will be performed on 14 different cells per month of the 158 shutdown cells.
- d. The buffer gas sample will be analyzed for H₂O and UF₆.⁽²⁾
- e. If buffer gas sample results exceed the set limits (an H₂O concentration \geq 50 ppm and/or a UF₆ concentration \geq 10 ppm), applicable actions per the latest revision of XP4-CO-CA2162 "Shutdown Cell Buffering" and NCSA-0326-001.0C1 "Nuclear Criticality Safety of Shutdown X-326 Cells" (latest revision)⁽³⁾ will be performed.
- f. The automatic buffer monitoring system instrumentation will be calibrated⁽⁴⁾ by Maintenance personnel per normal PM maintenance schedule.
- g. The buffer gas analysis instrumentation will be calibrated semi-annually by lab personnel.

Unit Lube Oil and Hydraulic Oil Systems

The lube and hydraulic oil lines to each cell have been valved off. The shutdown units' lube oil and hydraulic oil pumps have been shutdown and breakers tripped. The lube oil from each shutdown unit has been stored in the unit drain tank until disposed of or used elsewhere as needed. The shutdown units' lube oil system will cause a change in air

emission source permit requirements. A critical component will be removed to assure that lube oil pumps will not be started. See Table 3 "Signage Requirements."

Shutdown Cell NDA Monitoring

Quantitative uranium NDA measurements⁽³⁾ will be taken on each shutdown cell to satisfy NCS and Security concerns. The frequency of monitoring will assure that every cell is measured once every two years. Based on 158 cells, this will require NDA measurements on seven cells per month.

Local Cell Cubicles

The cells in the shutdown units have been placed on cell or unit datum. Datums have been adjusted to allow individual cell buffer pressure to be read at the Local Cell Cubicles (LCCs) as a backup for the automatic buffer monitoring system. LCC blister manifolds and instrument lines from the LCC to the shutdown cells have been purged to remove any UF_6 after clean-up treatments were completed.

Post Maintenance Testing

After maintenance activities on shutdown cells are complete, post maintenance testing must assure cell is re-buffered and equipment is returned to status of Cell Shutdown Checklist.

Table 1. Checklist Summary

Activity	Responsible Organization/Check Frequency		
	Operations	Maintenance	Engineering/ Production Support
Buffer Monitoring			
1. Cell pressure checks	2 cells/unit, shift		
2. Review cell pressure data	daily		
3. Buffer gas sampling/analyses			14 cells/mo.
4. Calibrate monitoring instrumentation		per PM schedule	
5. Calibrate gas analyses instruments			semi-annual
NDA Monitoring			
Perform cell measurements			7 cells/mo.

Table 2. Building Layout for Cells/Units Covered

Unit	On Shut	Cell No.									
27-1	14 O	2	4	6	8	10	12	14	16	18	20
	6 S	1	3	5	7	9	11	13	15	17	19
27-2	8 O	2	4	6	8	10	12	14	16	18	20
	12 S	1	3	5	7	9	11	13	15	17	19
27-3 THRU 25-6	140 SHUT DOWN	2	4	6	8	10	12	14	16	18	20
		1	3	5	7	9	11	13	15	17	19
		2	4	6	8	10	12	14	16	18	20
		1	3	5	7	9	11	13	15	17	19
25-7	20 O	2	4	6	8	10	12	14	16	18	20
	0 S	1	3	5	7	9	11	13	15	17	19

 = On Stream / Available (42 Cells)

 = Shut Down (158 Cells)

Permanent Shutdown Criteria:

- | | |
|---|---|
| a. Cell treated | e. Automatic Buffer Monitoring System activated |
| b. Final NDA data obtained | f. Cell buffer gas sampling/analyses completed |
| c. NCS approval of long-term buffering obtained | g. Condenser drained |
| d. Cell buffered | h. RCW supply lines blanked |

Table 3. Signage Requirements
X-326 Air Emission Sources - Lube Oil Systems

Source	Operating Now		Future Plans to Operate		Inoperable via control/wiring disconnect/ tagged out		Critical Component Removed	Tagging (verify w/ACR)	
	Yes	No	Yes	No	Yes	No		Yes	No
27-1	X		N/A		N/A		N/A	N/A	
27-2	X		N/A		N/A		N/A	N/A	
27-3		X		X	X		TBD	X	
25-1		X		X	X		TBD	X	
25-2		X		X	X		TBD	X	
25-3		X		X	X		TBD	X	
25-4		X		X	X		TBD	X	
25-5		X		X	X		TBD	X	
25-6		X		X	X		TBD	X	
25-7	X		N/A		N/A		N/A	N/A	

References

1. XP4-CO-CA-2162 (latest revision). "Shutdown Cell Buffering" Lockheed Martin Utility Services, Inc., Portsmouth Gaseous Diffusion Plant
2. XP4-TS-PT-6207, "Operation of Moisture Sample Analyzers" Lockheed Martin Utility Services, Inc., Portsmouth Gaseous Diffusion Plant
3. NCSA-0326-001 (latest revision). "Buffer Calibration Procedure" Lockheed Martin Utility Services., Inc., Portsmouth Gaseous Diffusion Plant
4. XP4-OM-1M-6309. "Maintenance Buffer Calibration Procedure" Lockheed Martin Utility Services, Inc., Portsmouth Gaseous Diffusion Plant
5. TSD-534-721. -723. -726. -729. "Operation of NDA Equipment" Lockheed Martin Utility Services, Inc., Portsmouth Gaseous Diffusion Plant