
FO-GUIDE-1

APPROVAL:

This Qualification Card Guide book has been reviewed and meets the content requirements for qualification and requalification as Facility Operations Shift Engineer (Surface), Central Monitoring Room Operator, and Facility Operations Roving Watch. This Qualification Card Guide Book is approved for use.



Facility Operations Manager

3/25/09
Date

FORMAT:

This Qualification Card Guide Book has been reviewed and meets format requirements in effect.



Training Manager

3-25-09
Date

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QUALIFICATION REQUIREMENTS

PART 1 - GENERAL REQUIREMENTS:

This Qualification Card Guide Book is to be utilized by all Facility Operations Personnel qualifying as Facility Operations Shift Engineer (Surface), Central Monitoring Room Operator and Facility Operations Roving Watch. Note, both the Facility Shift Manager and the Facility Operation Shift Engineer (Surface) qualify under the FO-FOSE-3 (Surface) qualification card. This Qualification Card Guide Book represents the minimum knowledge and competency requirements for INITIAL AND BIENNIAL QUALIFICATION and REQUALIFICATION. All the requirements of the applicable initial Qualification Card Signature Record Form must be completed by the candidate prior to operating any equipment or performing any operating evolutions without the direct supervision of a qualified operator.

Training requirements should be conducted and signed by individuals who are qualified or appointed to the level required on the signature block contained in the Qualification Card Signature Record Form. These include, but are not limited to:

ON-THE-JOB TRAINING EVALUATOR (OJTE): - A qualified operator who has satisfactorily completed an oral examination on the performance of on-the-job training.

SUBJECT MATTER EXPERT (SME) - A qualified operator who has been designated by letter and satisfactorily completed an oral examination on the designated system or equipment and the performance of on-the-job training. Operators qualified as SME may also sign an OJTE training requirement.

CENTRAL MONITORING ROOM OPERATOR (CMRO) - Any individual qualified to operate the systems contained in the Central Monitoring Room.

FACILITY SHIFT MANAGER (FSM) - Any crew manager or shift engineer who has been designated as a Facility Shift Manager.

CREW MANAGER - The member of management appointed to manage a Facility Operations crew. This individual will normally be a Facility Shift Manager.

FACILITY OPERATIONS MANAGER (FOM) - The member of management appointed to direct the Facility Operations section.

PROFICIENCY QUALIFICATION REQUIREMENTS - The Facility Operations engineer shall be required to stand watch as a Facility Shift Manager once per quarter to maintain the qualification of Facility Shift Engineer. Documentation to meet this requirement will be as followed:

- E-mail sent to Technical Training confirming a watch was performed as Facility Shift Manager.
- Forward a copy of the log for that shift to Technical Training annotating the Facility Shift Engineer performed the watch as the Facility Shift Manager.

PART 2 - PRACTICAL FACTOR PERFORMANCE

All practical requirements should be completed to the indicated level of performance. Levels of performance are as follows:

PERFORM (P) - All aspects of the practical requirement will be performed in accordance with the designated procedure(s).

SIMULATE (S) - The practical requirement should be walked through in the field using the procedure and discussing the desired reaction and indication(s) expected as would be seen if the procedure were being performed.

OBSERVE (O) - The candidate should watch all aspects of the requirement being performed by a qualified operator discussing the desired reaction(s) and indication(s) as they are observed.

DISCUSS (D) - The candidate should discuss all aspects of the requirement including desired reaction(s) and indication(s). A discuss may be completed in a training area.

Where multiple levels of performance are indicated for a practical requirement, the goal of the candidate and evaluator is to complete the highest level possible. The level achieved may be limited by equipment status, facility conditions, or compliance modes. The hierarchy of levels of performance, from highest to lowest, are perform, simulate, observe, discuss. The evaluator will circle the level of performance achieved on the practical requirement.

If the indicated level of performance for a requirement cannot be achieved, the highest level achievable should be indicated. The Facility Operations Manager or designated alternate will approve the change and initial, date, and note the reason the level of performance cannot be achieved.

PART 3 - MODIFICATIONS TO TRAINING PROGRAMS

If a requirement must be deleted, the cognizant manager will draw a single line through the item, initial and date the deletion, provide a brief explanation for the deletion, and sign the deleted item. The cognizant manager will notify Technical Training immediately after deleting an item so a revision can be initiated. The Facility Operations Manager has the authority to delete requirements in any qualification program based on facility status or condition during the time of the candidate's qualification program, or due to previous qualifications or qualifications achieved by the candidate. Requirements not completed at the time of qualification due to plant status will be completed as soon as status allows. The candidate will show "Provisional Qualification" status until all requirements are met.

If a training requirement cannot be completed *exactly as specified within this guide or the Qualification Card Signature Record Form* (this will usually happen only due to the superseding of a procedure or by the significant modification of an item of equipment), the responsible individual (SME, OJTE, FSM, etc.) shall annotate in the right-hand margin or at the bottom of the applicable page on the Qualification Card Signature Record Form how the requirement was completed (i.e., new procedure number) and sign/date the requirement in the Qualification Card. The Facility Operations Manager or designated alternate will approve the change and initial & date the entry prior to the candidate's final oral qualification board.

If the Facility Operations Shift Engineer (Surface) candidate is currently qualified as a Facility Operations Roving Watch and Central Monitoring Room Operator, only the Qualification Card Signature Record Form FO-FOSE-3 must be completed. Facility Operations Shift Engineer (Surface) candidates *not* qualified as Facility Operations Roving Watch and Central Monitoring Room Operator must complete all the sections of FO-RW-1 and FO-CMRO-2 Qualification Card Signature Records Forms as identified in the Qualification Card Signature Record Form FO-FOSE-3, except Watchstanding Requirements. Facility Operations Shift Engineer (Surface) candidates are only required to complete watchstanding requirements as listed in the FO-FOSE-3 Qualification Card Signature Record Form, *regardless of the number of prior qualifications held*. Cognizant Crew Managers retain the authority to require any Facility Operations Shift Engineer (Surface) candidate assigned to their respective shift crew to fully complete all subordinate watchstation qualification programs (including required watches and qualification boards) enroute to full qualification as Facility Operations Shift Engineer (Surface).

PART 4 - QUALIFICATION PROGRAM FORMAT AND REQUIREMENTS

This Qualification Card Guide Book is divided into the following sections:

- I. Qualification Requirements and References
- II. Classroom Requirements
- III. System Knowledge Requirements
- IV. System Operation Practical Evaluation Requirements
- V. Administrative Requirements
- VI. Administrative Requirements Practical Evaluation
- VII. Watchstanding

The following rules apply for personnel in initial qualification only:

1. Classroom Requirements may be completed at any time prior to qualification on a particular watchstation.
2. System Knowledge Requirements must be complete prior to the candidate working on Administrative Requirements or Administrative Requirements Practical Evaluation. Verification of this requirement will be by FOM or FSM signature in the applicable Qualification Card Signature Record Form.
3. Candidates may complete Administrative Requirements and Practical Evaluation prior to completing all System Operation Practical Evaluation Requirements, but only after all System Knowledge Requirements are completed.
4. Prior to the candidate working on the System Operation Practical Evaluation Requirements for a specific system, all knowledge requirements for that system must be completed. Completion of system practical factor requirements should be entered into the CMRO logbook. The log entry should include the reason for performance and trainee's name.
5. Prior to the candidate working on the Administrative Requirements Practical Evaluation for a specific topic, all knowledge requirements for that topic must be completed.

Where two or more training watches are required for a particular shift on a particular watchstation prior to qualification, one watch per shift *may* be stood as an observation watch under instruction prior to the candidate's completing all System Knowledge Requirements *for that watchstation*. All remaining "credit" watches **shall** be stood under instruction following completion of all System Knowledge Requirements requirements *for that particular watchstation*. Where required by a qualification program, the final evaluated watch or any cross-crew under instruction watches should be completed when all training requirements (except Classroom Requirements) have been satisfied.

For candidates qualifying as Facility Operations Shift Engineer (Surface), similar sections of subordinate cards (eg: FO-RW-1, FO-CMRO-2) may be performed concurrently. A candidate must complete System Knowledge Requirements in all assigned cards, however prior to working on any Integrated Plant requirements.

The Facility Operations Shift Engineer (Surface) Qualification Card Signature Record (FO-FOSE-3) contains the qualification requirements for FO-RW-1 (Facility Operations Roving Watch), FO-CMRO-2 (Central Monitoring Room Operator), OPS-01 (Lockout/Tagout Authorizing Supervisor), OPS-02 (Temporary Plant Modification Authorizing Supervisor) and P-37 (Person-in-Charge). Upon completion of FO-FOSE-3, specific qualification for FO-RW-1, FO-CMRO-2, OPS-01, OPS-02 and P-37 will not be required.

The Facility Operations Roving Watch Qualification Card Signature Record (FO-RW-1) contains the qualification requirements for OPS-01T (Lockout/Tagout Technician) and OPS-02T (Temporary Plant Modification Technician). Upon completion of FO-RW-1, specific qualification for OPS-01T and OPS-02T will not be required.

The applicable Qualification Card Signature Records should be retained by the Facility Operations watchstander candidate until completed. When completed, all forms must be routed to the Technical Training Group for review and retention.

PART 5 - REVISIONS TO QUALIFICATION PROGRAMS DURING INITIAL QUALIFICATION

Revisions to Qualification Card Signature Record Forms or this Guide Book will be accomplished in accordance with WTS Training Section requirements. Candidates holding superseded Qualification Card Signature Record Forms following a new revision must obtain a copy of the new revision as soon as possible. The Facility Operations Manager will evaluate the need and methods for transferring of qualification signatures between new and superseded record forms. This method should be concurred with by the WTS Training Manager or designee and must show full compliance with requirements contained in the most recent program revision.

PART 6 - REQUALIFICATION

The Facility Operations Shift Engineer (Surface) Requalification Card Signature Record Form (FO-FOSE-3R) contains all of the biennial requalification requirements for FO-FOSE-3 (Facility Operations Shift Engineer (Surface)), FO-CMRO-2 (Central Monitoring Room Operator), FO-RW-1 (Facility Operations Roving Watch), OPS-01 (Lockout/Tagout Authorizing Supervisor), OPS-02 (Temporary Plant Modification Authorizing Supervisor) and P-37 (Person-in-Charge).

The Central Monitoring Room Operator Requalification Card Signature Record Form (FO-CMRO-2) contains all of the biennial requalification requirements for FO-CMRO-2 (Central Monitoring Room Operator), FO-RW-1 (Facility Operations Roving Watch), OPS-01T (Lockout/Tagout Technician) and OPS-02T (Temporary Plant Modification Technician).

The Facility Operations Roving Watch Requalification Card Signature Record Form (FO-RW-1R) contains all the biennial requalification requirements for FO-RW-1 (Facility Operations Roving Watch), OPS-01T (Lockout/Tagout Technician) and OPS-02T (Temporary Plant Modification Technician).

Watchstander qualification on system upgrades, enhancements or modifications that occur subsequent to initial qualification will be addressed and handled in a manner to be determined by the Facility Operations Manager and concurred with by the Manager of the Technical Training Section.

PART 7 - QUALIFICATION LIMIT:

The qualifications contained in this Qualification program are valid for two years. Extension of qualification is achieved by timely completion of requalification cards FO-RW-1R, FO-CMRO-2R, or FO-FOSE-3R as applicable.

The failure of any qualified operator to complete requalification within two years **shall** result in full disqualification from watchstanding duties until requirements are satisfied. The procedure to reestablish watchstander qualification shall be determined by the Facility Operations Manager in accordance with WP 14-TR.01, *WIPP Training Program*, and concurred with by the Manager of the Technical Training Section.

Notification or discovery of a failure of any qualified operator to meet specified periodic refresher training requirements related to the classroom requirements listed in Section II of this manual **will** result in disqualification from watchstanding duties as defined in Section 17 of WP 14-TR.01.

PART 8 - ENTRY LEVEL REQUIREMENTS:

Facility Operations Shift Engineer (Surface) candidates must be recommended by the Facility Operations Manager for qualification as Facility Operations Shift Engineer (Surface) to include Tagout/Lockout Authorizing Supervisor, Temporary Plant Modification Cognizant Operations Supervisor and Person-in-Charge. Validation of this recommendation is by FOM signature in Qualification Card Signature Record Form FO-FOSE-3.

CMRO candidates must have current Roving Watch qualification in accordance with FO-RW-1 **except for** Facility Operations Shift Engineer (Surface) candidates. Validation of this qualification is by FSM or FOM signature in Qualification Card Signature Record Form FO-CMRO-2.

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II. REFERENCES

A. HVAC

Vendor Manuals

1. Moore Instruments Application Manual

WIPP Drawings

2. 41-B-003-W1, Exhaust Filter Building 413 HVAC System Piping and Instrument Diagram.
3. 41-B-051-W, Waste Handling Building 411 RH Area HVAC - Piping and Instrument Diagram.
4. 41-B-066-W, TRUPACT Maintenance Facility 412 HVAC System Piping and Instrument Diagram.
5. 41-F-052-W1, Waste Handling Building 411 CH Area HVAC - AHU 41-B-812 and 41-B-813 Piping and Instrument Diagram.
6. 41-F-052-W2, Waste Handling Building 411 CH Area HVAC - Exhaust Fans 41-B-816, 817, 835, 836 Piping and Instrument Diagram.
7. 41-H-151-014, Waste Handling Building 411 RH Area HVAC Control Logic Diagram Sheet 1 of 2.
8. Waste Handling Building 411 CH Area HVAC Control Logic DDC System
9. 41-H-158-014, Waste Handling Building 411 RH Area HVAC Control Logic Diagram Sheet 2 of 2.
10. Waste Handling Building 411 CH Area HVAC Control Logic DDC System.
11. 41-H-163-014, Waste Handling Building 411 Mechanical Equipment Room HVAC Control Logic Diagram.
12. 41-H-166-W, TRUPACT Facility 412, HVAC System Control Logic Diagram.
13. 41-H-167-W, Exhaust Filter Building 413, HVAC System Control Logic Diagram.
14. 41-H-351-014, Waste Handling Building 411 RH & CH Areas HVAC Instrument Loop Diagram.
15. 41-H-352-014, Waste Handling Building 411 RH & CH Areas HVAC Instrument Loop Diagram.
16. 41-H-370-W, Exhaust Filter Building 413 HVAC System Instrument Loop Diagram.
17. 45-B-009-W1, Building 486 HVAC Piping and Instrument Diagram.
18. 45-B-009-W2, Building 486 AHUs 45-B-417, 418, 419 & 420.
19. 45-F-020-008, HVAC System - Air Flow Diagram.
20. 45-F-051-W, Support Building 451 Administrative Area Zone 1 HVAC Piping and Instrument Diagram.
21. 45-F-052-W, Support Building 451 Locker Room Zone 3 Area HVAC Piping and Instrument Diagram.
22. 45-F-053-W, Support Building 451 Laboratory Area Zone 2 HVAC Piping and Instrument Diagram.
23. 45-F-054-W, Support Building 451 Administrative Area Zone 4 HVAC Piping

- and Instrument Diagram.
24. 45-F-055-W, Support Building 451 Administrative Area Zone 5 HVAC Piping and Instrument Diagram.
 25. 45-F-056-W, Support Building 451 CMR and Instrument Shop Zone 6 HVAC Piping and Instrument Diagram.
 26. 45-F-057-W, Water Pumphouse 456 HVAC System Piping and Instrument Diagram.
 27. 45-F-060-012, Guard and Security Building 485 HVAC Arrangement - Plan and Sections, Sheet 1 of 2.
 28. 45-F-061-012, Guard and Security Building 485 HVAC Arrangement - Plan and Sections, Sheet 2 of 2.
 29. 45-H-051-W1, Support Building 451 Administrative Area Zone 1 HVAC Instrument Loop Diagrams.
 30. 45-H-051-W2, Support Building 451 Administrative Area Zone 1 HVAC Instrument Loop Diagrams.
 31. 45-H-052-W1, Support Building 451 Locker Room Zone 3 Area HVAC Instrument Loop Diagrams.
 32. 45-H-052-W2, Support Building 451 Locker Room Zone 3 Area HVAC Instrument Loop Diagrams.
 33. 45-H-053-W1, Support Building 451 Laboratory Area Zone 2 HVAC Instrument Loop Diagrams.
 34. 45-H-053-W2, Support Building 451 Laboratory Area Zone 2 HVAC Instrument Loop Diagrams.
 35. 45-H-054-W1, Support Building 451 Administrative Area Zone 4 HVAC Instrument Loop Diagrams.
 36. 45-H-054-W2, Support Building 451 Administrative Area Zone 4 HVAC Instrument Loop Diagrams.
 37. 45-H-055-W1, Support Building 451 Administrative Area Zone 5 HVAC Instrument Loop Diagrams.
 38. 45-H-055-W2, Support Building 451 Administrative Area Zone 5 HVAC Instrument Loop Diagrams.
 39. 45-H-056-W1, Support Building 451 CMR and Instrument Shop Zone 6 HVAC Instrument Loop Diagrams.
 40. 45-H-056-W2, Support Building 451 CMR and Instrument Shop Zone 6 HVAC Instrument Loop Diagrams.
 41. 45-H-056-W3, Support Building 451 CMR and Instrument Shop Zone 6 HVAC Instrument Loop Diagrams.
 42. 45-H-057-W, Water Pumphouse 456 HVAC System Instrument Loop Diagram.
 43. Support Building 451 HVAC System - Control Logic Diagram, DDC System
 44. Support Building 451 HVAC System - Control Logic Diagram, DDC System
 45. Support Building 451 HVAC System - Control Logic Diagram, DDC System
 46. Support Building 451 HVAC System - Control Logic Diagram, DDC System
 47. 45-H-158-W, Guard and Security Building 458 HVAC Control Logic Diagram.
 48. 45-H-351-014, Support Building 451 HVAC System Loop Diagram.
 49. ACA 9484 M-3, Temperature Control.
 50. ACA 9492 M-1, HVAC Floor Plan - Bldg. 489.
 51. ACA 9492 M-2, Mechanical Control Diagram - Bldg. 489.

52. CMA M-3, Safety and Emergency Building Ground and Second Floor HVAC Plans.
53. CMA M-4, Safety and Emergency Building HVAC Equipment Schedule.

B. High Voltage Electrical

Vendor Manuals

1. Installation, Operation and Maintenance Manual for Static Trip III Overcurrent Trip Device, SG-3118-02.
2. Operations and Maintenance Manual for 3502, 3512 and 3516 Industrial Engine.
3. Magna One Generator Installation, Operation and Maintenance Manual.
4. Beeman, Donald. *Industrial Power Systems Handbook*
5. Croft, Terrell. *American Electrician Handbook*
6. Siemens-Allis Installation, Operation, Maintenance Instructions, 5 kV & 15 kV Metal Enclosed Load Interrupter Switches SG3328.
7. Westinghouse Instructions for Type WLI Load Interrupter Switchgear 5.0 kV, 15.0 kV, 25.8 kV & 38.0 kV.
8. Square D Company Power-Zone HVL Load Interrupter Switchgear 5 kV to 38 kV.
9. PCI Company, Load Interrupter Switch, Operations Instructions for 15 kV LIS PCL1156 Model.
10. Siemens Metal Clad Switchgear Type D (5 kV) and F (15 kV), Installation, Operation, & Maintenance Instructions SG3178, or Siemens Vacuum Circuit Breakers Type FSV and MSV Operation & Maintenance Instructions SG-3248-01.
11. Westinghouse Instructions for Porcel-Line Type DH-P Circuit Breakers.
12. S&C Pad-Mounted Gear, Manual PMH Models Outdoor Distribution, Operations Instructions Sheet 662-510.
13. Siemens Low Voltage Circuit Breakers Type RL Instructions for Installation, Operation, Maintenance, Parts SG-3068-1.
14. Deleted
15. Instructions 1B-5000 Series P-5000 POWL-VAC Vacuum Circuit Breakers 4.16 kV, 7.2 kV & 13.8 kV Voltage Classes.
16. Westinhouse Instructions for Low Votage Power Circuit Breakers Types DS DSL.
17. Instructions 1B46000Series P-46000Class E Controllers with Drawout Air Break Contractor 2.5, 5, and 7.2 kV Voltage Class.
18. Westinghouse Installation, Operation, Maintenance Instructions, Type CV Voltage Relay.
19. GE Instructions GEK-45375F Time Overcurrent Relays Types IFC51A & 51B, IFC53A & 53B, IFC77A & 77B
20. Brown Boveri Electric Type GWM Ground Shield Ground Wire Monitoring Relay.
21. Simplex Load Bank Operations Manual
22. 25-J-015-W, Sheets 1 through 7, Yard Electrical, Area Sub 3 and On Site Power 480V SWGR 25P-SWG04/3, Electrical Diagram and Details.

23. 25-J-019-W3, Surface Medium Voltage Switchgears Trip Unit Settings.
24. 25-J-020-W4, WIPP Site Primary Power One Line Diagram With Surface Low Voltage Interrupter Lineup.
25. 25-J-021-W2, Surface 480 Volt Switchgears Trip Unit Settings.
26. 25-J-044-W, Plant Main Substation (25P-SWG15/1), Station Power Unit Number Eight Three Line Schematic.
27. 25-J-060-W, Area Substation Number 3, 480V SWGR 25P-SWG04/3 Schematic Diagram.
28. 25-J-066-W, Yard Electrical Plant Substation 25P-SWG15/1, Single Line Diagram and Schemes.
29. 25-J-071-W1, Backup Diesel Generator #1 25P-E-503 Generator Control Schematic.
30. 25-J-072-W1, Backup Diesel Generator #2 25P-E-504 Generator Control Schematic.
31. 25-J-094-W1, Yard Electrical Load Bank System Single Line Diagrams
32. ECO 8758, Installation of New WIPP Utility Substation

C. Low Voltage Electrical

Vendor Manuals

1. Deleted
2. Deleted
3. EPS-2000 50 to 125 kVA Uninterruptible Power Supply System Owner's Manual

WIPP Drawings

4. PS-1 (Surface) Panel Schedules
5. PS-3 (Trailers) Panel Schedules
6. 25-J-020-W4, WIPP Site Primary Power One Line Diagram With Surface Low Voltage Interrupter Lineup.
7. 41-J-510-W1, Exhaust Filter Building 413 480V MCC 41P-MCC04/7 Single Line Diagram.
8. 41-J-511-W1, Waste Handling Building 411 480V MCC 41P-MCC04/1 Single Line Diagram.
9. 41-J-512-W1, Waste Handling Building 411 480V MCC 41P-MCC04/3 and 41P-DP04/3 Single Line Diagram and Arrangement.
10. 41-J-513-W1, Waste Handling Building 411 480V MCC 41P-MCC04/5 Single Line Diagram.
11. 41-J-514-W1, Waste Handling Building 411 480V MCC 41P-MCC04/6 Single Line Diagram.
12. 41-J-527-W1, Waste Handling Building 411 480V MCC 41P-MCC04/2 Single Line Diagram.
13. 45-J-008-W1 through W6, Yard Switchracks
14. 45-J-510-W1, Support Building 451 480V MCC 45P-MCC04/4 Single Line Diagram.
15. 45-J-511-W1, Support Building 451 480V MCC 45P-MCC04/3 Single Line

- Diagram.
16. 45-J-512-W1, 458 Guard and Security Building 480V MCC 45P-MCC04/5 Single Line Diagram.
 17. 45-J-515-W1, Water Pumphouse 456 480V MCC 45P-MCC04/2 Single Line Diagram.

D. Underground Ventilation/Filtration

Vendor Manuals

1. EVA Flow Devices (The Book of EVA).
2. Large Induction Motors: Toshiba O & M Manual.
- 2B Flosconic Application and Installation Manual

WIPP Drawings

3. 25-J-020-W, WIPP Site Primary Power Distribution.
4. DELETE
5. 41-G-284-019, UVFS Exhaust Duct/Piping Arrangement.
6. 41-G-302-34B, UVFS Modifications.
7. 41-H-307-34B, UVFS Instrument Loop Diagram.
8. 41-J-007-W, UVFS Diagram and Location Plans.
9. 41-J-008-W, UVFS Control Panel Details.
10. 41-J-015-W, Component Layout for 413-CP-307-01.

E. Fire Detection, Fire Suppression and Domestic Water

Vendor Manuals

1. Detroit Diesel Operators Manual.
2. Patterson Pumps Operations Manual.
3. Moore Single Loop Digital Controller.
4. Wallace & Tiernan Chlorine Residual Analyzer.
5. Masoneilan 2100 Series Control Valves.
6. General Controls Hydramotor Actuators.
7. Chlorinators and Controls.
8. Exidyne Chlorine Gas Detector.
9. Material Safety Data Sheets.
10. National Fire Protection Association Manual, Chapter 20.

WIPP Drawings

11. 23-F-001-007, Water Pipeline System, Piping and Instrument Diagram.
12. 24-C-047-W, Site Utilities Water Domestic
13. 25-F-006-W, Yard Utilities, Water Supply System, Piping and Instrument Diagram.
14. 41-J-024-W1, Waste Handling Building, Fire Panel 411-FP-01301.
15. 41-J-024-W2, Waste Handling Building, Fire Panel 411-FP-01301.

16. 45-F-041-014, Utility Water Distribution System, Piping and Instrument Diagram.
17. 45-G-701-006, Water Storage Tanks 25-D-001A and B.
18. 45-H-108-010, Water Pumphouse, Fire Water Pumping System Control Logic Diagram.
19. 45-H-110-010, Water Pumphouse, Water Pumping System Control Logic Diagram.
20. 45-H-130-010, Water Pumphouse, Fire and Security Systems Control Logic Diagram.
21. 45-H-310-010, Yard Utility and Water Pumphouse, Domestic Water Pumping System Instrument Loop Diagram.
22. 45-J-029-W1, Support Building 451, Fire Panel 451-FP-01132.
23. 45-J-029-W2, Support Building 451, Fire Panel 451-FP-01132.
24. 45-J-047-W, Water Pumphouse 456, Water Pumping System Schematic Diagram.
25. 45-J-515-W, Water Pumphouse 456, 480V MCC 45P-MCC04/2, Single Line Diagram and Arrangement.

F. Compressed Air

Vendor Manuals

1. Ingersoll-Rand XLE Air Compressors.
2. Ingersoll-Rand Type 30 Air Compressors.
3. Atlas-Copco GA200 Compressors.
4. Curtis-Toledo Model ES-20 Air Compressor.
5. Hankison Model DH-2100 Regenerative Desiccant Air Dryer.
6. Deltech PS Series Heatless Compressed Air Dryer.
7. AMLOC-DHA Regenerative Desiccant Air Dryer.

WIPP Drawings

8. PS-1 (Surface) Panel Schedules
9. 25-D-002-W, North Compressor Building 485 Plan View & Equipment Layout.
10. 41-F-037-W, Compressor Building 463, Compressed Air/Cooling Water System Piping and Instrument Diagram.
11. 41-J-013-W, Air Compressors 41-G-021A/B Panels Schematic Diagrams and Parts Location.
12. 41-J-014-W, Component Layout, Wiring and Schematic Diagrams for Air Compressors 41-G-022A/B, 45-G-400A/B and 45-G-403A/B.
13. 41-J-510-W, Exhaust Filter Building 413, 480V MCC 41P-MCC04/7 Single Line Diagram.
14. 41-J-512-W, Waste Handling Building 411, 480V MCC 41P-MCC04/3 Single Line Diagram.
15. 41-J-513-W, Waste Handling Building 411, 480V MCC 41P-MCC04/5 Single Line Diagram.
16. 41-P-001-W, Exhaust Filter Building 413, Compressed Air System Piping and Instrument Diagram.

17. 41-P-002-W, Waste Handling Building 411, Compressed Air System Piping and Instrument Diagram.
18. 45-J-048-W, Compressor Building 485, Electrical Plan.
19. 45-J-091-W1, Building 485 Electrical Arrangement.
20. 45-J-091-W2, Building 485 Wiring Diagram.
21. 45-J-091-W3, Sequencer 45P-ES03/001 Service Diagram, Bldg 485 Compressors 45-G-030A & B.
22. 45-J-099-W1, Wiring Diagram for Atlas-Copco Compressor 45-G-030A.
23. 45-J-099-W2, Wiring Diagram for Atlas-Copco Compressor 45-G-030B.
24. 45-J-510-W, Support Building 451, 480V MCC 45P-MCC04/4 Single Line Diagram.
25. 45-P-001-W, North Compressor Building 485, Compressed Air System, Piping and Instrument Diagram.
26. 45-P-002-W, Support Building 451, Compressed Air System Piping and Instrument Diagram.
27. 53-P-001-W, Sheet 5, Underground and Shafts Compressed Air System Piping and Instrument Diagram.

G. Chilled Water

Vendor Manuals

1. *The Refrigeration Cycle*, TRANE Air Conditioning Clinic Booklet.
2. *Refrigeration System Components*, TRANE Air Conditioning Clinic Booklet.
3. *Refrigeration Compressors*, TRANE Air Conditioning Clinic Booklet.
4. *Centrifugal Water Chillers*, TRANE Air Conditioning Clinic Booklet.
5. TRANE Air Conditioning Manual, Chapter VI.
6. TRANE Owner-Operator's Guide Air-Cooled Centravac, CVAC-M-1A.
7. TRANE Air Cooled Centravac Liquid Chillers Centrifugal, CVAC-UP-1.
8. TRANE Air Cooled Centravac Liquid Chillers Centrifugal, CVAC-IN-1A.
9. TRANE Operation and Maintenance Manual, CGAC-M-3A.
10. Carrier Flotronic Reciprocating Liquid Chillers, 30GB040-070.

WIPP Drawings

11. 25-J-020-W4, WIPP Site Primary Power One Line Diagram With Surface Low Voltage Interrupter Lineup.
12. 41-B-066-W, TRUPACT Maintenance Facility 412 HVAC System P&ID, Sheet 1
13. 41-F-038-014, Waste Handling Building, Chilled Water System, Flow Diagram, Sheet 1 of 2.
14. 41-F-039-014, Waste Handling Building, Chilled Water System, Flow Diagram, Sheet 2 of 2.
15. 41-F-068-W, Waste Handling Building, Chilled Water System, Piping and Instrument Diagram, Sheet 1 of 2.
16. 41-F-069-W, Waste Handling Building, Chilled Water System, Piping and Instrument Diagram, Sheet 2 of 2.
17. 41-H-168-014, Chilled Water System, Control Logic Diagram.

18. 41-H-368-014, Chilled Water System, Instrument Loop Diagram.
19. 45-J-051-W3, Engineering Building 486, Receptacle and Power Arrangement.
20. 45-J-054-W, Building 486 Power Distribution Riser and Single Line Diagrams.
21. 45-J-055-W1, Building 486 HVAC Wiring Schematic Diagrams.
22. 41-J-545-W, Water Chiller Area, Instrument Grounding, Power and Control Plan.
23. CMA-486-M-4, HVAC Equipment Schedule

H. Central Monitoring System

Vendor Manuals

1. Best FC-5kVA UPS Operation and Maintenance Manual
2. Toshiba Uninterruptible Power System 1400 and 1400 Plus Series
3. Custom Automation O & M
- > 3. DELETE
- > 4. DELETE
- > 5. DELETE
- > 6. DELETE
- > 7. DELETE
- > 8. DELETE
- > 9. DELETE
- > 10. DELETE
- > 11. DELETE
- > 12. DELETE
- > 13. DELETE
14. DTN User's Manual.

WIPP Drawings

15. PS-1, Panel Schedules (Surface)
16. 41-J-760-014, Waste Handling Building 411, Local Processing Unit Layout Plan, Sheet 1 of 4.

I. Waste Water Treatment System

Vendor Manuals

1. Environmental Protection Agency Operations Manual, Stabilization Ponds (EPA-430/9-77-012).
2. Environmental Protection Agency Process Design Manual, Land Treatment of Municipal Wastewater.
3. Environmental Protection Agency Handbook, Septage Treatment and Disposal.
4. Environmental Protection Agency Design Manual, Municipal Wastewater Stabilization Ponds.
5. Instruction Manual, Diamond Shamrock Wastewater Chlorinator.
6. Red Valve Manual, Pinch Valves, Manufacturer's Manual.

WIPP Drawings

7. 24-C-045-W, WIPP Site Utilities, Sanitary Sewer.
8. 24-C-072-010, Stabilization Lagoon Grading & Fencing Plan & Sections.
9. 25-C-004-W, Stabilization Lagoon Added Evaporation Pond
10. 25-C-020-010, Stabilization Lagoon Plan & Sections.
11. 25-C-021-010, Stabilization Lagoon Sections & Details.
12. 25-C-049-010, Yard Piping - Plant Site to Stabilization Lagoon Plan & Profile.

13. 25-D-004-010, Yard Piping & Stabilization Lagoon Valve Pits, Plans, Sections & Details.

J. Surface Fuel Station

Vendor Manuals

1. EBW Inc., AUTO/STIK JR. Operation Instruction Manual.
2. XERXES Inc., Underground Storage Tanks, Double Wall Tank Installation and Warranty Manual
3. Rizzo, Joyce, *Underground Storage Tank Management: A Practical Guide*, Fourth Edition.
4. American Petroleum Institute Recommended Practice Manual, Bulk Liquid Stock Control at Retail Outlets.
5. EIB-USTR-1 through 14, State of New Mexico Underground Storage Tank Regulations.
6. Material Safety Data Sheet 948, Unleaded Gasoline.
7. Material Safety Data Sheet 274, #1 Diesel Fuel.

WIPP Drawings

8. 25-C-037-010, Vehicle Fuel Station Fuel Storage Tanks Plan, Sections & Details.
9. 25-F-040-W, Facility #480 Vehicle Fuel System Piping & Instrument Diagram.
10. 25-G-101-W, Facility #480 Vehicle Fuel Station Piping Arrangement.

K. Vacuum

Vendor Manuals

1. Rietschle Operating Instructions (For Model VTB 250.)

WIPP Drawings

2. 41-F-030-W, Waste Handling and Support Building, Plant Vacuum System, Piping and Instrument Diagram.
3. 41-J-026-W1, Vacuum Pump Wiring Diagram & Schematics 41-G-050 A, B, C, Plant Vacuum System 411-CP-029-06.
4. 41-J-026-W2, Vacuum Pump Wiring Diagram & Schematics 41-G-050 A, B, C, Plant Vacuum System 411-CP-029-06.
5. 41-J-512-W, Waste Handling Building 411, 480V MCC 41P-MCC04/3 and 41P-DP04/3 Single Line Diagram and Arrangement.
6. 41-J-514-W, Waste Handling Building 411, 480V MCC 41P-MCC04/6 Single Line Diagram and Arrangement.
7. DELETE

L. Underground Electrical System

Vendor Manuals

1. Ensign-Hubbell Power Center O&M Manual
2. Westinghouse Low-Voltage Power Circuit Breakers, Types DS & DSL
3. Square D Mini-Power Center O&M
4. Toshiba Model 1400 UPS O&M
5. 1000 KVA Power Center O&M
6. S&C Mini Rupter Switch O&M
7. Cimco Overtemp Device O&M
8. Line Power High & Low Voltage Couplers O&M

Other Manuals

9. 30 CFR Federal Metal and Nonmetallic Mine Safety and Health Regulations
10. ANSI C37.2

WIPP Drawings

11. PS-2, Underground Panel Schedules.
12. 25-J-019-W4, U/G Medium Voltage Switchgear Trip Unit Settings
13. 25-J-020-W1, WIPP Site Primary Power Distribution - One Line Reference Sheet
14. 25-J-020-W2, WIPP Site Primary Power Distribution - One Line Diagram
15. 25-J-020-W3, Operations Surface & Underground
16. 25-J-020-W4, Operations/Surface with 480 VAC Loads
17. 25-J-020-W5, Operations/Underground with 480 VAC Loads
18. 25-J-020-W6, Fault Analysis and Protected Device Coordination
19. 25-J-020-W7, Selected Load System, Operations - Surface & Underground
20. 25-J-020-W8, Selected Load System Load Flow & Voltage Drop Calculation
Fault Current Analysis
21. 25-J-020-W9, WIPP FSAR/Surface
22. 25-J-020-W10, WIPP FSAR/Underground
23. 53-J-009-W1, U/G 13.8kV & Low Voltage Cable Routing & Equipment Locations
24. 53-J-009-W2, U/G 13.8kV & Low Voltage Cable Routing & Equipment Locations
25. 53-J-009-W3, U/G 13.8kV & Low Voltage Cable Routing & Equipment Locations
26. 53-J-028-W1, U/G 480V Power Distribution from 53P-SWG15/2A & 2B, Single Line Diagram for 53P-CB04/1, CB04/2, DP04/1 (A & B), 2, 3, 4, 21, -LP04/3, -LP04/1 & -LP04/2
27. 53-J-028-W2, U/G 480V Power Distribution from 53P-SWG15/2A & 2B, Single Line Diagram for 53P-CB04/1, CB04/2, DP04/1 (A & B), 2, 3, 4, 21, -LP04/3, -LP04/1 & -LP04/2
53-J-028-W3, U/G 480V Power Distribution from 53P-SWG15/2A & 2B, Single Line Diagram for 53P-CB04/1, CB04/2, DP04/1 (A & B), 2, 3, 4, 21, -LP04/3, -

LP04/1 & -LP04/2

3. 53-J-037-W, U/G Substation #4 Location Single Line Diagram & Alcove Plan & Details
4. 53-J-510-W, U/G Utilities Sub #1 & Distribution Panel 53P-DP04/7 & 53P-DP04/7 Single Line Diagram
5. 53-J-511-W, U/G Utilities Sub #1 & Distribution Panels 53P-DP04/11, 04/8, 04/10

M. Underground Ventilation System

Vendor Manuals

1. Davis Anemometer O&M Manual
2. LY Series Instruction & Maintenance Manual (Limotorque Corporation, U/G Regulator Motors)
3. SS4 AAA Products O&M Manual (U/G Bulkheads)

Other Manuals

4. 30 CFR 57 Subpart G-Ventilation

WIPP Drawings

5. PS-2, Underground Panel Schedules
6. 54-W-001-W, U/G Mine Ventilation System
7. 54-W-002-W, U/G Ventilation Plan Waste Handling Mode
8. 54-W-004-W, U/G Ventilation Plan - Filtration Mode
9. 54-W-005-W, U/G Ventilation Plan Air Reversal Mode for Mining Area and/or Salt Handling Shaft
10. 54-W-006-W, U/G Ventilation Plan Air Reversal Mode for Experimental Area
11. 54-W-007-W, U/G Ventilation Plan Air Reversal Mode for Air Intake Shaft

N. WIPP System Information Manuals, Procedures & Instructions

System Information Manuals

1. WP 04-CA00, Compressed Air (SIM)
2. WP 04-CW00, Chilled Water System (SIM)
3. WP 04-CM00, Central Monitoring System (SIM).
4. WP 04-ED00, High Voltage Electrical (SIM)
5. WP 04-FP00, Fire Detection and Suppression (SIM)
6. WP 04-ED00, Low Voltage Electrical (SIM)
7. WP 04-GC03, Wastewater Treatment System (SIM)
8. WP 04-HV01, WHB HVAC System (SIM)
9. WP 04-HV02, WHB HVAC System (SIM)
10. WP 04-HV03, Support Building HVAC System (SIM)
11. WP 04-HV04, Exhaust Filter Building HVAC System (SIM)

12. WP 04-HV05, Building 456 HVAC (SIM)
13. WP 04-HV05, Emergency Safety and Health Building HVAC (SIM)
14. WP 04-HV05, Warehouse Building 453 HVAC (SIM)
15. WP 04-HV06, Auxiliary Warehouse and Vehicle Service Building HVAC (SIM)
16. WP 04-HV06, Engineering Building HVAC (SIM)
17. WP 04-HV06, Guard and Security Building 458 HVAC (SIM)
18. WP 04-PV00, Plant Vacuum System (SIM)
19. WP 04-VU00, Underground Ventilation and Filtration System (SIM)
20. WP 04-WD00, Water Distribution (WD00)(SIM)
21. Plant Monitoring and Communications (System Design Description (SDD)(CMOO).
22. U/G Ventilation System Design Description (SDD)
23. U/G Ventilation and Filtration System Design Description (SDD)

WIPP Procedures

24. WP 02-6 & 7, Resource Conservation & Recovery Act (RCRA) Compliance Manual.
25. WP 02-12, WIPP Contingency Plan.
26. WP 04-AD3001, Facility Mode Compliance.
27. WP 04-AD3005, Administrative Control of System Lineups.
28. WP 04-AD3007, CMS Point Scan/Alarm Check Removal Authorization.
29. WP 04-AD3008, Shift Operating Logs.
30. WP 04-AD3011, Equipment Tagout/Lockout.
31. WP 04-AD3012, Temporary Plant Modification Control.
32. WP 04-AD3027, TSR Violation Reporting and Recovery Plan.
33. WP 04-CA1001, Operation of Air Compressors 41-G-021A and 41-G-021B.
34. WP 04-CA1003, Operation of Exhaust Filter Building and Support Building Air Compressors.
35. WP 04-CA1101, Instrument Air Operation.
36. WP 04-CA1202, Operation of Air Compressors 45-G-030A & B.
37. WP 04-CA4001, Compressed Air System Alarm Response.
38. WP 04-CM1001, Remote Operation of the Diesel Generators.
39. WP 04-CM1006, Remote Operation of Electrical Circuit Breakers.
40. WP 04-CM1185, Remote Operation of the Support Building Zone 6 HEPA Filtration.
41. WP 04-CM1301, Public Address System Console Operation.
42. WP 04-CM1303, Historical Storage & Retrieval Operation.
43. WP 04-CM1304, CMS Equipment Operation.
44. WP 04-CM1305, LPU Downloading.
45. WP 04-CM1306, Operation of Remote Uninterruptible Power Supplies for CMS Equipment.
46. WP 04-CM4501, VOC Trouble Alarms.
47. WP 04-CO, Conduct of Operations Manual
48. WP 04-CW1101, Waste Handling Building (WHB) and Support Building (SB) Chilled Water System.
49. WP 04-CW4101, WHB and SB Chilled Water System Alarm Response.
50. WP 04-ED1001, 13.8 kV Surface Transformer Operating Instructions.

51. WP 04-ED1021, Site Surface Electrical Distribution System.
52. WP 04-ED1301, Diesel Generator Operation
53. WP 04-ED1341, Surface Backup Power Distribution.
54. WP 04-ED1542, Central Uninterruptible Power Supply Unit 2 45P-UPS03/2.
55. WP 04-ED1621, Underground Electrical Distribution
56. WP 04-ED1631, Underground Backup Power Distribution
57. WP 04-ED2341, Remote Operation of Underground Circuit Breakers.
58. WP 04-ED4301, Diesel Generators 1 and 2 Local Alarm Response.
59. WP 04-EM4542, Central Uninterruptible Power Supply Unit 2 45P-UPS03/2 Alarm Response.
60. WP 04-EM1301, Seismic Monitoring System Operation.
61. WP 04-EM1302, Quarterly Operational Test of Surface Seismic Monitoring System.
62. WP 04-FP1201, Site Fire Water Supply System Operation.
63. WP 04-FP2201, Electric Fire Pump.
64. WP 04-FP2202, Diesel Fire Pump.
65. WP 04-GC1201, Sewage Lagoon System Operation.
66. WP 04-GC1605, Operation of Surface Fuel Station Storage Tanks.
67. WP 04-HO4010, Mine Hoist Emergency Responses
68. WP 04-HV1001, Waste Handling Building Zone 1 HVAC.
69. WP 04-HV1021, Waste Handling Building Zone 2 HVAC.
70. WP 04-HV1041, Waste Handling Building Hoist Room and Waste Shaft Area HVAC (Zone 3).
71. WP 04-HV1061, WHB RH Area HVAC (Zone 4).
72. WP 04-HV1081, TRUPACT Maintenance Facility Building 412 HVAC.
73. WP 04-HV1101, Support Building Zone 1 HVAC.
74. WP 04-HV1116, Support Building Zone 2 HVAC.
75. WP 04-HV1131, Support Building Zone 3 HVAC.
76. WP 04-HV1146, Support Building Zone 4 HVAC.
77. WP 04-HV1161, Support Building Zone 5 HVAC.
78. WP 04-HV1176, Support Building Zone 6 HVAC.
79. WP 04-HV1201, Exhaust Filter Building HVAC.
80. WP 04-HV1301, Guard and Security Building HVAC System.
81. WP 04-HV1306, Safety and Emergency Building HVAC.
82. WP 04-HV1316, Engineering Building HVAC System Operation.
83. WP 04-HV4021, HVAC Alarm Response.
84. WP 04-MD3003, Control of Operator Aids.
85. WP 04-PC3017, Essential Plant Communications Systems Testing.
86. WP 04-PV1201, Operation of Waste Handling Building and Support Building Vacuum System.
87. WP 04-VU1001, Surface UVFS Operation.
88. WP 04-VU1002, Operability Testing of Underground Filtration.
89. WP 04-VU1608, Underground UVFS Operation.
90. WP 04-VU1610, Reentry
91. WP 04-VU2603, UVFS Air Reversal for Non-RMA Areas
92. WP 04-VU4605, UVFS Alarm Response.
93. WP 04-WD1010, Domestic Water System Operation.
94. WP 04-WD1020, Free Chlorine Analyzer Operation

95. WP 04-WD4010, Pumphouse Alarm Response.
96. WP 04-CM1002, Routine Operations for CMRO
97. WP 04-CM2002, CMRO Actions for Transportation.
98. WP 06-HM1020, TRUPACT-II Receipt.
99. WP 06-HM1040, Empty TRUPACT-II Receipt.
100. WP 06-HM3108, Request for Disposal.
101. WP 06-HM3109, Nonradioactive Satellite Waste Accumulation Area Inspection.
102. WP 10-2, Maintenance Operations Instruction Manual
103. WP 10-AD3005, Control and Use of Maintenance Locks.
104. WP 10-WC3002, Work Control Administration.
105. WP 10-WC3004, Preventive Maintenance Administration.
106. 09.DC.01, Surface Excavation and Backfill Permit.
107. WP 12-1, WIPP Safety Manual
108. WP 12-IH.02, Confined Space Entry Program.
109. WP 12-FP3002, Hot Work Permits.
110. WP 12-9, WIPP Emergency Management Plan.
111. WP 02-AR1001, Unreviewed Safety Question Determination.
112. WP 12-ER3903, Event Recovery
113. WP 12-ER3904, Categorization and Classification of Operational Emergencies.
114. WP 12-ER4901, Severe Weather Response.
115. WP 12-ER4902, Hazardous Material Spill Response.
116. WP 12-ER4903, Radiological Event Response
117. WP 12-ER4905, Security Emergency Response.
118. WP 12-ER4906, Surface Medical Emergency.
119. WP 12-ER4907, Site Evacuation.
120. WP 12-ER4908, Surface Fire Response.
121. WP 12-ER4910, Earthquake/Seismic Response.
122. WP 12-ER4911, Underground Fire Response.
123. WP 12-ER4912, Underground Medical Emergency Response.
124. WP 12-ES3918, Reporting Occurrences in Accordance with DOE Order 232.1.
125. WP 13-1, WID Quality Assurance Program Description.
126. WP 13-QA3001, Hold Tag Issuance.
127. MP1.2, Work Suspension and Stop Work
128. WP 13-QA3003, Corrective Actions Program
129. WP 14-TR.01, WIPP Training Program.
130. WP 14-TR3307, Qualification Programs.
131. WP 14-TR3308, On-the-Job Training.
132. Waste Isolation Pilot Plant Mine Ventilation Plan

Facility Operations Instructions and Standing Instructions

133. Facility Operations Shift Instructions and Standing Instructions

Permits and Technical Safety Requirements

134. DOE/WIPP-91-005, Resource Conservation and Recovery Act Part B Permit Application

- 135. DOE/WIPP-95-2065, WIPP Safety Analysis Report
- 136. DOE/WIPP-95-2125, WIPP Technical Safety Requirements

Miscellaneous

- 137. WP 05-WH1011, CH Waste Processing
- 138. WP 05-WH4401, Waste Handling Operator Event Response
- 139. WP 04-ED2306, Powering Essential UPS Loads Via Power Conditioner
- 140. WP 04-FP2010, Alternate FW Supply Lineup
- 141. UV-0281, Engineer Station Support Utilities Document
- 142. Genicom O&M Manual
- 143. Site Phone Book
- 144. CMR Fax Machine O&M Manual
- 145. WP 09-CN3022, Engineering File Resources Operations
- 146. Siemens MCC O&M Manual
- 147. Drawing 45-B-050-W
- 148. Drawing ACA 9492-M-3
- 149. Drawing 45-J-005-W

II. CLASSROOM INSTRUCTION

ROVING WATCH

- A. Current Electrical Safety (ELC-103)
- B. Current Subject Matter Expert/On-the-Job Training (TRG-293)
- C. Conduct of Shift Operations (OPS-115)
- D. Print Reading (PRT-103)
- E. Current Radiological Worker I (RAD-101)

CMRO

- A. Current Hazardous Materials Emergency Response (HMT-104)

FACILITY OPERATIONS SHIFT ENGINEER (SURFACE)

- A. Root Cause Analysis (TRG-296)
- B. WIPP Occurrence Reporting for FR/FRD/FM/FMD/FSM (OPS-110)
- C. WIPP Contingency Plan Procedure (SAF-645)
- D. Confined Space Entry (SAF-515) (Classroom Phase Only)
- E. Current Hazardous Waste Worker (HWW-101 or HWW-102)
- F. Incident Command Training

III. SYSTEM KNOWLEDGE REQUIREMENTS - ROVING WATCH

To complete the requirements in the Signature Record Form, the SME will certify, by oral examination, that the candidate has adequate knowledge of the objectives listed below.

A. HVAC

- 1 Safety Building HVAC (Ref. A.52, A.53, N.13, N.82)
 - a. Discuss the following as they apply to the Safety Building HVAC:
 - Component location and operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls including system timers and zone thermostats
- 2 Pumphouse HVAC (Ref. A.26, A.42, N.12)
 - a. Discuss the following as they apply to the Pumphouse HVAC:
 - Component location and operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- 3 Warehouse HVAC (Ref. A.19, N.14)
 - a. Discuss the following as they apply to the Warehouse HVAC:
 - Component location and operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- 4 Guard and Security Building HVAC
 - a. Using the appropriate drawing, locate the major system components (Ref. A.27, A.28):
 - (1) Supply Fan 45-B-401
 - (2) Supply Fan 45-B-402
 - (3) Supply Fan 45-B-403
 - (4) Roof Exhaust Fan 45-B-409
 - (5) Booster Fan 45-B-410

- (6) Temperature Transmitters
- (7) Control Panel 459-CP-O58-O1
- (8) Heat Pump 45-B-404
- (9) Heat Pump 45-B-405
- (10) Heat Pump 45-B-406
- (11) Heat Pump 45-B-407
- (12) Heat Pump 45-B-408
- (13) Duct Heater 45-B-411
- (14) Duct Heater 45-B-416

b. Discuss the following as they apply to the Guard and Security Building HVAC (Ref. A.27, A.28, A.47, N.17, N.81):

- Component operation
- Component Tagout/Lockout locations
- Applicable alarm responses
- Operation of system controls

c. Discuss the control logic of the Guard and Security Building HVAC (Ref. A.47).

5. Engineering Building HVAC

a. Using the appropriate drawing, locate the major system components (Ref. A.17, A.18):

- (1) Supply Fan 45-B-417
- (2) Supply Fan 45-B-418
- (3) Supply Fan 45-B-419
- (4) Supply Fan 45-B-420
- (5) Exhaust Fan 45-B-421
- (6) Exhaust Fan 45-B-422
- (7) Exhaust Fan 45-B-423

-
- (8) Exhaust Fan 45-B-424
 - (9) Exhaust Fan 45-B-425
 - (10) Exhaust Fan 45-B-426
 - (11) Exhaust Fan 45-B-427
 - (12) Exhaust Fan 45-B-428
 - (13) Control Panels
- b. Discuss the following as they apply to the Engineering Building HVAC (Ref. A.17, A.18, N.16, N.83):
- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls including system timers and zone thermostats
- c. Discuss the control logic of the Engineering Building HVAC (Ref. A.17, A.18, A.49).
6. Training Building HVAC
- b. Using the appropriate drawing, locate the major system components (Ref A.50):
- (1) AHU 45-B-430
 - (2) AHU 45-B-431
 - (3) AHU 45-B-433
 - (4) AHU 45-B-434
 - (5) AHU 45-B-435
 - (6) AHU 45-B-436
 - (7) AHU 45-B-437
 - (8) AHU 45-B-438
 - (9) AHU 45-B-439

- (10) Condensing Unit 45-E-008
- (11) Condensing Unit 45-E-009
- (12) Condensing Unit 45-E-010
- (13) Condensing Unit 45-E-01
- (14) Condensing Unit 45-E-012
- (15) Condensing Unit 45-E-013
- (16) Condensing Unit 45-E-014
- (17) Condensing Unit 45-E-015
- (18) Condensing Unit 45-E-016
- (19) Room Thermostats

b. Discuss the following as they apply to the Training Building HV AC (Ref. A.50, A.51):

- Component operation
- Component Tagout/Lockout locations
- Applicable alarm responses
- Operation of system controls

7. Exhaust Filter Building (EFB) HVAC

a. Using the appropriate drawing, locate the major system components (Ref. A.2, A.16):

- (1) Supply Fan 41-B-870
- (2) Supply Fan 41-B-871
- (3) Exhaust Fan 41-B-881
- (4) Exhaust Fan 41-B-882
- (5) HEPA Filter 41-B-883
- (6) HEPA Filter 41-B-884
- (7) Temperature Transmitter
- (8) AHU Heaters

- (9) Control Panel. 413-CP-067-O2
 - (10) Control Panel 413-CP-067-O5
 - b. Discuss the following as they apply to the Exhaust Filter Building HVAC (Ref. A.2, N.11, N.80, N.84):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
 - c. Using the appropriate drawing, discuss the control logic of the Exhaust Filter Building HVAC (Ref. A.13).
 - d. Discuss the instrument loop for EFB HVAC (Ref. A.16)
8. Support Building HVAC - ZONE 1
- a. Using the appropriate drawing, locate the major system components (Ref. A.20):
 - (1) Supply Fan 45-B-1O1
 - (2) Exhaust/Return Fan 45-B-1O2
 - (3) Temperature Controllers
 - (4) Duct Heaters
 - (5) Control Panel 451-CP-O51-33
 - (6) Chilled Water Temperature Control Valve
 - b. Discuss the following as they apply to the Support Building Zone 1 HVAC (Ref. A.20, N.10, N.74, N.84):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
 - c. Using the appropriate drawing, discuss the control logic of the Zone 1 HVAC (Ref. A.43).
 - d. Discuss the instrument loop for Zone 1 HVAC (Ref. A.29, A.30).
 - e. State the areas served by Zone 1 HVAC (Ref. A.20, N.10).
9. Support Building HVAC - ZONE 2

- a. Using the appropriate drawing, locate the major system components (Ref. A.22):
 - (1) Supply Fan 45-B-112
 - (2) Supply Fan 45-B-113
 - (3) Exhaust Fan 45-B-114
 - (4) Deleted
 - (5) Exhaust Fan 45-8-118
 - (6) Exhaust Fan 45-B-119
 - (7) HEPA Filter 45-B-116
 - (8) HEPA Filter 45-B-117
 - (9) Lab Hoods
 - (10) Duct Heaters
 - (11) Control Panel 451-CP-O53-35
 - (12) Chilled Water Temperature Control Valve
 - (13) Temperature Controllers
 - (14) Differential Pressure Transmitters
- b. Discuss the following as they apply to the Support Building Zone 2 HVAC (Ref. N.10, N.75, N.84):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- c. Using the appropriate drawing, discuss control logic of the Zone 2 HVAC (Ref. A.44, A.48).
- d. Discuss the instrument loop for Zone 2 HVAC (Ref. A.33, A.34).
- e. State the areas served by Zone 2 HVAC (Ref. A.22, N.10).

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- a. Using the appropriate drawing, locate the major system components (Ref. A.21):
- (1) Supply Fan 45-B-105
 - (2) Exhaust/Return Fan 45-B-106
 - (3) Exhaust Fan 45-B-107
 - (4) Exhaust Fan 45-B-108
 - (5) Odor Absorber Unit 45-B-109
 - (6) Exhaust Fan 45-B-111
 - (7) Temperature Controllers
 - (8) Duct Heaters
 - (9) Control Panel 451-CP-52-34
 - (10) Chilled Water Temperature Control Valve
 - (11) Air Conditioning Unit 45-B-O34
- b. Discuss the following as they apply to the Support Building Zone 3 HVAC (Ref. N.10, N.76, N.84):
- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- c. Using the appropriate drawing, discuss the control logic of the Zone 3 HVAC (Ref. A.45).
- d. Discuss the instrument loop for Zone 3 HVAC (Ref. A.31, A.32).
- e. State the areas served by Zone 3 HVAC (Ref. A.21, N.10).
11. Support Building HVAC - ZONE 4
- a. Using the appropriate drawing, locate the major system components (Ref. A.23):
- (1) Supply Fan 45-B-120
 - (2) Exhaust/Return Fan 45-B-121
 - (3) Exhaust Fan 45-B-122

- (4) Temperature Controllers
 - (5) Duct Heaters
 - (6) Control Panel 451-CP-O54-37
 - (7) Chilled Water Temperature Control Valve
- b. Discuss the following as they apply to the Support Building Zone 4 HVAC (Ref. N.10, N.77, N.84):
- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls.
- c. Using the appropriate drawing discuss the control logic of the Zone 4 HVAC (Ref. A.46).
- d. Discuss the instrument loop for Zone 4 HVAC (Ref. A.35, A.36).
- e. State the areas served by Zone 4 HVAC (Ref. A.23, N.10).
12. Support Building HVAC ZONE 5
- a. Using the appropriate drawing, locate the major system components (Ref. A.24):
- (1) Supply Fan 45-8-125
 - (2) Exhaust/Return Fan 45-B-126
 - (3) Exhaust Fan 45-B-127
 - (4) Temperature Controllers
 - (5) Duct Heaters
 - (6) Control Panel 451-CP-O55-38
 - (7) Chilled Water Temperature Control Valve
- b. Discuss the following as they apply to the Support Building Zone 5 HVAC (Ref. N.10, N.78, N.84):

- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- c. Using the appropriate drawing, discuss the control logic of the Zone 5 HVAC (Ref. A.46).
- d. Discuss the instrument loop for Zone 5 HVAC (Ref. A.37. A.38).
- e. State the areas served by Zone 5 HVAC (Ref. A.24, N.10)
13. Support Building HVAC - ZONE 6
- a. Using the appropriate drawing, locate the major system components (Ref. A.25):
- (1) Supply Fan 45-B-130
 - (2) Supply Fan 45-B-131
 - (3) Booster Fan 45-B-135
 - (4) Condensing Unit 45-B-132
 - (5) Condensing Unit 45-B-133
 - (6) Exhaust Fan 45-B-136
 - (7) Exhaust Fan 45-B-137
 - (8) Temperature Controllers
 - (9) Duct Heaters
 - (10) Control Panel 451-CP-O56-36
 - (11) Differential Pressure Transmitters
- b. Discuss the following as they apply to the Support Building Zone 6 HVAC (Ref. N.10, N.79, N.84):
- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
- c. Using the appropriate drawing, discuss the control logic of the Zone 6 HVAC (Ref. A.46).

- d. Discuss the instrument loop for Zone 6 HVAC (Ref. A.39, A.40, A.41).
- e. State the areas served by Zone 6 HVAC (Ref. A.25, N.10)

14. Waste Handling Building HVAC - ZONE 1

- a. Using the appropriate drawing, locate the major system components (Ref. A.5, A.6):
 - (1) Supply Fan 41-B-861
 - (2) Supply Fan 41-B-863
 - (3) Exhaust Damper 411-HD-063-08
 - (4) Exhaust Damper 411-HD-063-11
 - (5) Exhaust Damper 411-HD-063-12
 - (6) Exhaust Damper 411-HD-063-13
 - (7) Temperature Transmitters
 - (8) Unit Heaters 41-B-904 through 41-B-908
 - (9) Control Panel 411-CP-063-16
 - (10) KURZ Panel 411-CP-063-16A
 - (11) Chilled Water Temperature Control Valve
- b. Discuss the following as they apply to the Waste Handling Building Zone 1 HVAC (Ref. N.8, N.69, N.84):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
 - DDC System
- c. Using the appropriate drawing, discuss the control logic of the Zone 1 HVAC (Ref. A.11).
- d. State the areas served by Zone 1 HVAC (Ref. A.5, A.6, N.8)

15. Waste Handling Building HVAC - ZONE 2

- a Using the appropriate drawing, locate the major system components (Ref. A.5. A.6):
- (1) Supply Fan 41-B-812
 - (2) Supply Fan 41-B-813
 - (3) Exhaust Fan 41-B-816
 - (4) Exhaust Fan 41-B-817
 - (5) Exhaust Fan 41-B-835
 - (6) Exhaust Fan 41-B-836
 - (7) HEPA Unit 41-B-814
 - (8) HEPA Unit 41-B-815
 - (9) HEPA Unit 41-B-834
 - (10) HEPA Unit 41-B-979
 - (11) Control Panel 411-CP-062-13
 - (12) Control Panel 411-CP-062-14
 - (13) Control Panel 411-CP-062-15
 - (14) Control Panel 411-CP-062-20
 - (15) Chilled Water Temperature Control Valves
 - (16) KURZ Panel 411-CP-O52-13A/14A
 - (17) KURZ Panel 411-CP-O52-15A
 - (18) Temperature Transmitter
 - (19) Differential Pressure Transmitters
- b. Discuss the following as they apply to the Waste Handling Building Zone 2 HVAC (Ref. N.8, N.70, N.84):
- Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
 - DDC System

- c. Walk down and draw a rough sketch of the Zone 2 HVAC including location of Pressure Differential Dampers, Backdraft Dampers, Isolation Dampers for AHUs, HEPA Dampers and Seismic Dampers (Ref. A.5, A.6).
 - d. Using the appropriate drawing, discuss the control logic of the Zone 2 HVAC (Ref. A.8, A.10).
 - e. Discuss the Zone 2 instrument loops (Ref. A.14, A.15).
16. Waste Handling Building HVAC - ZONE 4
- a. Using the appropriate drawing, locate the major system components (Ref. A.3):
 - (1) Supply Fan 41-B-803
 - (2) Supply Fan 41-B-804
 - (3) Supply Fan 41-B-807
 - (4) Exhaust Fan 41-B-805
 - (5) Exhaust Fan 41-B-806
 - (6) Exhaust Fan 41-B-878A
 - (7) Exhaust Fan 41-B-878B
 - (8) HEPA Unit 41-B-801
 - (9) HEPA Unit 41-B-802
 - (10) HEPA Unit 41-B-877A
 - (11) HEPA Unit 41-B-877B
 - (12) HEPA Unit 41-B-877C
 - (13) Control Panel 411-CP-O51-10
 - (14) Control Panel 411-CP-O58-19
 - (15) Control Panel 411-CP-O51-11
 - (16) Control Panel 411-CP-O52-12
 - (17) Control Panel 411-CP-O52-17

- (18) Chilled Water Temperature Control Valves
 - (19) KURZ Panel 411-CP-O52-10A/11A
 - (20) KURZ Panel 411-CP-O52-12A/17A
 - (21) Temperature Transmitter
 - (22) Air Lock Supply Fan 41-B-101
 - (23) Air Lock Supply Fan 41-B-102
 - (24) Differential Pressure Transmitters
- b. Discuss the following as they apply to the Waste Handling Building Zone 4 HVAC (Ref. N.9, N.72, N.84):
- Component operation
 - Component Tagout/lockout locations
 - Applicable alarm responses
 - Operation of system controls.
- c. Walk down and draw a rough sketch of the Zone 4 HVAC including location of Pressure Differential Dampers, Backdraft Dampers, Isolation Dampers for AHUs, HEPA Dampers and Seismic Dampers (Ref. A.4)
- d. Using the appropriate drawing, discuss the control logic of the Zone 4 HVAC (Ref. A.7, A.9).
- e. Discuss the Zone 4 instrument loops (Ref. A.14, A.15).

17. TMF HVAC

- a. Using the appropriate drawing, locate the major system components (Ref A.4):
- (1) Supply Fan 41-B-991
 - (2) Supply Fan 41-B-992
 - (3) Exhaust/Return Fan 41-B-993
 - (4) Exhaust/Return Fan 41-B-994
 - (5) Control Panel 412-CP-066-01
 - (6) Chilled Water Temperature Control Valves
 - (7) KURZ Panel 412-CP-066-01A

- b. Discuss the following as they apply to the TMF HVAC (Ref. N.9, N.73, N.84):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls.
- c. Using the appropriate drawing, discuss the controllogic of the TMF HVAC (Ref. A.12).

18. Seismic Monitoring System

- a. Discuss the following as they apply to the Seismic Monitoring System (Ref. N.8, N.9, N.62, N.63):
 - Component operation
 - Component Tagout/Lockout locations
 - Applicable alarm responses
 - Operation of system controls
 - Quarterly system testing
- b. Discuss the operation of the Seismic Monitoring System control panel 413A- SMP-004-001. (Ref. N.62, N.63, N.121)
- c. Discuss the alarm response associated with Seismic Monitoring Panel 413A- SMP-004-001. (Ref. N.62, N.63, N.121)

B. High Voltage Electrical

1. Diesel Generators

- a. Using the O & M Manual, discuss basic diesel generator construction and identify the function of the major components (Ref. B.2, N.4).
- b. Using the shift operating logs, discuss the parameters monitored during diesel generator operation and identify actions to be taken if readings are out of specification (Ref. N.4, N.29, N.52, N.58).
- c. State the alarms and explain the corrective action for the alarm on the diesel generator (Ref. N.58).
- d. State the source of control power for the diesel generator output breakers (CB-01 and CB-02) (Ref. B.29, B.30).
- e. State the protective features for the diesel generator output breakers (CB-G1 and CB-G2) (Ref. B.16, B.25, N.4).
- f. Discuss tagout/lockout locations for the diesel generators (Ref. B.2, B.3, B.22, B.29, B.30).
- g. Discuss normal local and remote operation of the diesel generators

including alignment while shutdown (Ref. N.52).

- h. Discuss requirements for performing periodic diesel generator operability testing (Ref. N.52).
- i. Using the O & M Manual, discuss basic load bank construction and identify the function of the major components (Ref. B.21).
- j. State the source of control power for the load bank system (Ref. B.21).
- k. State the protective features for the load bank system. (Ref. B.21)
- l. Discuss tagout/lockout locations for the load bank and related switchgear.(Ref. B.31).
- m. Discuss local and remote operation of the load bank including alignment while shutdown (Ref. N.52).

2. Area Substations and Switchgear

- a. State the protective features for the circuit breakers in Substation 3 (Ref. B.1 B.13, B.25, N.4).
- b. Using the appropriate drawing, explain the normal and emergency control power circuits for Substation 3 (Ref. B.22, N.4).
- c. State the loads supplied by the area substations (Ref. B.24)
- d. Discuss safety precautions to be observed when operating or racking circuit breakers in or out (Ref. N.4, N.51).
- e. Discuss the requirements for danger tagging of high voltage electrical breakers (Ref. N.4, N.30).
- f. State the location of the load interrupter switches and explain the purpose of key interlocks (Ref. B.18, N.4).
- g. Discuss the methods for operating site load interrupter switches (Ref. B.6, B. 7, B.9).
- h. Discuss the normal and alternate methods for operating vacuum interrupter switch 25P-VIS15/11 (Ref. B.8).
- i. Discuss the method for operating switches on 25P-SWG15/9 (Ref. B.12).
- j. Discuss the methods for operating racking devices on 480 Vac Area Substation circuit breakers and CB-G1/CB-G2 (Ref. B.13, B.14).
- k. Discuss the methods for opening and closing 480 Vac Area Substation circuit breakers and CB-G1/CB-G2 (Ref. B.13, B.14).
- l. Discuss the method for operating racking devices on Substation 74160 Vac circuit breakers (Ref. B.15).

- m. Discuss the methods for opening and closing Substation 74160 Vac circuit breakers (Ref. B.15).
 - n. Discuss the operation of 41-B-700 fan starters 25P-STR-700A or 700B (Ref. B.10).
 - o. Discuss how to identify fault conditions on breaker solid state trip devices (Ref. B.13, B.14, N.4).
3. Plant and Utility Substations
- a. Using the appropriate drawing, state the protective features for the circuit breakers in the Plant Substation including the types of protective relays (Ref. 8.19, N.4, 8.25).
 - b. Using the appropriate drawing, explain the normal and emergency control power circuits in the Plant Substation (Ref. B.20).
 - c. Using the appropriate drawing, discuss normal and alternate power supply to each substation of the electrical system (Ref. B.24).
 - d. Using the appropriate drawing, discuss the Surface Backup Electrical Distribution System options using the 13.8 kV cabling and the Plant Substation (Ref. B.24, N.53).
 - e. Explain the philosophy of relying on interlocks while operating the electrical system (Ref. N.4).
 - f. Discuss how to identify fault conditions on Plant or Utility Substation circuit breakers (Ref. B.10, N.4).
 - g. Explain the required actions if a circuit breaker trips on fault (Ref. N.4).
 - h. Discuss methods for normal operation of site 13.8 kV circuit breakers (Ref. B.10).
 - i. Describe method for manual opening of Plant Substation breakers CB-12 and CB-13. (Ref. B.10).

C. Low Voltage Electrical

1. Motor Control Centers and Distribution Panels

- a. State the location and power sources for the Motor Control Centers (Ref. C.6)
- b. List the major loads supplied by the Motor Control Centers (Ref. C.7 through C.12, C.14 through C.17).
- c. Discuss the methods for opening and closing breakers on the site Motor Control Centers (Ref. N.6).
- d. State the location of Distribution Panels (Ref. C.4, C.5)
- e. List the major loads supplied by the Distribution Panels (Ref. C.4, C.5).
- f. State the location of the yard switchracks (Ref. C.13).
- g. List the major loads on the yard switchracks (Ref. C.13).

2. Uninterruptible Power Supplies

- a. Describe the function and basic operation of an uninterruptible power supply (Ref. C.1 through C.3, N.6).
- b. Discuss the differences between the various site UPS systems (Ref. C.1 through C.3, N.6).
- c. Discuss the areas serviced by uninterruptible power supplies (Ref. C.4).
- d. Discuss the methods for transferring the Central Uninterruptible Power Supplies from their normal to alternate power sources and back (Ref. N.54, N.55).
- e. Discuss the UPS alarms and appropriate response actions (Ref. N.60, N.61).
- f. List tagout/lockout locations for the Central Uninterruptible Power Supplies (Ref. C.14, N.6, N.54, N.55).
- g. Discuss the methods for transferring the Central Uninterruptible Power Supplies from their normal to abnormal power sources and back. (Ref. N.139)

D. Underground Ventilation/Filtration

1. Using the appropriate drawing, explain the flow paths through the Underground Ventilation and Filtration System (Ref. D.5, D.6, D.8).
2. Walk down the system and discuss the location and function of the major UVFS components (Ref. D.5, D.6, D.8).
3. Describe the operation of the components listed below (Ref. D.4 through D.8, N.19, N.88).
 - a. 41-B-856 and 41-B-857 HEPA units.
 - b. LR/R- 7 Switch
 - c. EVA Flow System (KURZ)
 - d. Flosconic (ultrasconic sensor) (D.2B)
4. Discuss the methods of filtration initiation listed below (Ref. D.7, D.9, D.10, N.19, N.87):
 - a. Automatic Initiation
 - b. CMR Initiation
 - c. Local Initiation from control panel 413-CP-O56-O1
5. Discuss the modes of operation and operating limits for the 41-B-860 fan conditions listed below (Ref. N.19, N.88):
 - a. 41-B-860 fan in filtration mode
 - b. 41-B-860 fan in Minimum Ventilation mode
 - c. 41-B-860 fan in Reduced Ventilation mode
 - d. Diesel generator supplying site power.
 - e. Operating with a failed 41-B-856 or 41-B-857 HEPA unit.
 - f. 41-B-860 fan in Maintenance Ventilation Mode
6. Discuss the modes of operation and operating limits for the 41-B-700 fan conditions listed below (Ref. N.19, N.87):
 - a. Alternate Ventilation mode
 - b. Normal Ventilation mode
 - c. Maintenance Ventilation Mode
 - d. Fan Trip Settings

7. Discuss the required actions under the following conditions (Ref. N.19, N.87, N.92):
 - a. 41-B- 700 fan low flow alarm.
 - b. 41-B-860 fan low flow alarm.
 - c. Clogged indication on HEPA unit 41-B-856 or 857,
 - d. Waste tower high differential pressure alarm.
 - e. 41-B-700 Fan Vibration Alarms.
 - f. 41-B700c Fan Bearing Temperature Alarms
8. List the tagout/lockout locations for major UVFS components (Ref. D.3. N.19. N.23)
9. Discuss the normal and alternate methods for opening and closing the Bypass Dampers, EFB Isolation Damper, HEPA Filter Isolation Dampers, and fan inlet/outlet dampers (Ref. N.88).
10. Discuss manual and automatic vortex operation of UVFS fans (Ref. N.88).
11. Discuss UVFS alarms and appropriate responses (Ref. N.93).

E. Fire Detection, Fire Suppression and Domestic Water

1. Fire pumps and piping systems
 - a. Walk down the fire and domestic water systems and state the location of tanks, pumps and major isolation valves (Ref. E.11, E.12, N.5).
 - b. Describe the following pumps function, capacity, control setpoints, and tagout/lockout locations (Ref. E.1, E.2, E.10, E.25, N.5, N.64, N.65, N.66)
 - (1) Jockey pump
 - (2) Electric fire pump
 - (3) Diesel fire pump
 - c. State the five diesel fire pump alarms that will give a common trouble light (Ref. E.18, N.5, N.96).
 - d. Discuss the appropriate response to system alarms (Ref. N.96)
 - e. State the minimum fuel requirements for the diesel fire pump (Ref. N.5, N.64).
 - f. Describe the fire water system lineup during a power outage (Ref. N.5).
 - g. State the amount of water dedicated to fire protection and describe the

system design and lineup that ensures water availability (Ref. N.5, N.140).

- h. State the minimum required fire system pressure to maintain system availability. State also when this limit applies. (Ref. N.130).
- i. Discuss normal and emergency startup and shutdown of the Electric and Diesel Fire Pumps (Ref. N.64, N. 65, N.66).
- j. Discuss the methods for reprogramming the Diesel Fire Pump Control Panel (Ref. N.64).

2. Domestic Water system

- a. Describe the function and operation of the water storage tanks including: capacity, level monitoring, level control and location of level monitoring readouts (Ref. E.3, E.6, E.12, E.16, E.19, E.21, E.24, N.64).
- b. Discuss manual fill of domestic water tanks and state the basis for the maximum flow rate (Ref. E.13, N.20, N.94).
- c. Discuss the function and operation of the domestic water pumps including capacity, control setpoints, control signals, pump switching, and tagout/lockout locations (Ref. E.17, E.19, E.21, N.20).
- d. State how domestic water pressure is maintained during normal and abnormal operation (Ref. E.6, N.20, N.94).
- e. Discuss the function and operation of the hypochlorinator system including: control signals, chemical used, safety precautions and pump operation (Ref. E.7, E.9, E.21, N.20, N.94).
- f. Discuss the function, operation, and alarms associated with the chlorine analyzer system (Ref: E.4, E.7, N.20, N.94).
- g. Discuss the function and operation of the HACH free chlorine analyzer (Ref. N.95).

3. Fire suppression and detection

- a. Describe the WHB fire detection and suppression zones and operation of fire control panels including panel switches (Ref. E.14, E.15, N.5).
- b. Describe the Support Building fire detection system and operation of fire control panels including panel switches (Ref. E.22, E.23, N.5).
- c. Discuss sources of alarms and appropriate responses, including the RFAR (Ref. N.96, N.120).

F. Compressed Air

1. Site Air Systems

- a. Walk down the site air system and state the locations of the air compressors, air dryers, air receivers, cooling water package components (Ref. F.9, F.10, F.11, F.17, F.25, F.26, N.1).
- b. Discuss the system operation and state the location of major isolation valves (Ref. F.9, F.10, F.17, F.25, F.26, N.1).
- c. Discuss the components supplied by the instrument air and plant air systems in the following locations:
 - (1) Waste Handling Building (Ref. F.17, N.1).
 - (2) Support Building (Ref. F.26, N.1).
 - (3) Exhaust Filter Building (Ref. F.16, N.1)
- d. Discuss the appropriate response to system alarms including a loss of site air pressure (Ref. N.37).

2. Ingersoll-Rand XLE-NL Compressors

- a. Discuss the function and normal operation of the Ingersoll-Rand XLE-NL air compressors (Ref. F.1, N.1, N.33).
- b. Explain the meaning of the term "non-lubricated" as it applies to the Ingersoll-Rand XLE-NL air compressors (Ref. F.1, N.1).
- c. State the safety precautions and the controls required when working with the cooling water system (Ref. N.1, N.33).
- d. State the conditions that will cause an alarm actuation or automatic shutdown of an Ingersoll-Rand XLE-NL air compressor (Ref. N.1, N.37).
- e. State the location and setpoints of pressure reliefs associated with the Ingersoll-Rand XLE-NL air compressors (Ref. F.1, F.10, N.1).
- f. List tagout/lockout locations of major components (Ref. F.1, F.8, F.10, F.11, F.14).

3. Atlas-Copco Model GA200 Air Compressors

- a. Discuss the function and operation of the Atlas-Copco Air Compressors including air flow, oil flow, loading and unloading systems (Ref. F.3).
- b. Discuss the operation of the Compressor Control Module including available readings on numeric displays, service indicator lamps, setpoints, shutdowns (including setpoints) and manual versus automatic operation (Ref. F.3).

- c. Describe the differences between Programmed and Emergency stops (Ref. F.3).
 - d. State location and setpoints of safety valves (Ref. F.3, F.25).
 - e. List the control functions and alarms available to the CMR Operator (Ref. F.20, F.22, F.23, F.26).
 - f. State the parameters monitored and normal limits (Ref. N.29),
 - g. Discuss operation of the Atlas-Copco Sequencer (Ref. F.21, N.36).
 - h. List tagout/lockout locations of major components (Ref. F.8, F.18, F.19, F.22, F.23).
4. Curtis-Toledo Model ES-20 Compressor
- a. Describe the method used to control the Model ES-20 Curtis-Toledo air compressor (Ref. F.4, N.1).
 - b. State the location and setpoint of the relief associated with the Model ES-20 Curtis-Toledo air compressor (Ref. F.4, N.1).
 - c. Describe the function and operation of the air dryer associated with the Model ES-20 Curtis-Toledo air compressor (Ref. F.4, N.83).
 - d. List tagout/lockout locations of major components (Ref. F.4, F.8).
5. Deltech Model PS 1701 Heatless Desiccant Air Dryer
- a. Describe the function and operation of the Deltech Model PS 1701 Heatless Desiccant Air Dryer (Ref. F.6).
 - b. State the parameters monitored and normal limits (Ref. N.29).
 - c. Discuss the automatic functions on a loss of electrical power (Ref. F.6).
 - d. List the normal purge and vessel pressures during operation (Ref. F.6, N.29).
 - e. List tagout/lockout locations and power sources and discuss use of the power transfer switch (Ref. F.6, F.18, N.36).
6. Hankison Series DH-2100 Regenerative Air Dryer
- a. Describe the operation of the Hankison Series DH-2100 regenerative desiccant air dryer (Ref. F.5 N.1).
 - b. State the automatic functions that occur if the Hankison Series DH-2100 regenerative desiccant air dryer loses control panel power (Ref. F.5, N.1).
 - c. State the automatic functions that occur if a switching failure or temperature probe malfunction is indicated on the control panel of the Hankison Series DH-2100 regenerative desiccant air dryer (Ref. F.5, N.1).

- d. State the purpose and operation of the moisture indicator on the Hankison Series OH-2100 regenerative desiccant air dryer (Ref. F.5, N.1).
 - e. List tagout/lockout locations of major components (Ref. F.8, F.10, N.33).
7. PALL AMLOC-DHA Regenerative Air Dryer
- a. Describe the operation of a PALL AMLOC-DHA regenerative desiccant air dryer (Ref. F.7, N.1).
 - b. State the automatic function that occurs if a PALL AMLOC-DHA regenerative desiccant air dryer control panel loses power (Ref. F.7, N.1).
 - c. State the automatic function that occurs if a PALL AMLOC-DHA regenerative desiccant air dryer displays a Chamber Performance Degrading alarm (Ref. F.7, N.1).
 - d. State the purpose of the AQUADEX moisture indicator on a PALL AMLOC- DHA regenerative desiccant air dryer and the normal and abnormal moisture indications (Ref. F.7, N.1).
 - e. List tagout/lockout locations of major components. (Ref. F.8, F.16, F.17, F.26, N.35).

G. Chilled Water

1 Basic Refrigeration Concepts

- a. Draw a one line diagram of the basic refrigeration cycle and discuss the function of each component (Ref. G.1, G.2, G.3, G.10, N.2).
- b. Discuss the operational differences between reciprocating and centrifugal chillers (Ref. G.3, G.4, N.2).
- c. State the reason for using immersion heaters in chiller oil systems (Ref. G.3, G.9, N.2).
- d. Discuss the reason for maintaining proper oil level during compressor operations and discuss consequences of inadequate oil level (Ref. G.2, G.3, N.2).

2. Main Plant Chiller

- a. State the function of the Main Plant Chiller and discuss the components supplied with chilled water (Ref. G.6, G.12, G.16, N.2).
- b. Discuss how the compressor motor is cooled (Ref. G.6, N.2).
- c. Discuss the tagout locations for the main plant chillers and state when the different locations would be used. (Ref. G.11, G.19, N.2)
- d. Using the roving watch logs, discuss the normal readings and the reasons for monitoring the following indications also be able to discuss

the actions to be taken if the readings are out of specification. (Ref. G.6, N.2, N.29):

- (1) Condenser Pressure
 - (2) Evaporator Pressure
 - (3) Low Oil Pressure
 - (4) High Oil Pressure
- e. Describe the function of the following components (Ref. G.6, N.2):
- (1) Percent current control
 - (2) Control point control
 - (3) Vane position indicators
- f. State the purpose of the following system indicator lights on the chiller control panel (Ref. G.6, N.2):
- (1) Safeties Satisfied
 - (2) Cooling Required
 - (3) Restart Time Elapsed
 - (4) Chilled Water Pump
 - (5) Oil Pump
 - (6) System
- g. Discuss the function of the following safety indicators on the chiller control panel (Ref. G.6, N.2):
- (1) Low Oil Pressure
 - (2) High Condenser Pressure
 - (3) Low Refrigerant Pressure
 - (4) High Motor Temperature
 - (5) Starter Fault
 - (6) High Oil Temperature
- h. Discuss the sequence of chiller operation, from cooling required to setpoint satisfied (Ref. G.6, N.2).
- i. Discuss safe practices to be followed when adding makeup water to the chilled water system (Ref. N.2, N.48).

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- j. Discuss the chiller lead/lag selector switch, the chiller/chiller pump pairing selector switch and the effects these switches have on normal chiller operation (Ref. G.17, N.2, N.48).
 - k. Describe the operation of the pneumatically actuated chilled water valves (Ref. G.14, N.2, N.48).
 - l. State the location and explain the purpose of the differential pressure bypass valve in the chilled water system loop (Ref. G.14, G.15, N.2).
 - m. Discuss system alarms and appropriate response (Ref. N.49).
3. Engineering Building Chiller
- a. State the function, capacity and type of the Engineering Building chiller; also discuss the location of the components and power disconnects (Ref. G.9, G.20, N.2).
 - b. Using the chiller O & M manual, identify and discuss the functions of the control panel components. (Ref. G.9)
 - c. Discuss the function following chiller safeties and interlocks (Ref. G.9, N.2):
 - (1) Chilled water flow switch
 - (2) Low ambient lockout temperature
 - (3) Compressor motor protectors
 - (4) High discharge pressure switches
 - (5) Compressor motor overloads
 - (6) Low water temperature cutout
 - (7) Three phase power monitor
 - d. Discuss the chiller control diagnostic indicators (Ref. G.9, N.2)
 - e. Discuss chilled water system makeup (Ref. N.83).
 - f. State the compressor oil levels during normal operations and when the unit is secured (Ref. G.9, N.2).
 - g. State the tagout locations for the various components associated with the engineering building chiller unit (Ref. G.9, G.20, G.21, N.83).
4. Safety Building Chiller
- a. State the function, type and capacity of the Safety Building chiller also discuss the location of the components and power disconnects (Ref. G.10, N.2, N.82).

- b. Using the chiller O & M manual, identify and discuss the functions of the unit operating panel components (Ref. G.10).
- c. State the tagout locations for the various components associated with the safety building chiller unit (Ref. G.23).

H. Central Monitoring System

1 Plant Communications Equipment

- a. Discuss the operation and proper use of the Motorola Two-way radios (Ref. N.21, N.41, N.47, N.86).
- b. State the purpose and general operation of the Public Address System (Ref. N.21, N.41, N.47, N.86).
- c. Discuss the purpose and general operation of the Site Notification and Telephone Paging Systems (Ref. N.21, N.41, N.47, N.86).
- d. Discuss the operation of the Mine Pager Phone (Ref. N.21, N.41, N.47, N.86).

2. CMS Hardware

- a. Discuss the physical locations, basic operating principles and tagout/lockout location of the following CMS components (Ref. H.3, H.15, H.16):
 - (1) Local Processing Units
 - (2) Fiber-Optic Repeaters
 - (3) Operator's and Engineer's Stations
- b. List the physical locations of the Remote Uninterruptible Power Supplies and associated tagout/lockout locations (Ref. H.15, N.45).
- c. Describe the basic operation of the Best FC-5kVA UPS (Ref. H.1, N.6).
- d. Describe the basic operation of a Toshiba 1400 Series UPS including methods for clearing fault indications (Ref. H.2, N.45).

I. Waste Water Treatment

- 1. Walk down and create a basic diagram of the Sewage Lagoon system. Using the diagram created, discuss the purpose of the ponds and major system components (Ref. I.1, I.9, I.10, I.11, I.13, N.7).
- 2. Discuss the theory of operation, construction, function and basic operating procedures for a facultative wastewater pond system (Ref. I.1, I.9, I.10, I.11, I.13, N.7, N.67).
- 3. Describe the valves used in the construction of the Wastewater Treatment System why these types were chosen, and basic valve operation (Ref. N.7).

4. State the normal operating depth for an in-service pond (Ref. N.7, N.29, N.67).
5. State the minimum depth for a standby pond (Ref. N.7, N.29, N.67).
6. State the minimum depth for an evaporation pond (Ref. N.7, N.29, N.67).
7. Discuss in detail, the health hazards associated with waste water treatment (Ref. I.1 through I.4, N.7).
8. Discuss in detail, the safety hazards and precautions associated with the operation of the Sewage Lagoon (Ref. I.1 through I.4, N.7).
9. Discuss the process and precautions for chlorination of the Sewage Lagoon effluent (Ref. N.7).

J. Surface Fuel Station

1. Using applicable drawings, discuss the function, layout and basic operation of the Surface Vehicle Fuel Station (Ref. J.1, J.2, J.8, J.9, J.10, N.68).
2. Discuss the construction of the Underground Fuel Storage Tanks (Ref. J.2)
3. State the power supplies and emergency power disconnect locations for the fuel pumps and leak detection panel (Ref. J.9).
4. Discuss the normal (automatic) leak detection method (Ref. J.1, N.68).
5. Discuss the backup (contingency) method for leak detection. Include leak limits and times when this method must be used (Ref. J.3, N.68).
6. Discuss the procedure for receiving fuel into an underground fuel storage tank (Ref N.68).
7. Discuss the actions taken in the event of a fuel spill (Ref. N.115)
8. Discuss the dangers, health hazards and precautions required for the handling or transfer of gasoline or diesel fuel (Ref. J.6, J.7, N.68).
9. Discuss the routine weekly and monthly maintenance activities performed by Facility Operations on the UFSTs (Ref. N.68).
10. Discuss the required actions for a leak detection system alarm (Ref. J.5, N.68, N.115).

K. Plant Vacuum

1. Walk down the plant vacuum system in the Waste Handling Building and Support Building and discuss the location of major equipment and system isolation valves (Ref. K.2, N.18).
2. Describe the purpose of the vacuum system (Ref. N.18),
3. Discuss the basic operation the Plant vacuum pumps (Ref. K.1, N.18).
4. State the vacuum pump motor power supplies (Ref. K.5, K.6).

5. DELETE
6. Explain the lead/lag control feature for the vacuum pump pain (Ref. K.3, N.18).
7. DELETE
8. Describe how the intake filter element condition is monitored (Ref. K.1, N.18).
9. State the purpose of the pressure transmitters in the vacuum system (411-PT-029-001 and 411-PT-029-002) (Ref. N.18).
10. DELETE
11. Discuss normal system operation (Ref. N.86).

>III. SYSTEM KNOWLEDGE REQUIREMENTS - CMRO

> A. CMS Equipment

- > 1. State the Purpose of a Local Processing Unit (LPU). (Ref. H.3, N.3, N.21)
- > 2. List the Locations of all 21 LPUs. (Ref. H.3)
- > 3. Discuss the purpose of the Fiber Optic Ethernet. (Ref. H.3, N.21)
- > 4. State the purpose of an I/O server. (Ref. H.3, N.21)
- > 5. Describe what a Display Client PC is used for. (Ref. H.3, N.21)
- > 6. Discuss the locations, functions and operations of the Human-Machine-Interfaces (HMI-201, HMI-203, HMI-204, HMI-211, HMI-212, HMI-221, HMI-222). (Ref. H.3, N.21)
- > 7. State the difference between an Operator Workstation and an Engineering Workstation. (Ref. H.3, N.21)
- > 8. Discuss the interrelationships between the field sensors and all of the equipment in steps 1-6. (Ref. H.3,N.21).
- > 9. State what software and hardware is utilized by the CMS. (Ref. H.3,N.21)
- > 10. Discuss the General Screen Layout and Symbols as listed in the O&M. (Ref. H.3)
- > 11. Discuss the Screen Color Codes as listed in the O&M. (Ref. H.3)
- > 12. Describe how the Controlling Equipment features work in the CMS. (Ref. H.3)
- > 13. Describe the Menu Structure and Screen Navigation of the CMS. (Ref. H.3)
- > 14. Describe the Security features of the CMS. (Ref. H.3)
- > 15. Discuss the Alarms section of the CMS. (Ref. H.3)
- > 16. State the Alarm Page Color Key and the relationship to the Priorities that are set. (Ref. H.3)
- > 17. Describe what Hardware Alarms are used for. (Ref. H.3)
- > 18. Discuss the LPU Status Screen. (Ref. H.3)
- > 19. Discuss the Trend Section of the CMS in detail. (Ref. H.3)
- > 20. Describe the Reports Section of the CMS. (Ref. H.3)
- > 21. Describe the Archiving and Backup Portion of the CMS. (Ref. H.3)
- > 22. Discuss briefly the SIXNET hardware section in the O&M.

(Ref. H.3)

- > 23. Discuss the operation of the Printers for the CMS. (Ref. H.3)
 - > 24. Discuss the function and operation of all communication systems located in the CMR (Ref. N.21, N.41, N.86).
- B. DTN Weather System (Ref. H.14)
- 1. Describe the functions and operation of the DTN Weather System.
 - 2. State the minimum number of times the CMRO will access DTN during inclement weather along TRUPACT-II routes.
- C. Underground Electrical System
- 1. Discuss the relays and protective devices associated with underground 13.8kV circuit breakers (Ref. L.1).
 - 2. Describe the basic differences between switching stations and substations in the underground (Ref. L.1, L.5).
- A. State the purpose of the Emergency Stop Buttons for each switching station (Ref. L.1, L.17).
- B. Draw a one-line diagram of the underground electrical distribution system from the plant substation (25P-SWG15/1) to the 480V substations underground (Ref. L.17).
- C. Using the diagram created in Requirement 4., above and the listed references, discuss the following:
- 1. Normal electrical distribution switch lineup (Ref. L.17, N. 52).
 - 2. Normal backup power distribution switch lineup (Ref. L.17, N.53).
 - 3. Locations of all underground switching stations (Ref. L.17, L.23 through L.25).
 - 4. Locations of all underground substations (Ref. L.17, L.23 through L.25).
- 6. Discuss the alternate power supply to Substation 3 (Ref. L.17, N.53).
 - 7. List the major loads on the underground substations (Ref. L.17).
 - 8. Discuss the transferring of 480V loads between Substations 1 and 4 (Ref. N.53).
 - 9. List the "Essential Loads" as determined by WP04-ED1621 and WP04-ED1631 (Ref. N.52, L.53).
 - 10. State the power supplies to the following loads (Ref. L.11):
 - a. Underground LPUs

- b. Underground Evacuation Alarm
 - c. Critical doors and bulkhead regulators
 - d. Underground Differential Pressure Alarm Panels
 - e. Underground Public Address System equipment
 - f. Underground fire panels.
11. State the required actions to be taken in the event of a loss of underground electrical power (Ref. N.52, N.53).

D. Underground Ventilation System

- 1. Describe the path of underground air flow during normal ventilation. (Ref. M.6, M.7)
- 2. Describe the path of underground air flow during filtration mode. (Ref.M.6, M.8, N.81)
- 3. Discuss the four underground "air splits" and how air flow is regulated within each. (Ref. M.6)
- 4. Discuss the purpose and location of the underground "Control Doors". (Ref. M.4, M.6)
- 5. Discuss the purpose of the S-400 and S-1300 differential pressure indications and alarms. (Ref. N.81)
- 6. State the purpose of the underground booster fans (Ref. M.9).
- 7. Describe the rib reflectors and discuss their respective colors. (Ref. M.6)
- 8. Describe the underground evacuation routes. (Ref. M.6)

IV SYSTEM OPERATION PRACTICAL EVALUATION - ROVING WATCH

The tasks listed below identify the task number and reference that match the Signature Record Form. The SME or OJTE will certify, by personal observation, that the candidate possesses the skills and knowledge necessary to safely perform the tasks without assistance. The SME or OJTE still retains full responsibility and accountability for the proper operation of plant equipment.

NOTE

Numbers in left-hand parenthesis correspond to tasks outlined in the Systematic Approach to Training requirements for the Facility Operations Roving Watch

A. HVAC

1. TRUPACT MAINTENANCE FACILITY HVAC (Ref. N.73)
 - a. (A-1) Startup the TMF HVAC.
 - b. (A-2) Shut down the TMF HVAC.
2. GUARD & SECURITY BUILDING HVAC (Ref. N.81)
 - a. (A-3) Startup G&SB HVAC.
 - b. (A-4) Shut down G&SB HVAC.
3. ENGINEERING BUILDING HVAC (Ref. N.83)
 - a. (A-5) Startup Engineering Building HVAC.
 - b. (A-6) Shut down Engineering Building HVAC.
4. SAFETY BUILDING HVAC (Ref. N.82)
 - a. (A-7) Startup Safety Building HVAC.
 - b. (A-8) Shut down Safety Building HVAC.
5. EXHAUST FILTER BUILDING HVAC (Ref. N.80)
 - a. (A-9a) Startup Exhaust Filter Building HVAC.
 - b. (A-10a) Shut down Exhaust Filter Building HVAC.

6. STATION A HVAC (Ref. A.17)
 - a. (A-9b) Start up Station A HVAC
 - b. (A-10b) Shut down Station A HVAC
7. WAREHOUSE HVAC (Ref. N.147)
 - a. (A-12a) Startup Warehouse HVAC.
 - b. (A-13a) Shut down Warehouse HVAC.
8. PUMPHOUSE HVAC (Ref. A.26)
 - a. (A-12b) Startup Pumphouse HVAC
 - b. (A-13b) Shut down Pumphouse HVAC
9. TRAINING BUILDING HVAC (Ref. N.148)
 - a. (A-14) Startup Training Building HVAC
 - b. (A-15) Shutdown Training Building HVAC
10. MAINTENANCE SHOPS HVAC (Ref. N.149)
 - a. (A-16) Startup Maintenance Shops HVAC
 - b. (A-17) Shut down Maintenance Shops HVAC
11. SUPPORT BUILDING HVAC
 - a. (B-1) Start up Support Building Zone 1, 4 or 5 HVAC (Ref. N.74, N.77, N.78).
 - b. (B-2) Shut down Support Building Zone 1, 4 or 5 HVAC (Ref. N.74, N.77, N.78).
 - c. (B-3) Start up Support Building Zone 2 HVAC (Ref N.75).
 - d. (B-4) Shut down Support Building Zone 2 HVAC (Ref. N.75).
 - e. (B-5) Start up Support Building Zone 3 HVAC (Ref. N.76).
 - f. (B-6) Shut down Support Building Zone 3 HVAC (Ref. N.76).
 - g. (B-7) Start up Support Building Zone 6 HVAC (Ref. N.79).
 - h. (B-8) Shut down Support Building Zone 6 HVAC (Ref. N.79).
 - i. (B-9) Swap from Lead to Lag on Support Building Zone 6 HVAC for AHU. (Ref. A.46)
 - j. (B-10) Swap from Lead to Lag on Support Building Zone 6 HVAC for Exhaust Fan. (Ref. A.46)

12. WASTE HANDLING BUILDING HVAC

- a. (C-1) Start up Waste Handling Building Zone 1 HVAC (Ref. N.69).
- b. (C-2) Shut down Waste Handling Building Zone 1 HVAC (Ref. N.69).
- c. (C-3) Start up Waste Handling Building Zone 2 HVAC (Ref. N.70).
- d. (C-4) Shut down Waste Handling Building Zone 2 HVAC (Ref. N.70).
- e. (C-5) Start up Waste Handling Building Zone 4 HVAC (Ref. N.72).
- f. (C-6) Shut down Waste Handling Building Zone 4 HVAC (Ref. N.72).
- g. (C-7) Set up the Surface Seismic Monitoring System for operation (Ref. N.62).
- h. (C-8) Perform the quarterly Surface Seismic System Operational Test (Ref. N.63).
- i. (C-9) Swap from lead to lag on Waste Handling Building Zone 1 HVAC. (Ref. N.69)
- j. (C-10) Swap from lead to lag on Waste Handling Building Zone 2 HVAC. (Ref. N.69)
- k. (C-11) Secure and Power Up DDC System Computer for power outage. (Ref. N.53)

B. High Voltage Electrical

1. (D-1) Rack out and rack in a 13.8 kV breaker (Ref. B.10).
2. (D-2) Open and close a 13.8 kV breaker locally (Ref. B.10).
3. (D-3) Deleted.
4. (D-4) Open and close a Load Interrupter Switch in Substation 1, 2, 3, 4, 6, or the Support Building (Ref. B.6, B.7).
5. (D-5) Manually open and close the Load Interrupter Switch in Substation 8 (Ref. B.9).
6. (D-6) Manually open and close Vacuum Interrupter Switch 25P-VIS15/11 (Ref. B.8).
7. (D-7) Operate any switch on 25P-SWG15/9 (Ref. B.12).
8. (D-8) Rack out and rack in a 480 Vac breaker at Substation 6 (Ref. B.14).
9. (D-9) Rack out and rack in a 480 Vac breaker at *other than* Substation 6 (Ref. B.13).

10. (D-10) Manually open and close a 480 Vac breaker at Substation 6 (Ref. B.14).
11. (D-11) Manually open and close a 480 Vac breaker at *other than* Substation 6 (Ref. B.13).
12. (D-12) Rack out and rack in a Substation 7 4160 Vac breaker (Ref. B.15).
13. (D-13) Manually open and close a Substation 7 4160 Vac breaker (Ref. B.15).
14. (D-14) Open and close a 41-B-700 fan starter (25P-STR-700A or 700B or 700C) in Substation 7 (Ref. B.17).
15. (D-15) Manually open and close CB-G1 or CB-G2 (Ref. B.14).
16. (D-16) Rack out and rack in CB-G1 or CB-G2 (Ref. B.14).
17. (D-17) Open and close a 480 Vac equipment breaker in Area Substation 5 (Ref. B.14).
18. (D-18) Identify fault conditions for a 13.8 kV breaker and a 480 Vac breaker (Ref. B.1, 18, 19, 20).
19. (D-19) DELETED
20. (E-2) Locally start a diesel generator (Ref. N.52).
21. (E-3) Locally stop a diesel generator (Ref. N.52).
22. (E-4) Align a diesel generator for remote start (Ref. N.52).
23. (E-5) Perform monthly diesel generator operability testing (Ref. N.52).
24. (E-6) Respond to alarms on diesel generator (Ref. N.58).
25. (E-7) Perform Monthly DG Operational Test using Loadbank. (Ref. N.58).

C. Low Voltage Electrical

1. (F-4) Start up the Central UPS (45P-UPS03/2)(Ref. N.55).
2. (F-5) Shut down the Central UPS (45P-UPS03/2)(Ref. N.55).
3. (F-6) Transfer the Central UPS (45P-UPS03/2) from normal source to alternate source and back to normal source (Ref. N.55).
4. (F-7) Respond to UPS alarms (Ref. N.60, N.61).
5. (F-8) Open and close the main breaker on a Motor Control Center Distribution Panel or Switchrack (Ref. N.146)
6. (F-9) Transfer the Central UPS loads from normal source to abnormal source and back to normal source. (Ref. N.139)

D. Underground Ventilation and Filtration

1. (G-1) Manually open and close a HEPA filter damper (Ref. N.87).
2. (G-2) Manually open and close a Bypass Damper (Ref. N.87).
3. (G-3) Manually open and close the Isolation Damper (Ref. N.87).
4. (G-4) Manually open and close a 700 fan inlet damper (Ref. N.87).
5. (G-5) Manually control the vortex for a 41-B-860 fan (Ref. N.87).
6. (G-6) Manually control the vortex for a 41-B-700 fan (Ref. N.87).
7. (G-7) Align the UVFS for Filtration Mode (Ref. N.87).
8. (G-8) Align the UVFS for Normal Ventilation Mode (Ref. N.87).
9. (G-9) Align the UVFS for Alternate Ventilation Mode (Ref. N.87).
10. (G-10) Align the UVFS for Minimum Ventilation Mode (Ref. N.87).
11. (G-11) Align the UVFS for Reduced Ventilation Mode (Ref. N.87).
12. (G-12) Locally Start/Stop Filtration Mode. (Ref. N.87).
13. (G-13) Respond to UVFS alarms (Ref. N.92).
14. (G-14) Align the UVFS for Maintenance Ventilation Mode (Ref. N.87).
15. (G-15) DELETED

E. Fire Detection, Fire Suppression and Domestic Water

1. (H-1) Perform an emergency startup of the electric fire pump. (Ref.N.65)
2. (H-2) Perform an emergency shutdown of the electric fire pump (Ref.N.65).
3. (H-3) Perform an emergency startup of the diesel fire pump (Ref. N.66).
4. (H-4) Perform an emergency shutdown of the diesel fire pump (Ref. N.66).
5. (H-5) Perform a manual startup of the electric fire pump (Ref. N.64).
6. (H-6) Perform a manual startup of the diesel fire pump (Ref. N.64).
7. (H-7) Perform a manual shutdown of the diesel fire pump (Ref. N.64).
8. (H-8) Align the diesel fire pump for automatic start (including reprogramming of fire pump control panel) (Ref. N.64).
9. (H-9) Shift domestic water pumps (Ref. N.94).

10. (H-10) Startup the hypochlorinator system (Ref. N.94).
11. (H-11) Perform a free chlorine analysis (Ref. N.95).
12. (H-13) Respond to pumphouse alarms (Ref. N.96).
13. (H-14) Manually control domestic water system pressure (Ref. N.94).
14. (H-15) Respond to fire protection and suppression alarms (Ref. N.96, N.120).
15. (H-16) Perform a manual shutdown of the electric fire pump (Ref. N.64)
16. (H-17) Shutdown the hypochlorinator system (Ref. N.94)

17.

F. Compressed Air

1. (I-1) Startup an Ingersoll-Rand air compressor (Ref. N.33).
2. (I-2) Shut down an Ingersoll-Rand air compressor (Ref. N.33).
3. (I-3) Adjust cooling water pressure for the Ingersoll-Rand air compressors (Ref. N.33).
4. (I-4) Start the Hankison Regenerative Desiccant air dryer (Ref. N.33).
5. (I-5) Shut down the Hankison Regenerative Desiccant air dryer (Ref. N.33).
6. (I-6) Start an Atlas-Copco Air Compressor (Ref. N.36).
7. (I-7) Locally shut down an Atlas-Copco Air Compressor (Ref. N.36).
8. (I-8) Start the Deltech Heaterless Desiccant Air Dryer (Ref. N.36).
9. (I-9) Shut down the Deltech Heaterless Desiccant Air Dryer (Ref. N.36).
10. (I-10) DELETED
11. (I-11) DELETED
12. (I-12) Start a PALL AMLOC-DHA regenerative air dryer (Ref. N.35).
13. (I-13) Shut down a PALL AMLOC-DHA regenerative air dryer (Ref. N.35).
14. (I-14) Respond to plant air system alarms (Ref. N.37).
15. (I-15) Startup the Curtis-Toledo air compressor (Ref. N.83).
16. (I-16) Shutdown the Curtis-Toledo air compressor (Ref. N.83).

G. Chilled Water

1. (J-1) Adjust pressure of the Chilled Water system (Ref. N.48).
2. (J-2) Startup a main chiller (Ref. N.48).
3. (J-3) Shut down a main chiller (Ref. N.48).
4. (J-4) Startup Engineering Building Chiller (Ref. N.83).
5. (J-5) Shut down Engineering Building Chiller (Ref. N.83).
6. (J-6) Startup the Safety Building Chiller (Ref. N.82).
7. (J-7) Shut down the Safety Building Chiller (Ref. N.82).
8. (J-8) Delete

H. Central Monitoring System

1. (K-1) Startup a Local Processing Unit and a Fiber Optic Repeater (Ref.N.45, N.54).
2. (K-2) Shut down a Toshiba UPS (Ref. N.45).
3. (K-3) Startup a Toshiba UPS (Ref. N.45).
4. (K-4) Shut down the Best 5kVA UPS (Ref. N.45).
5. (K-5) Startup the Best 5kVA UPS (Ref. N.45).
6. (K-6) Respond to LPU/UPS alarms (Ref. N.45).
7. (K-7) Startup a Operator's or Engineer's Station (Ref. N.43).
8. (K-8) Shutdown a Local Processing Unit and a Fiber Optic Repeater (Ref. N.45, N.54).
9. (K-9) Shutdown a Operator's or Engineer's Station (Ref. N.43)

I. Waste Water Treatment System

1. (L-1) Perform daily operation of the Sewage Lagoon (Ref. N.67).
2. (L-2) Discharge to an evaporation pond (Ref. N.67).
3. (L-3) Switch in-service ponds (Ref. N.67).

J. Surface Fuel Station

1. (M-1) Perform a weekly alarm and circuit check of the Surface Fuel System (Ref. N.68).
2. (M-3) Calculate fuel transfer (Ref. N.68).
3. (M-4) Respond to monitoring system alarms (Ref. N.68).

K. Plant Vacuum

1. (N-1) Start up a Vacuum pump (Ref. N.87).
2. (N-2) Shut down a Vacuum pump (Ref. N.87).
3. (N-3) Respond to vacuum system alarms (Ref. N.87).

IV. SYSTEM OPERATION PRACTICAL EVALUATION - CMRO

The tasks listed below identify the task number and reference that match the Signature Record Form. The SME or OJTE will certify, by personal observation, that the candidate possesses the skills and knowledge necessary to safely perform the tasks without assistance. The SME or OJTE still retain full responsibility and accountability for the proper operation of plant equipment.

NOTE

Numbers in left-hand parenthesis correspond to tasks outlined in the Systematic Approach to Training requirements for the Central Monitoring Room Operator

SYSTEM OPERATION PRACTICAL EVALUATION - CMRO

A. CMS Equipment Operation

- > 1. (A-1) Logoff and Shutdown an Operator Station from a running state. (Ref. H.3, N.21)
- > 2. (A-2) Startup and Logon to an Operator Station from a cold state. (Ref. H.3, N.21)
- > 3. (A-3) Navigate through all available graphics in the CMS. (Ref. H.3)
- > 4. (A-4) Print a Graphic from any HMI. (Ref. H.3)
- > 5. (A-5) Acknowledge any received alarms. (Ref. H.3)
- > 6. (A-6) Setup a Trend as directed by the Evaluator. (Ref. H.3)
- > 7. (A-7) Perform a System Backup as directed by the Evaluator. (Ref. H.3)
- > 8. (B-1) Make an announcement using the site Public Address System (Ref. N.41).
- > 9. (B-2) Make an announcement using the Site Notification System (Ref. N.41).
- > 10. (B-3) Initiate a page and communicate using the Mine Pager Phone (Ref. N.41).
- > 11. (B-4) Communicate using the Zone Talk feature of the site Public Address System (Ref. N.41).
- > 12. (B-5) Initiate a Surface Evacuation (Ref. N.41).
- > 13. (B-6) Reset a Surface Evacuation Alarm (Ref. N.41).
- > 14. (B-7) Manually initiate an Underground Evac Alarm (Ref. N.41).
- > 15. (B-8) Reset an Underground Evacuation Alarm (Ref. N.41).

- > 16. (C-1) Initiate a page by telephone (Ref. N.143).
- > 17. (C-2) Fax a document using the CMR Fax machine (Ref. N.144).
- > 18. (D-1) Startup a backup diesel generator from the CMR (Ref. N.38).
- > 19. (D-2) Shut down a backup diesel generator from the CMR (Ref. N.38).
- > 20. (D-3) Open an electrical circuit breaker from the CMR (Ref. N.39).
- > 21. (D-4) Close an electrical circuit breaker from the CMR (Ref. N.39).
- > 22. (D-5) Initiate Underground Filtration from the CMR (Ref. N.88).
- > 23. (D-6) Secure Underground Filtration from the CMR (Ref. N.88).
- > 24. (D-7) Start a 41-B-860 fan from the CMR (Ref. N.88).
- > 25. (D-8) Shut down a 41-B-860 fan from the CMR (Ref. N.88).
- > 26. (D-9) Initiate Support Building Zone 6 HVAC Filtration from the CMR (Ref. N. 40).
- > 27. (D-10) Secure Support Building Zone 6 HVAC Filtration from the CMR (Ref. N. 40).
- > 28. DELETE
- > 29. DELETE
- > 30. DELETE
- > 31. DELETE
- > 32. DELETE
- > 33. DELETE
- > 34. DELETE
- > 35. DELETE
- > 36. DELETE
- > 37. DELETE
- > 38. DELETE
- > 39. DELETE
- > 40. DELETE
- > 41. DELETE

> 42. DELETE

> 43. DELETE

V. ADMINISTRATIVE REQUIREMENTS - ROVING WATCH**A. Equipment Tagout/Lockout (Ref. N.30)**

1. State the purpose of a Danger Tag.
2. State the purpose of a Caution Tag.
3. State the conditions that require an operations lock to accompany a tagout.
4. State the personnel who are authorized to place Operations locks and tags.
5. State when Operations locks and tags are placed and removed with respect to Maintenance locks.
6. Describe the precautions observed when placing a tag on a component.
7. State the conditions that must be met if a maintenance lock must be removed and the technician who installed the lock is not available. (Ref. N.103)
8. State the concurrence requirements for tagouts involving fire protection equipment.
9. Describe the requirements for tagging mobile equipment.
10. State the consequences of intentionally violating a lockout/tagout.
11. State the frequency of tagout/lockout audit performance.
12. Describe the method used to add work packages to a Tagout/Lockout Control Sheet.
13. State what sources may be utilized to determine the proper location for placement of danger tags.
14. Describe the requirements for stored energy devices. (Ref. N.30, N.103, N.109)
15. State the conditions required to allow removal of a tagout/lockout.
16. Describe the actions that must be taken if a discrepancy is found during a tagout/lockout audit.

B. Temporary Plant Modification (Ref. N.31)

1. State the purpose of the Temporary Plant Modification Control Procedure.
2. State the definition of a Temporary Plant Modification. (TPM)
3. Describe the responsibilities of the Cognizant Operations Supervisor in regard to the TPM control procedure.
4. Discuss the precautions and limitations associated with the TPM control procedure.
5. Discuss the policies which govern the use of TPMs.

6. State the type of work which is excluded from TPM control.
7. State the physical requirements that must be met by mechanical and electrical jumpers.
8. State the physical requirements that must be met by lifted leads and blank flanges.
9. State the notification requirements when authorizing a TPM for OSR equipment.
10. Discuss the requirements for completing blocks 1 through 19 of the TPM Control Record form.
11. State the source of retest requirements upon restoration of equipment from a TPM.
12. State the frequency of a TPM Control Record Sheet audit.
13. State the actions required if a discrepancy is found during a TPM Control Record Sheet audit.
14. Discuss the TPM Control record keeping requirements.

C. Work Authorization (Ref. N.104 and N.105)

1. State the purpose of an Action Request (AR).
2. Discuss the "graded approach" to site maintenance as it relates to plant work performance.
3. State the purpose of a Work Change Notice (WCN).
4. Describe work that is excluded from the authority of the Work Authorization procedure.
5. State who the initiator of an AR shall be.
6. State where the retest requirements can be found or who stipulates the retest requirements if the AR or Preventive Maintenance (PM) instruction does not address a retest.

D Conduct of Operations (Ref. N.47)

1. Discuss the responsibilities of the Facility Operations Roving Watch.
2. Discuss the responsibilities of the CMRO.
3. Discuss the watchstanding practices as described in the Conduct of Operations Manual.
4. State the requirements for a procedure to be open and in step-by-step use.
5. State the requirements that must be met to use a performance copy of a procedure that contains signoffs.

6. Describe the conditions which must be met in order for the operator not to have a procedure open and in step-by-step use during an evolution.
7. State the actions that an operator shall be capable of performing without reference to a procedure in an abnormal or emergency event.
8. State the action required by an operator if a procedure cannot be performed as written.
9. State the actions required if a procedure or evolution has been stopped due to a problem or shift turnover.
10. Discuss the requirements of good communications techniques as described in the Conduct of Operations Manual.
11. Discuss the requirements of good logkeeping techniques as described in the Conduct of Shift Operations Manual and the Shift Operating Logs Procedure (Ref. N.29)
12. Discuss the fundamental principle of "Believe Your Indication" as it pertains to facility instrumentation.
13. Discuss the good practices of monitoring instrumentation as described in the Conduct of Operations Manual.
14. Discuss the good practices of performing watchstation tours and monitoring systems and equipment as described in the Conduct of Operations Manual.
15. Discuss the responsibilities of all operators in the event of any facility problem.
16. Discuss the requirements for logging a facility problem.
17. Discuss the good safety practices as described in the Conduct of Operations Manual.
18. Discuss the requirements governing the performance of On-the-Job Training as described in the Conduct of Operations Manual.
19. Discuss the requirements for performing a watchstation or Shift Turnover as described in the Conduct of Operations Manual.
20. Discuss the purpose and requirements for reviewing required reading as described in the Conduct of Operations Manual.

E. Control of Operator Aids (Ref. N.85)

1. State the purpose of the Control of Operation Aids procedure.
2. State the person responsible for approving the posting of an operator aid.

F. Facility Emergencies

1. State the purpose of the WIPP Emergency Plan. (Ref. N.110)

2. Discuss the types of emergencies covered in the WIPP Emergency Plan. (Ref. N.110)
3. Discuss the emergency notification requirements of the WIPP Emergency Plan and other directives. (Ref. N.110, N.124)
4. State the time requirement for classification of reportable occurrences for WP 12-ES3918. (Ref. N.124)

G. System Lineups (Ref. N.27)

1. Describe the methods for determining if a system lineup is required.
2. Discuss the general techniques employed in performing system lineups.
3. State the responsibilities of the Positioner.
4. State the responsibilities of the Independent Verifier.
5. Discuss the specific requirements and methods for checking the position of valves, valve operator clutches, dampers, circuit breakers, and switches.

H. Technical Safety Requirements (Ref. N.26, N.32, N.89, N.134, N.135)

1. List the equipment operating requirements from Administrative Control of the WIPP TSR for both operating modes.
2. List the differences in facility staffing requirements between Waste Storage/Disposal Mode and Waste Handling Mode.
3. Describe the responsibility of each watchstander in ensuring compliance with the Facility Staffing and Facility Staff Qualifications Administrative Controls of the WIPP TSR.
4. Discuss the Administrative controls of the WIPP TSR.
5. Describe the "Defense-In-Depth" philosophy regarding accident mitigation as discussed in the WIPP SAR and TSR.
6. Discuss the difference between "Operability Tests" and "Surveillance Requirements" as viewed from a SAR perspective (Limiting Conditions for Operation versus Administrative Controls)
7. Discuss the Operability Tests performed by Facility Operations to validate equipment operability for Administrative Control 5.1 of the TSR.
8. List the actions required of any individual who suspects that a TSR Administrative Control has been violated.

I. Guidelines for Operating Electrical Components (Ref. N.107)

- A. Define the electrical plane and when it may be crossed.
- B. Discuss minimum Personal Protective Equipment (PPE) and precautions used while operating Circuit Breakers.
- C. Discuss minimum PPE and precautions used for racking in/out Circuit Breakers.

V. ADMINISTRATIVE REQUIREMENTS - CMRO

A. CMS Alarm Enable/Disable Authorization

- > 1. State the person responsible for authorizing the enabling and disabling of CMS alarms.
- > 2. Discuss the contents of the CMS Alarm Enable/Disable Logbook.
- > 3. Discuss the documentation of a CMS Alarm Enable/Disable.
- > 4. Discuss the process on how to Enable or Disable a CMS Alarm.
- > 5. Discuss the weekly logbook review procedure

B. Facility Emergencies

- > 1. State the responsibility of the CMRO in the notification process following an occurrence (Ref. N.110, N.124).
- > 2. Discuss appropriate use of the public address system for personal, informational and emergency announcements (Ref. N.41, N.47).

C. Waste Handling Operations

- > 1. Discuss the surface waste handling process. (Ref. N.137)
- > 2. Discuss the underground waste handling process. (Ref. N.137)
- > 3. Discuss Waste Handling actions during an abnormal event. (Ref. N.138)
- > 4. Discuss Waste Handling actions taken for a suspended load.(Ref. N.138)
- > 5. Discuss expected communication during daily operation. (Ref. N.137)

D. Mode Compliance

- > 1. Discuss how to complete each line item on the Waste/Storage Mode Facility Checklist. (Ref. N.26)
- > 2. Discuss how to complete each line item on the Waste Handling Mode Facility Checklist. (Ref. N.26)

VI ADMINISTRATIVE REQUIREMENTS PRACTICAL EVALUATION - ROVING WATCH

NOTE

Numbers in left-hand parenthesis correspond to tasks outlined in the Systematic Approach to Training requirements for the Facility Operations Roving Watch

A. Equipment Tagout/Lockout. (Ref. N.30)

1. (O-1) Prepare an equipment Tagout/Lockout Control Sheet and the associated tags for a facility component as specified by the evaluator.
2. (O-2) After the equipment tagout/lockout has been authorized, place the equipment tagout/lockout on the specified component.
3. (O-3) Remove the equipment tagout/lockout that was placed in practical Requirement O-2.
4. (O-4) Perform a tagout/lockout audit.

B. Temporary Plant Modification. (Ref N.31)

1. (O-5) Given specific information for placing a TPM on a plant component, prepare a TPM Control Record Form.
2. (O-6) Perform a TPM Control Record Form audit.

C. Work Authorization (Ref. N.30, N.104)

1. (O-8) Review a work package for completeness and equipment tagout/lockout requirements.

D. System Lineups (Ref. N.27)

1. (O-14) Perform a system lineup as the positioner.

VI. ADMINISTRATIVE REQUIREMENTS PRACTICAL EVALUATION - CMRO

> A. CMS Alarm Enable/Disable

- > 1. (E-1) Perform a weekly Enable/Disable logbook review.

> B. Facility Emergencies

Demonstrate (or Simulate) the CMRO responses required for each of the following plant casualties and facility emergencies:

- > 1. (E-2) Surface Fire (Ref. N.120).
- > 2. (E-3) Underground Fire (Ref. N.122).
- > 3. (E-4) Hazardous Material Spill (Ref. N.115).
- > 4. (E-5) Severe Weather/Tornado (Ref. N.114).
- > 5. (E-6) Earthquake/Seismic Event (Ref. N.121).
- > 6. (E-7) Site Evacuation (Ref. N.119).
- > 7. (E-8) Medical Emergency (Ref. N.118, N.123).
- > 8. (E-9) Security Emergency (Ref. N.117).
- > 9. (E-10) Respond to system alarms:
- > a. UVFS Fan High Vibration Alarm (Ref. N.93).
- > b. UVFS Ventilation Fan High Low Flow Alarm (Ref. N.93).
- > c. UVFS HEPA Filter High Differential Pressure Alarm (Ref. N.93).
- > d. Waste Hoist Tower High Differential Pressure Alarm (Ref. N.93).
- > 10. (E-11) Respond to Hazardous Material Transportation Event (Ref. N.97).
- > 11. (E-12) Respond to a Radcon Event (Ref. N.116)
- > 12. (E-13) Respond to a Loss of CH HVAC (Ref. N.83)
- > 13. (E-14) Respond to Loss of Underground Ventilation (Ref. N.92)

C. Waste Handling Operations

- > 1. (E-15) Respond to Waste Handling Immediate Danger Abnormal Event (Ref. N.138)
- > 2. (E-16) Respond to Waste Handling "Other" Abnormal Event (Ref. N.138)
- > 3. (E-17) Perform a walkthrough or observe the surface waste handling process.

(Ref. N.137)

- > 4. (E-18) Perform a walkthrough or observe the underground waste handling process. (Ref. N.137)

D. Mode Compliance

- > 1. (E-19) Complete a Waste/Storage Disposal Mode Checklist. (Ref. N.26)
- > 2. (E-20) Complete a Waste Handling Mode Checklist. (Ref. N.26)

V. ADMINISTRATIVE REQUIREMENTS - FACILITY OPERATIONS SHIFT ENGINEER

A. Equipment Tagout/Lockout (Ref. N.30)

1. Discuss the retention and storage requirements for active and superseded Tagout/Lockout Control Sheets.
2. Discuss the importance of understanding plant configuration as it applies to the following:
 - a. Mode Compliance equipment
 - b. RCRA equipment (Appendices F & G)
 - c. Facility Availability Equipment
 - d. Open or active work orders in progress under the same or related tagout.

B. Temporary Plant Modification Control (Ref. N.31)

1. Discuss the importance of understanding plant configuration as it applies to the following:
 - a. Mode Compliance Equipment
 - b. RCRA equipment (Appendices F & G)
 - c. Facility Availability Equipment
2. State when special training related to TPMs must be conducted and what forms this training may take.

C. Conduct of Operations (Ref. N.47)

1. Discuss the purpose and requirements for reviewing shift instructions as described in Section 17 of the Conduct of Operations Manual.
2. Discuss the responsibilities of the FSM and the Facility Engineer.
3. State the reporting chain within the Facility Operations and from the FSM to the WTS General Manager
4. State the purpose of the Conduct of Operations Manual.
5. Discuss the authority of the FSM.
6. State the priorities of shift operations as arranged under the Conduct of Operations Manual.
7. State the requirements for holding on-shift assessment meetings and safeguarding evidence following an event.
8. Describe the procedure change process including actions required to be taken

if a procedure cannot be performed as written.

D. Control of Operator Aids (Ref. N.84)

1. State the responsibility of the "Responsible Engineer" in the approval process concerning Operator Aids.
2. State the purpose and location of the Master Operator Aid Notebook.
3. State the review requirement for all posted Operator Aids
4. State the posting requirements for an Operator Aid.

E. System Lineups (Ref. N.27)

1. State the responsibilities of the Facility Operations Engineer in determining the requirements for a system lineup.
2. State the responsibilities of the Facility Shift Engineer in scheduling and performing a system lineup.

F. Work Authorization (Ref. N.102, N.104, N.105)

1. Discuss the use of the Work Request Comments/Partial Release Form.
2. Discuss the use of the Plant Work Suspension Sheet.
3. Discuss the contents of a Modification Impact Checksheet and state when one is required to be used.
4. Describe the WIPP work control system priorities.
5. State the person responsible for establishing the priority of an Action Request (AR).
6. Describe the approval requirements for an AR based on equipment design classification.
7. Describe the AR categories used in the Work Authorization procedure.
8. Discuss the priorities for the scheduling of Preventive Maintenance Instructions (PMI)
9. Discuss the procedures employed for the tracking of Ars/PMIs that are released for field work.
10. Describe the actions to be taken if work instructions cannot be worked as written.
11. Discuss when ARs may be canceled.
12. Describe the differences in processing of each type of Ars.
13. Discuss the items and reviews listed in Blocks 1 through 8 and 10 of the Work Order Concurrence/Approval Checksheet. Include specific times when

signatures are required in the blocks.

14. Discuss the Operations Plan of the Week including its purpose, contents, authorizing authority, changes to scheduled work, and authority to perform work.
15. Discuss the Plan of the Day meeting.
16. Discuss the Utility Outage Permits including requirements for completing, notifications, and actions to be taken if canceled.
17. Discuss the requirements for and contents of Safe Work Permits (Ref. N.109)
18. Discuss requirements for and procedure for performing Job Hazard Analysis.
19. Discuss requirements for and contents of Radiological Work Permits.
20. Discuss requirements for and contents of Excavation and Backfill Permits. (Ref N.106)
21. Discuss the turnover requirements for new or modified plant equipment.
22. Discuss requirements and authority of the FSM in stopping plant work. (Ref. N.127)
23. List the persons responsible for identifying and investigating suspected unsafe conditions. (Ref. N.107, N.127)
24. Define "non-conforming condition" as it applies to equipment or systems at the WIPP. (Ref. N.125, N.126)
25. Discuss the responsibilities of the FSM if a non-conforming condition is discovered. (Ref. N.125, N.126)
26. Discuss requirements for work order closeout for each different AR category.

G. Facility Emergencies

1. State the responsibility of the FSM, in the notification process following an occurrence. (Ref. N.110, N.124)
2. State the reporting time limits for each type of occurrence. (Ref. N.124)
3. State the responsibilities of the FSM when off-site response of WIPP emergency equipment and/or personnel is requested under a Memorandum of Understanding. (Ref. N.110)
4. Discuss WID capabilities when responding under an MOU. (Ref. N.110)
5. Describe the purpose of Root Cause Analysis investigations and when they must be conducted. (Ref. N.107, N.110, N.112, N.124)
6. State the person responsible for activation of the Emergency Operations Center (EOC) in the event of an occurrence requiring EOC activation. (Ref. N.25, N.110, N.112 through N.123)

7. State the authority of the FSM for directing a site evacuation and the responses required of all personnel when a site evacuation has been directed. (Ref. N.110, N.119)
8. Discuss the facility actions required in each of the following emergencies:
 - a. Surface fire (Ref. N.120)
 - b. Hazardous Material Spill (Ref. N.115)
 - c. Underground Fire (Ref. N.122)
 - d. Low Plant Air Pressure Alarms (Ref. N.37)
 - e. Severe Weather Warning or Tornado (Ref. N.114)
 - f. Earthquake or Seismic Event (Ref. N.121)
 - g. Electrocution or Medical Emergency (Ref. N.118, N.123)
 - h. Security Emergency (Ref. N.117)
 - i. Radiological Emergency (Ref. N.116)
 - j. Hoisting Emergency (Ref. N.67)
 - k. Any facility alarm (Ref. N.47)

H. Miscellaneous Administrative Requirements

1. Discuss the contents of the WIPP Contingency Plan. Include the implementation requirements and the major sections within the plan. (Ref. N.25)
2. Describe the responsibilities and authority of the RCRA Emergency Coordinator. (Ref. N.25)
3. Describe how and when to transfer Emergency Coordinator responsibility to the Crisis Manager. (Ref. N.25)
4. Discuss the requirements for releasing information to outside agencies or authorities. Include time requirements as applicable. (Ref. N.25, N.124)
5. Describe the contents of a MSDS. State where the master MSDS file is located at the WIPP. (Ref. N.25, N.107, N.110)
6. Describe actions to be taken if groundwater or the environment are threatened by a HAZMAT incident. (Ref. N.25, N.115)
7. State the resources available to the EST and Emergency Coordinator for determining personnel hazards, chemical nature, and cleanup procedures for HAZMAT incidents. (Ref. N.25, N.110, N.115)
8. Discuss the actions to be taken in the event of a roof fall or spalling in an open waste emplacement room. (Ref. N.25)

9. Discuss when facility restart can occur following an event that implemented the Contingency Plan. (Ref. N.25, N.112)
 10. Discuss minimum manning requirements for the EOC when activated. (Ref. N.25, N.110)
 11. Discuss the requirements for hazardous waste accumulation and disposal at the WIPP site. (Ref. N.24)
 12. Discuss why a "Request for Disposal" form must be filled out for each hazardous waste generated at the WIPP site. (Ref. N.24, N.100)
 13. Discuss how to determine if an item of waste is "controlled". (Ref. N.24)
 14. Discuss the requirements for usage and proper disposal of personally owned, but regulated items at the WIPP site. (Ref. N.24)
 15. Discuss the actions required if a substance that is suspected or known to be regulated is found without an accompanying MSDS. (Ref. N.24)
 16. List the locations and requirements for "Satellite Accumulation" areas at the WIPP site. (Ref. N.100)
 17. Discuss the engineering change process (ECP/ECO). (Ref. WP 09-CN3007)
 18. Discuss the function and applicability of Engineering Change Orders in altering controlled engineering documents. (Ref. WP 09-CN3007)
- I. **Technical Safety Requirements** (Ref. N.26, N.32, N.135, N.136)
1. Describe the responsibility of the Facility Shift Manager in ensuring facility compliance with the Technical Safety Requirements. (TSRs)
 2. State the frequency in which compliance with the TSRs must be re-validated.
 3. Discuss the process for ensuring plant readiness for switching from Waste Storage/Disposal Mode to Waste Handling Mode.
 4. State the conditions that would cause any individual to suspect that a TSR violation may exist.
 5. State the required actions of the Facility Shift Manager upon discovery that a TSR violation is suspected to exist.
 6. Discuss the facility conditions and requirements for the performance of Mode Compliance Equipment Operability Checks.
 7. Describe the required facility actions upon a failure of a Mode Compliance Equipment Operability Check.
 8. Discuss the Unreviewed Safety Question process including procedures for resolving Unreviewed Safety Questions. (Ref. N.111)

VI. ADMINISTRATIVE REQUIREMENTS PRACTICAL EVALUATION- FACILITY OPERATIONS SHIFT ENGINEER**NOTE**

Numbers in left-hand parenthesis correspond to tasks outlined in the Systematic Approach to Training requirements for the Facility Shift Manager

A. Equipment Tagout/Lockout (Ref. N.30)

1. (A-1) Complete tagout filing for a Tagout/Lockout Control Sheet.
2. (A-2) Authorize a Tagout/Lockout Control Sheet.
3. (A-3) Authorize a Tagout/Lockout removal.

B. Temporary Plant Modification (Ref. N.31)

1. (A-4) Authorize a Temporary Plant Modification.
2. (A-5) Authorize the restoration of a Temporary Plant Modification.

C. Conduct of Operations (Ref. N.29, N.47)

1. (A-6) Review Facility Operations logs.
2. (A-7) Review the CMR narrative log.
3. (A-8) Perform an oncoming shift turnover.
4. (A-9) Perform an off-going shift turnover.

D. Miscellaneous Administrative Tasks

1. (A-10) Approve an Operator Aid (Ref. N.84).
2. (A-11) Review a system lineup (Ref. N.27).
3. (A-13) Approve the Plan of the Day for daily use (Ref. N.102).
4. (A-15) Authorize the removal of a CMS point from scan or alarm (Ref. N.28).
5. (A-16) Authorize the change to a procedure (Ref. WP 15-PS3003).
6. (A-17) Categorize a facility event (Ref. N.113, N.124).
7. (A-18) Review and approve a utility outage permit (Ref. N.102).
8. (A-19) Access ECOs and Engineering Registers through the site computer network (Ref. N.145)

E. Work Authorization

1. (B-1) Release an Action Request (AR) for the craft to work in the field (Ref. N.104).

2. (B-2) Suspend an AR (Ref. N.104).
3. (B-3) Close out an AR (Ref. N.104).
4. (B-4) Prioritize an AR (Ref. N.104).
5. (B-5) Cancel an AR (Ref. N.104).
6. (B-6) Review a Radiological Work Permit (RWP) (Ref. WP 12-HP3600).
7. (B-7) Release a Preventive Maintenance Work Instruction (PMI) for the craft to work in the field (Ref. N.105).
8. (B-8) Close out a PMI (Ref. N.105).
9. (B-9) Review a Work Change Notice (WCN) or Maintenance Field Change Notice (MFCN) (Ref. N.102).
10. (B-10) Review an Excavation/Backfill Permit (Ref. N.106).
11. (B-11) Review a "J" work order for release (Ref. N.102, N.104).
12. (B-12) Close out a "J" work order (Ref. N.102, N.104).
13. (B-13) Update a Controlled Print or Panel Schedule (Ref. WP 09-CN3022).
14. (B-14) Review a Safe Work Permit (Ref. N.109).
15. (B-15) Review a Job Hazard Analysis (JHA) (Ref. N.102).
16. (B-16) Direct a Stop Work Order (Ref. N.317).
17. (B-17) Identify a Non-Conformance Item (Ref. N.125, N.128).

F. Facility Emergencies

1. (C-1) Respond to a Surface Fire (Ref. N.120).
2. (C-2) Respond to a Hazardous Material Spill (Ref. N.115).
3. (C-3) Respond to an Underground Fire (Ref. N.122).
4. (C-4) Respond to a Low Plant Air Pressure Alarm (Ref. N.37).
5. (C-5) Respond to Severe Weather/Tornado (Ref. N.114).
6. (C-6) Respond to Earthquake or Seismic Event (Ref. N.121).
7. (C-7) Respond to a surface or underground evacuation (Ref. N.119).
8. (C-8) Respond to an electrocution or medical emergency (Ref. N.118, N.123).
9. (C-9) Respond to a Security Emergency (Ref. N.117).

10. (C-10) Respond to a Radiological Event (Ref. N.116).
11. (C-11) Respond to a Hoisting Emergency (Ref. N.67).
12. (C-12) Respond to Facility Alarms (Ref. N.47).
13. (C-13) Respond to an off-site event in accordance with Memoranda of Understanding (MOU) (Ref. N.110).
14. (C-14) Implement the Contingency Plan (Ref. N.25).
15. (C-15) Conduct the duties of the RCRA Emergency Coordinator (Ref. N.25).

G. Technical Safety Requirements

1. (D-1) Review an Operability Check (Ref. N.26, N.47).
2. (D-2) Complete a facility checklist for Waste Storage/Disposal Mode (Ref. N.26).
3. (D-3) Complete a facility checklist for Waste Handling Mode (Ref. N.26).
4. (D-4) Respond to a failed Operability Check (Ref. N.26).

VII. WATCHSTANDING

Roving Watch

1. Stand two under instruction watches as the Roving Watch on graveyard shift.
2. Stand four under instruction watches as the Roving Watch on dayshift (Monday-Friday).
3. Stand two under instruction watches as the Roving Watch on any shift.
4. Stand one watch under instruction cross-crew as the Roving Watch on dayshift (Final evaluated watch).

Central Monitoring Room Operator

1. Stand two under instruction watches as the CMRO on graveyard shift.
2. Stand four under instruction watches as the CMRO on dayshift (Monday-Friday)
3. Stand two under instruction watches as the CMRO on any shift.
4. Stand one watch under instruction cross-crew as the CMRO on dayshift (Final evaluated watch).

Facility Operations Shift Engineer (Surface)

1. Stand one under instruction watch as the Roving Watch on graveyard shift. (Required item for Facility Engineer Candidates not currently qualified as Roving Watch)
2. Stand one under instruction watch as the Roving Watch on dayshift (Monday-Friday). (Required item for Facility Engineer Candidates not currently qualified as Roving Watch)
3. Stand one under instruction watch as the CMRO on graveyard shift. (Required item for Facility Engineer Candidates not currently qualified as CMRO)
4. Stand one under instruction watch as the CMRO on dayshift (Monday-Friday). (Required item for Facility Engineer Candidates not currently qualified as CMRO)
5. Stand three under instruction watches as the FSM on graveyard shift.
6. Stand three under instruction watches as the FSM on dayshift (Monday-Friday).
7. Stand three under instruction watches cross-crew as the FSM on any shift.
8. Stand one under instruction watch cross-crew as the FSM on dayshift (Monday - Friday)(Final Evaluated Watch).

