

Sunflower Electric Power Corporation



**Foreign Material Exclusion
(FME)**

Approved -s- Steve Moss Revison 1 Date 1/14/2008
Steve Moss Senior Manager, Power Production

Approved -s- Paul Reynolds Revison 1 Date 1/14/2008
Paul Reynolds Manager, Power Production Engineering and Environment

Approved -s- Kyle Nelson Revison 1 Date 1/14/2008
Kyle Nelson Vice President Power Production and Engineering

Approved -s- Earl Watkins Revison 1 Date 1/18/2008
Earl Watkins President and CEO

Approved -s- Gary Ratts Revison 2 Date 2/15/2010
Gary Ratts Manager, Supply Chain

Approved -s- Dave Chaney Revison 2 Date 2/15/2010
Dave Chaney Manager, Coal Resources

Approved -s- Steve Ricard Revison 2 Date 2/15/2010
Steve Ricard Manager, Maintenance

Approved -s- Derek Seacat Revison 2 Date 2/15/2010
Derek Seacat Manager, Gas Resources

Approved -s- Mike Kershner Revison 2 Date 2/15/2010
Mike Kershner FME Coordinator

TABLE OF CONTENTS

1. PURPOSE	4
2. SCOPE	4
3. RESPONSIBILITIES	5
4. INSTRUCTION	8
5. PLAN ADMINISTRATION.....	17
6. REVISION TRACKING.....	18
APPENDIX A	20
APPENDIX B	21
APPENDIX C.....	22

1. Purpose

- 1.1. The purpose of this procedure is to control introduction of foreign material into critical plant systems and components in order to minimize the potential for damage to equipment, increase equipment reliability, and reduce equipment downtime.

2. Scope

- 2.1. This procedure shall apply to all generation facilities. Priority of systems or components shall determine the level of Foreign Material (FM) control required.
- 2.2. Departments affected by the FME program include:
 - 2.2.1. Operations and Maintenance
 - 2.2.2. Engineering (including the Laboratory)
 - 2.2.3. Purchasing and Material Control
- 2.3. All applicable Contractor work will adhere to the standards and procedures set forth herein unless a Contractor has their own FME program.
 - 2.3.1. Sunflower's FME Coordinator shall make the final determination to the FME requirements for any Contractor work.
 - 2.3.2. If utilizing a Contractor FME program, the substitute program must be at least as stringent as Sunflower's FME program.
 - 2.3.3. A complete copy of Contractor FME program will be provided to Sunflower's FME Coordinator sufficiently in advance of conducting work on Sunflower equipment or systems to allow a reasonable time to review and approve the substitute FME program in advance of the work.
 - 2.3.4. Approval of the Contractor's FME program shall be provided by Sunflower's FME Coordinator in writing prior to the Contractor commencing any work on an affected Sunflower system or component.
 - 2.3.5. Sunflower personnel shall have access to the work to spot check Contractor's adherence to required FME procedures.

2.3.6. Contractor shall immediately notify Sunflower of Loss of FM control.

2.3.7. Contractor shall provide Sunflower copies of all FME records at the completion of work.

3. Responsibilities

3.1. The FME program shall have support from the highest levels of Sunflower.

3.1.1. The critical nature of the equipment operated and maintained by Sunflower necessitates every reasonable effort should be taken to prevent damage to Sunflower systems and components.

3.1.2. Sunflower has experienced first hand damage to critical systems and components due to the introduction of foreign material, and there have been several significant events in the electric utility industry due to the introduction of foreign materials.

3.1.3. Sunflower is committed to establish and maintain a robust FME program and will ensure adequate resources are available to the FME program.

3.1.4. Employees failing to implement FME program procedures shall be subject to disciplinary actions up to and including termination.

3.1.4.1. Sunflower shall establish a committee to determine the proper course of action in matters regarding disciplinary actions. The committee will include the FME Coordinator, and four (4) of the managers from the approval page.

3.2. Front Line Supervisors (FLS)

3.2.1. For the purpose of the FME program, FLS shall include Mechanical Maintenance Supervisor, EI&C Supervisor, Planning and Scheduling Supervisor, Laboratory Supervisor, Engineering Technical Services Supervisor, Generation Engineers, Shift Supervisor, Production Supervisor, Coal and Material Handling Supervisor, Coal and Material Handling Supervisor Assistant, Purchasing Supervisor, and Warehouse and Stores Supervisor.

3.2.2. All FLS shall be responsible for knowing the content of the FME program shall be able to recognize procedural requirements of the FME program and shall be able to recognize the loss of FME integrity control.

3.2.3. All FLS shall support training and awareness of the FME program and shall assist and advise workers in the proper control of FM into plant components and systems.

3.2.4. FLS shall make sure that company work policies and procedures are consistent with FME guidelines.

3.2.5. All FLS shall be responsible for spot checking work to be sure that proper FME practices are being followed.

3.3. Maintenance

3.3.1. Maintenance Manager (MM)

3.3.1.1. MM shall be responsible for the implementation of the FME program with in the Maintenance Departments.

3.3.1.2. MM shall ensure adequate staffing to cover FME needs as necessary.

3.3.1.3. MM should reinforce standards and expectations as well as hold individuals accountable to those standards and expectations.

3.3.2. Maintenance Supervisors

3.3.2.1. Maintenance Supervisors shall be responsible for spot checking work to ensure that affected maintenance activities are following the FME program.

3.4. Planning

3.4.1. The Planning Department shall be responsible for identifying FME points during work planning.

3.5. Craft Labor

3.5.1. Craft Labor is ultimately responsible for the final implementation and execution of FME practices. Workers shall provide feedback to their supervisor as to the effectiveness of the FME program and suggest possible improvements.

3.5.2. Craft Labor shall immediately notify the appropriate FLS of loss of FM controls.

3.6. Foreign Material Exclusion Monitor (FMEM)

- 3.6.1. The position of FMEM shall be utilized when a FMEA is setup.
- 3.6.2. FMEM shall be responsible to log items in and out of the FMEA, The monitor shall also regulate the traffic entering and exiting the FMEA.
- 3.6.3. Aside from job duties including fire watch, and confined space standby, the FMEM shall not perform other tasks.
- 3.6.4. Any material that enters the FMEA that will be utilized and not removed from the area shall be properly noted on the log sheet.
- 3.6.5. When working alone a worker may act as his/her own FMEM.

3.7. Additional Positions (Job Leaders/Job Coordinators/Contractor Liaisons)

- 3.7.1. Additional Positions shall support training and awareness of the FME program and shall assist and advise Craft Labor or Contractor workers in the proper control of FM into plant components and systems.
- 3.7.2. Additional Position shall be responsible for spot checking Craft Labor work or Contractor work to ensure that affected activities are following the appropriate FME program.
- 3.7.3. Additional Positions shall have the authority to properly enforce Sunflower Procedure (or approved Contractor Procedure) to the extent of stopping the job until the matter can be further investigated.

3.8. Engineering

- 3.8.1. The Engineering department shall maintain, edit, and update the FME program.

3.9. FME Coordinator

- 3.9.1. The FME Coordinator shall be designated by the Supervisor, Engineering Technical Services.
- 3.9.2. The FME Coordinator shall be responsible for:

3.9.2.1. Introduction of the FME program to affected employees and coordination of FME program training.

3.9.2.2. FME program records

3.9.2.3. FME program forms

3.9.2.4. Determination of FME requirements on work completed by Sunflower personnel or Contractors.

3.10. Operations

3.10.1. Shift Supervisors, Production Supervisors, Coal and Material Handling Supervisor, Assistant Coal and Material Handling Supervisor shall support training and awareness of the FME program and shall assist and advise operations workers in the proper control of FM into plant components and systems.

3.10.2. All Operations department FLS shall be responsible to understand the FME guidelines sufficiently to recognize the loss of FME integrity when spot checking any work (operations, maintenance, or Contractor) and shall report the loss of FME integrity to the appropriate work supervisor.

3.11. Laboratory

3.11.1. Laboratory personnel shall be responsible for following FME guidelines when opening and closing affected systems or equipment under Laboratory control. Examples of affected systems or equipment shall include but not necessarily be limited to reactivators, polishers (when adding resin), condensers, etc.

3.12. Warehouse and Purchasing

3.12.1. Warehouse personnel shall be responsible for material stored in the warehouse and shall protect affected material according to this procedure.

3.12.2. Purchasing personnel shall be responsible for informing vendors of the requirements of Sunflower's FME program requirements for equipment or materials provided by vendors.

4. Instruction

4.1. Work Order Planning

4.1.1. Planning shall, whenever possible, identify in advance the need for FME during the planning and work order conversion process. Any time a work order may require plant personnel to breach a piping system, open an electrical enclosure, or open any component not normally accessible, some degree of FME control must be considered.

4.2. Predetermined FMEA

4.2.1. If a critical system inside an FMEA can be properly secured when work is not being performed i.e. lunch, break, end of shift, work is being performed outside FMEA, etc. The FMEA may be considered inactive and continuous monitoring is not needed.

4.2.2. The following components shall be considered critical equipment and shall always have the highest FM controls and FMEA's shall be used. Any system that directly impacts the operation of one or more of the following components or directly could limit its integrity or availability shall be considered critical as well.

4.2.2.1. Turbine and Generator

4.2.2.1.1. During turbine or generator assembly or disassembly. Including generator bus work, generator excitation system and all lube oil systems and hydraulic systems.

4.2.2.2. Any boiler

4.2.2.2.1. When water/steam/selected gas paths are breached).

4.2.2.2.2. When considering a boiler the following shall be considered major, and critical components:

4.2.2.2.2.1. Main Steam

4.2.2.2.2.2. Reheat Steam

4.2.2.2.2.3. Feedwater

4.2.2.2.2.4. Auxiliary Steam

4.2.2.2.2.5. Condensate Return

4.2.2.3. A boiler feed pump or a boiler feed pump turbine.

4.2.2.3.1. During disassembly or reassembly

4.2.2.4. A gas turbine.

4.2.2.4.1. During disassembly or reassembly

4.2.2.5. Emergency fire protection pumps and associated systems.

4.2.2.5.1. During disassembly or reassembly

4.2.2.6. Medium and High Voltage motors or junction boxes.

4.2.2.7. Medium and High Voltage breaker or enclosure

4.2.2.7.1. When breaker is being removed or replaced

4.2.2.8. The cabinets of the 480V essential bus.

4.2.2.8.1. When they are breached for any reason.

4.2.2.9. The cabinets and components of the vital distribution system.

4.2.2.9.1. When they are breached for any reason.

4.3. Work Order Execution

4.3.1. Scheduling and Assignment

4.3.1.1. FLS shall review work order FME requirements and ensure FME guidelines are being properly followed throughout the execution of the work order.

4.3.1.2. FLS shall ensure that work is scheduled to allow sufficient time to adhere to the FM guidelines.

4.3.1.3. FLS shall make certain workers are briefed properly on FME requirement and that workers understand their individual FME responsibilities prior to beginning work.

4.3.1.4. FLS shall assign workers to act as Foreign Material Exclusion Monitors (FMEM) when appropriate.

4.3.1.5. FLS shall identify the need for Foreign Material Exclusion Areas (FMEA's) associated with a work order and help set their boundaries prior to beginning work on the work order. FLS shall inform operations of any FMEA's that will be established as part of a work order prior to work beginning.

4.3.1.6. FLS shall ensure proper inspections are being carried out, both following the system or component breach and prior to its closing.

4.3.1.7. FLS shall document any practice that falls outside the FM control plan and approving said practice.

4.3.1.8. FLS shall forward all FME documentation to the FME Coordinator.

4.3.2. Pre-Job Briefing

4.3.2.1. A comprehensive discussion of applicable FME requirements shall be included in work order pre-job briefings. FME topics to be discussed shall include:

4.3.2.1.1. Assignment of Foreign Material Exclusion Areas including methods for posting, establishing, and controlling boundaries.

4.3.2.1.2. Establishing controlled access point(s) for Foreign Material Exclusion Areas and identifying staging and lay down areas for materials, tools, and other job-related equipment.

4.3.2.1.3. Designating Foreign Material Exclusion Monitors.

4.3.2.1.4. Reviewing log-in procedures for access and egress from the Foreign Material Exclusion Areas.

4.3.2.1.5. Surveying the work area and surrounding areas to determine specific precautions that may be required to contain foreign material generated from the work activity and to ensure foreign material is not allowed to contaminate critical plant systems.

4.3.2.1.6. Identifying specific FME protective devices and covers that will be required to protect breached systems.

4.3.2.1.7. Filling out the FME Control Form.

4.3.2.1.8. Appropriate FME measures shall be taken to protect both the removed component/assembly and the system/component that was breached.

4.3.2.1.9. Continuing FME considerations shall be given for removed items that are transported to shops or otherwise removed from normal areas.

4.3.3. Foreign Material Exclusion Areas (FMEA)

4.3.3.1. Foreign Material Exclusion Areas shall be established prior to beginning work activity for areas where high levels of FM control are desired.

4.3.3.2. FMEA boundaries shall be constructed by the assigned workers as defined in the pre-job briefing. These boundaries shall be set up in a reasonable fashion allowing room for work activities but without being too large to be practical.

4.3.3.3. Workers shall post FMEA boundaries using signs, barriers, and other notifiers so that Foreign Material Exclusion Areas are clearly defined.

4.3.3.4. All Foreign Material Exclusion Areas should include clearly defined ingress and egress points.

4.3.3.5. A log should be set up at all ingress and egress points to keep track of all material entering and leaving the FMEA.

4.3.3.6. FMEA barriers shall be orange and white striped tape. Tape shall be properly labeled.

4.3.4. Work Execution in Foreign Material Exclusion Areas

4.3.4.1. Once FMEA boundaries have been established, all workers must enter and exit the FMEA through the defined ingress and egress points.

4.3.4.2. All materials brought into and taken out of the FMEA must be logged. Log entries should include the name of the worker, a brief description of the material (including quantity if applicable), and the time and date of entry and/or exit of the material from the FMEA. Logs should be

reconciled regularly throughout the job (possibly as often as once a shift) and prior to closure of an FMEA to assure accountability.

4.3.4.3. Workers shall make every effort to limit the quantity of items brought into the FMEA. Unneeded tools and equipment shall not be brought into the FMEA. Personal items such as watches, body piercing, jewelry or loose change shall not be brought into the FMEA.

4.3.4.4. Workers shall safely secure all tools, personal protective equipment, and other necessary items (such as glasses, badges, hard hats, radios, etc.) prior to entering the FMEA. Whenever possible the method of securing this equipment will include the use of taglines and lanyards to keep any material that may be dropped under control.

4.3.4.5. Prior to taking any required tools, parts or other material into a FMEA, workers shall thoroughly inspect the material for loose pieces or other defects which could cause the material to break apart and contaminate a critical plant system.

4.3.4.6. Remove all trash as it accumulates in and around Foreign Material Exclusion Areas to the maximum extent practical. Do not place trash cans within the FMEA unless completely unavoidable and only then with the proper authorization.

4.3.4.7. Workers shall perform work outside of FMEA whenever possible.

4.3.5. Breaching Critical Plant Equipment and Systems

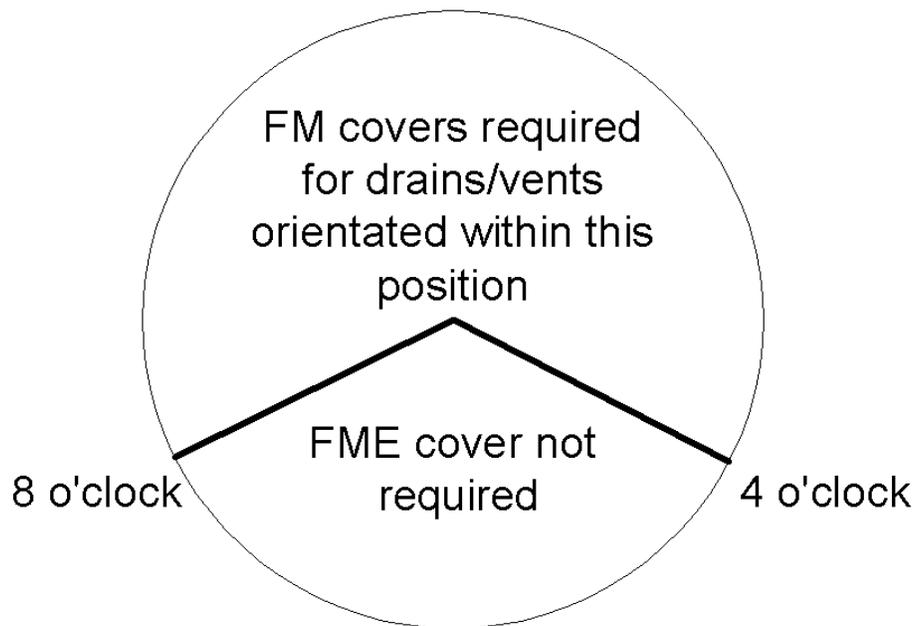
4.3.5.1. Upon initial breach of a critical plant system or piece of equipment, workers shall inspect the equipment to insure there is no Foreign Material present.

4.3.5.2. Once a system has been breached, workers shall properly cover all open systems before leaving them unattended. This includes breaks and lunches, as well as leaving for the end of shift. Covers can be made from any suitable material unless by its nature it can become FM by entering the system. Any cap or cover used should be clearly marked "FME".

4.3.5.2.1. In the event internal (sponge or bladder type) barriers are used they shall either be tethered or marked in a manner conspicuous enough to prevent them from being unnoticed.

4.3.5.3. Piping in the configuration shown below need not be covered:

4.3.5.3.1. Depending on the system sensitivity and make up this guideline may be the minimum.



4.3.5.4. Workers shall ensure that any component is free of FM prior to installing it in a system. To help insure proper protection, workers shall inspect all parts received from the warehouse for FM including but not limited to: paperwork, rock, gravel, plugs, shipping covers, bolts, fasteners, rags, fire blanket, solvents, oils and water, etc.

4.3.6. FMEA Pre-Closure Inspection and Closeout

4.3.6.1. A pre-closure inspection is required for all FMEA's. Workers shall complete this inspection prior to final closure of the FMEA to verify there is no Foreign Material remaining within the FMEA boundaries.

4.3.6.2. Workers shall inspect all tooling being used within the FMEA to be sure there are no pieces or parts missing.

4.3.6.3. The Job Coordinator shall reconcile the FMEA log prior to final closure of the FMEA. The FMEA log shall be turned in with the completed work order for recordkeeping.

4.3.6.4. When the above steps have been completed, the system may be closed.

4.3.6.5. After all FMEA pre-closure inspections and reconciliations are complete, and the system is closed, workers shall remove all FMEA barriers, signs, and postings.

4.3.7. Restricted Re-opening

4.3.7.1. At times it may be necessary to re-open a previously closed system. Examples may include but are not limited to:

4.3.7.1.1. Opening to verify closeout.

4.3.7.1.2. Opening to retrieve FM that was missed in the initial close out.

4.3.7.1.3. Opening to do minimum maintenance activities that may have been missed.

4.3.7.2. When a system is opened in this manner it shall be for a short period of time (less than one shift) and shall have continuous monitoring of any opened access.

4.3.7.3. Through proper planning and scheduling this practice shall be considered the exception rather than the rule.

4.3.8. FME Control Loss

4.3.8.1. Workers shall notify their Front Line Supervisor and Engineering anytime FME integrity is lost.

4.3.8.2. All reasonable attempts to retrieve FM shall be made; unless item has been deemed “no threat” by Engineering. Deeming “no threat” will not be common practice.

4.3.8.3. Attached form (Appendix C) shall be used when FME Control is lost and FM has been deemed irretrievable.

4.3.8.4. If Foreign Material retrieval is required, the retrieval should be carefully planned. Factors to consider include:

4.3.8.4.1. Can the FM be reliably retrieved?

4.3.8.4.2. Will the FM break apart when being retrieved?

4.3.8.4.3. Could the FM be repositioned during recovery creating a more difficult situation?

4.4. Purchasing and Warehousing

4.4.1. Warehouse

4.4.1.1. The warehouse shall inspect items for FM upon receipt. Any FM shall be noted, documented and removed. FM possibilities include but are not limited to: gravel, rocks, collapsed shipping plugs, paper, cardboard, water trapped in valve internals from valve hydro, nuts, bolts, or any item not on the shipping manifest.

4.4.1.1.1. In the event an item is delivered to the warehouse, and by its nature or design cannot be checked for FM, it shall be tagged “not checked for FM”.

4.4.1.2. While items are in inventory storage, they shall have covers on any open ends. Covers shall have FME clearly marked on the outside. Before items are issued they shall be checked to verify the covers are still in place.

4.4.1.3. When delivering items to the job location, warehouse personnel shall be sure to keep covers in place. They shall also take note of the location they stage said items as not to inadvertently introduce FM into a component, i.e. not staging items on the ground where sand and rocks might be blown into or fall inside of ends when opened.

4.4.2. Purchasing

4.4.2.1. Purchasing shall state wherever and whenever necessary the site requirements for FME; keeping in mind that all tube, pipe, valves, gearboxes, and other system components, need to arrive on-site free of FM and with shipping plugs or blinds intact.

- 4.4.2.2. Proper language shall be entered on Purchase Orders and Request for Qualifications so that vendors are made aware of site expectations.
- 4.4.2.3. Due to emergency, up-set condition, and the twenty four hour, seven day a week nature of Power Generation; it is possible that the routine Requisition to Purchase Order flow may be by-passed. If a purchase is made with a Pro-Card or a Purchase Order is generated for a part that has already been received, the proper language would not be provided to the vendor prior their delivery of that part. To maintain the integrity of The SEPC FME program it is necessary to use the following guidelines when a method other than routine is used to procure parts.
 - 4.4.2.3.1. Should a part be procured with the intent to issue a Purchase Order after the fact; the proper language of expectations shall be provided to the vendor prior to delivery of parts.
 - 4.4.2.3.2. Should a Pro-Card be used and the transaction is face to face, the language of expectations need not be provided prior to the transaction. However, it shall be the responsibility of the item procurer to ensure the item has the proper FM countermeasures and a reasonable inspection shall be performed.
 - 4.4.2.3.2.1. If parts are ordered by Pro-Card via electronic means the expectations shall be provided at the time of purchase.
 - 4.4.2.3.3. Proper language to be provided to vendors may be obtained by contacting the Purchasing Department at Holcomb Station.

5. Plan Administration

5.1. Authority

- 5.1.1. The ultimate approval authority concerning FME practices shall be the CEO of Sunflower Electric Power Corporation. The FME Coordinator shall be responsible to act on this authority through development and implementation of the FME program and FME procedures. The FME Coordinator is the individual responsible for changes and implementation of the FME plan. The FME program shall be approved by the CEO of Sunflower Electric Power

Corporation and shall be implemented under the FME Coordinator's oversight.

- 5.1.2. Changes to the procedure shall be under the FME Coordinator's oversight, changes that are department specific shall only require the affected manager(s) and will be tracked with a separate Revision number on the Signature Page.
- 5.1.3. The FME Coordinator has the full authority to enforce this program. The Coordinator shall have authority and organizational freedom to identify plan problems and initiate actions that will result in solutions. The FME Coordinator is responsible for maintenance and revisions to this procedure.
- 5.1.4. Any disagreement between participating departments which cannot be resolved shall be brought to the attention of the Vice President Power Production and Engineering.

5.2. Training

- 5.2.1. Training will be provided to employees considered applicable to this procedure. Depending on the job function, they will be trained to set up and closeout FMEA's, reconcile FME log sheets, properly cap and cover equipment to prevent FM entry, and correctly close a system.
- 5.2.2. Retraining may be necessary as the procedure is updated, a FM incident occurs, a major FMEA is to be set up, or at the request of an employee.

5.3. Auditing

- 5.3.1. This procedure shall be evaluated by the FME Coordinator by filing of reconciled log sheets and the observation of work conducted. This evaluation is to identify the effectiveness or inadequacies of the procedure.
- 5.3.2. Log sheets and documentation shall be kept in accordance with Sunflower's Approved Records Retention Policy and Schedule.

6. Revision Tracking

Revision 1 (All): Procedure Implementation.

Revision 2 (Manager, Supply Chain): Add 4.4.2.3

Revision 2 (FME Coordinator): Add paragraph 4.4.2.3 Add Section 6. Make Corrections to Table of Contents. Add paragraph 4.3.5.2.1

Revision 2 (Manager Resources, Coal): Add paragraph 4.3.5.2.1

Revision 2 (Manager, Resources Gas; Manager, Maintenance): Add paragraph 4.4.2.3, Add paragraph 4.3.5.2.1

Appendix A

DEFINITIONS

Foreign Material (FM): Any material that is not part of the system as designed. This includes any item that is left inside of a system that could adversely effect the intended operation, components, or chemistry of the system. Items such as: rice paper, tissue paper, bread or other items used during tube and pipe maintenance work shall not be considered FM. The aforementioned items have been deemed no threat by Engineering when they are used in an approved manner.

Foreign Material Exclusion Area (FMEA): A work area requiring specific controls to prevent the introduction of FM into a system(s).

FME Log: A log that is maintained to accurately account and track items (entering and exiting) an FMEA. A log may be hard copy or equivalent electronic copy.

FME Barrier: A temporary method for sealing and protecting a breached system or component from the introduction of FM when the system is left open or unattended. An FME Barrier should have these attributes: fire-resistant, non-brittle, tear resistant (paper should not be used), unlikely to deteriorate or decompose with time, inert, highly visible, and is retrievable.

Implementer: Individual assigned responsibilities for performing work activities where FM controls are needed.

Front Line Supervisor (FLS): For the purpose of this procedure a Front Line Supervisor shall include these titles: Mechanical Maintenance Supervisor, EI&C Supervisor, Planning and Scheduling Supervisor, Laboratory Supervisor, Engineering Technical Services Supervisor, Shift Supervisor, Production Supervisor, Coal and Material Handling Supervisor, Coal and Material Handling Supervisor Assistant, Purchasing Supervisor, and Warehouse and Stores Supervisor.

Foreign Material Control Plan: A document to be filled out when FM controls are desired. The document has portions to be filled out during the prejob briefing, during the job, following the system closeout, and after the work has been completed.

Appendix C

Loss of FM Control Form

FME Implementer Signature	Implementer's Front Line Supervisor	FLS Signature
System	Item Description	Work Order No.
Date	FME Coordinator Signature	Item deemed no threat