Title: Work on Pulverised Fuel Equipment

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Associated Documents:
APS-P-SHE-02-001 – APS Safety Rules (E&M)

Contents

1 INTRODUCTION/PURPOSE 1
2 SCOPE 1
3 DEFINITION 1
4 RESPONSIBILITIES 1
5 INSTRUCTION 2
6 CONTROL OF RECORDS 5
7 REVIEW AND AUDIT 5
1 INTRODUCTION/PURPOSE

This APS Instruction defines the formal approach to managing the risks of explosions in the pulverized fuel systems installed to NFPA standards at ACME power plant.

2 SCOPE

This instruction applies to all pulverized fuel systems within the following boundaries:

- The pulverizer plant system:
  The plant bounded by the entry to the coal silo feeding that pulverizer, the nozzles of PF burner fed from that pulveriser and the points at which hot air and cold air ducts are isolated from their respective main supply duct

- The furnace:
  The combustion chamber, bottom ash hopper and disposal system

- The dust disposal system:
  The dust hoppers and dry transportation systems

This instruction is identical for both Units

3 DEFINITION

NFPA  National Fire Protection Association

4 RESPONSIBILITIES

All Main Plant Operations, Material Handling and Engineering staff who operate, clean and/or maintain pulverizer fuel equipment identified in section 2 should make themselves thoroughly familiar with this instruction
5 INSTRUCTION

5.1 Dangers and Hazards

The ignition of finely divided combustible material such as pulverized fuel in air can lead to a significant explosion. The creation of an explosion requires a suitably proportioned air/pulverized fuel mixture and an ignition source of sufficient intensity.

An explosive air/pulverized fuel mixture will develop transiently within a pulverized fuel system when pulverizers are put into or taken out of service, or due to exceptional conditions such as loss of coal feed.

Ignition sources in pulverized fuel systems may arise from spontaneous combustion of local pulverized fuel deposits, presence of combustible material or blow back from the furnace.

5.2 Safe Operation of Pulverized Fuel Systems

All procedures and instructions must be observed to ensure the safe operation of the pulverised fuel systems under all anticipated conditions, both normal and exceptional, these are specified in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook).

This Code of Practice is printed in Handbook format and is issued to Operational and Engineering personnel who have responsibility for the safe operation and maintenance of pulverised fuel equipment:

The Code of Practice contains 9 Sections as follows:

Section 1: Explosion of Flammable Dusts
Section 2: Training
Section 3: General Precautions
Section 4: Operational Procedures – Normal Condition
Section 5: Abnormal Conditions and Emergency Procedures
Section 6: Procedures for Dealing with Fires
Section 7: Pulveriser Inerting System
Section 8: Maintenance Procedures
Section 9: Reporting of Incidents Associated with Pulverized Fuel Plant

5.3 Maintenance, Inspection and Testing of PF Plant

The procedures and instructions for the maintenance, inspection and testing of pulverized fuel plant are specified in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 8 Maintenance Procedures which describes the critical areas for inspection in relation to pulverized fuel safety, the care and maintenance of pulverised fuel pipework, control and instrumentation equipment and cleaning procedures.

Any consideration for Hot Work should following the requirements set out in APS/I/SHE/01/001 – Hot Work Assessment
5.4 Training

It is the policy at the ACME power plant that each person concerned with the operation and maintenance of pulverized fuel plant will receive on site formal training and an assessment of their competence and knowledge of the PF Code of Practice.

Thereafter, the competence and re-assessment of individuals shall be confirmed every three years and the results recorded.

The procedures for the provision of training and assessment of competence for all personnel who are concerned in the operation of pulverized fuel systems, both under normal and exceptional conditions, are specified in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 2 Training.

5.5 Procurement and Installation of Pulverized Fuel Plant Components

The requirements for pulverized fuel plant components to be installed to the correct procedures which ensure that containment requirements are fully accommodated, are specified in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 9 Maintenance Procedures “Quality Control”.

The requirements for new components to be procured to meet the design specification and installed to maintenance procedures that ensure that the containment requirements are fully accommodated are also specified.

5.6 Pulverizer Fire Detection

The detection of a pulverizer fire is by indication of a high or rapidly increasing pulveriser outlet temperature without other cause, to assure positive fire detection, temperature detection devices are installed in the pulverizer outlet.

A designated alarm provides positive indication of fire detection to the Operator.

Full details of the fire detection system are included in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 6 Procedure for Dealing with Plant Fires.

5.7 Fire Fighting Systems and Equipment

Details of the fire detection and extinguishing systems and equipment, together with the actions to be taken in the event of a fire, are described in APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 6 Procedure for Dealing with Fires.

5.8 Reporting of Incidents Associated with Pulverized Fuel Plant

APS/P/OPS/03/001 – Code of Practice for the Operation of Pulverized Fuel Firing Equipment (Handbook) Section 10, Reporting of Incidents associated with PF Plant requires that any accident, explosion or fire associated with pulverized fuel plant, whether or not causing damage or injuries, is reported in writing to the Operations Director and for significant incidents to be investigated and remedial measures applied where appropriate.
5.9 Information Relating to Significant Pulverized Fuel Incidents

Information resulting from any investigations into significant pulverized fuel incidents will be circulated, as appropriate, for inclusion in the company data-base from which future failure or integrity risks can be assessed and the need for policy changes identified.
6 CONTROL OF RECORDS

All records covered within this APS instruction provide evidence of the ongoing operation and should be properly organize and managed.

All records must be readily available for scrutiny and audit.

Records should be stored where possible within the APS Filing System maintained by Document Control.

7 REVIEW AND AUDIT

All APS Procedures and Instructions will be subject to review every two years unless the need arises before the planned review date. Additionally, this instruction will be subject to audit in accordance with APS/P/SHE/03/003 – Safety, Health and Environment Audit and Review.

Any inaccuracies or omissions in this procedure should be notified to the instruction owner immediately.