BACKGROUND INFORMATION

FOR

AP600

SHUTDOWN

EMERGENCY RESPONSE GUIDELINE

SDG-3

AP600 RESPONSE TO HIGH CONTAINMENT RADIATION

DURING SHUTDOWN

Rev. 2

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1.0 INTRODUCTION

Guideline SDG-3, RESPONSE TO HIGH CONTAINMENT RADIATION DURING SHUTDOWN, is a Shutdown Guideline (SDG) that provides procedural guidance if high radiation is present inside the containment.

There is only one explicit transition to the guideline SDG-3. It is from the Shutdown Safety Status Tree, SDF-0.1, on a ORANGE priority if the containment radiation level is above the alarm setpoint.

After all the actions in guideline SDG-3 are completed, the operator is instructed to return to the appropriate plant procedure.

2.0 DESCRIPTION

Guideline SDG-3, RESPONSE TO HIGH CONTAINMENT RADIATION DURING SHUTDOWN, provides actions to respond if high radiation is present inside containment. This guideline is entered on a ORANGE priority on the Shutdown Safety Status Tree when the containment radiation level is above the alarm setpoint. The containment alarm setpoint would be reached if there is RCS leakage into containment or if a fuel assembly is dropped and damaged during fuel transfer operations.

The actions of this guideline verify containment ventilation isolation and initiate actions to established containment closure. The operator would start containment fan coolers (if not already operating) and determine if any additional actions are needed based on plant status and conditions.

3.0 RECOVERY/RESTORATION TECHNIQUE

The objective of the recovery/restoration technique incorporated into guideline SDG-3 is to provide actions to respond to high containment radiation during plant shutdown.

The following subsections provide a summary of the major action categories of operator actions and the key utility decision points for guideline SDG-3, RESPONSE TO HIGH CONTAINMENT RADIATION DURING SHUTDOWN.

3.1 High Level Action Summary

A high level summary of the actions performed in SDG-3 is given on the following page in the form of major action categories. These are described below in more detail.

- Verify Containment Ventilation Isolation

  The isolation of the containment ventilation penetrations (i.e. containment supply and exhaust air dampers) is verified to prevent the potential release of radioactivity from the containment.

- Initiate Actions To Establish Containment Closure

  Actions are initiated to establish containment closure to prevent the potential release of radioactivity through any containment openings that were established for the shutdown condition.

- Start Available Containment Fan Coolers

  Containment fan coolers are started to provide cooling of the containment atmosphere.

- Determine If Any Additional Actions Are Necessary

  The operator is instructed to determine if any additional actions are necessary to address the containment high radiation level. This information may be needed to determine potential offsite releases.

MAJOR ACTION CATEGORIES IN SDG-3

- Verify Containment Ventilation Isolation
- Initiate Actions To Establish Containment Closure
- Start Available Containment Fan Coolers
- Determine If Any Additional Actions Are Necessary

3.2 Key Utility Decision Points

There is one key utility decision point in this guideline when the operator must determine an appropriate course of action. In Step 4, the operator is instructed to determine if any additional actions are necessary to address the containment high radiation level. The operator will determine if any additional actions are to be taken at this time in the guideline.

4.0 DETAILED DESCRIPTION OF GUIDELINE

This section provides a very detailed discussion of the generic guideline SDG-3 to facilitate EOP writing and training efforts. By presenting guideline background information in greater detail through the use of a structured format (i.e., step description tables, step sequence tables, and logic diagrams), plant applicability can be more easily determined. The separate and unique subsections containing this information follow.

4.1 Detailed Description of Steps, Notes, and Cautions

This section contains a one-page (or more) step description table for each separate guideline step, note, and caution. Notes and cautions are always presented relative to the step they precede.

The Step Description Tables for the steps and associated notes and cautions of guideline SDG-3 are presented on the following page.

STEP 1

STEP: Verify Containment Ventilation Isolation

PURPOSE: To ensure containment ventilation penetrations are isolated

BASIS:

This step instructs the operator to verify that isolation of the ventilation penetrations has occurred to prevent potential release of radioactive materials from containment.

ACTIONS:

- Determine if containment supply and exhaust air dampers are closed
- Close dampers

INSTRUMENTATION:

- Containment supply and exhaust air dampers position indications

CONTROL/EQUIPMENT:

Containment supply and exhaust air dampers controls

KNOWLEDGE:

N/A

ADDITIONAL INFORMATION:

N/A

STEP 2

STEP: Initiate Actions To Establish Containment Closure

PURPOSE: To establish a boundary to prevent the release of fission products

BASIS:

Actions are initiated to establish containment closure to prevent the potential release of radioactivity through any containment openings that were established for the plant shutdown condition. Since all actions are local, the operator must contact the appropriate plant personnel and tell them to close all containment openings. Instrument air to containment is also closed since it is a potential relief path that is open during outages.

ACTIONS:

Initiate actions to establish containment closure

INSTRUMENTATION:

N/A

CONTROL/EQUIPMENT:

N/A

KNOWLEDGE:

N/A

ADDITIONAL INFORMATION:

Include AP600 specific details for establishing containment closure

STEP 3

STEP: Start Available Containment Fan Coolers

PURPOSE: To ensure operation of the containment fan coolers for containment cooling

BASIS:

The containment purge and exhaust system provides outside air to the containment during outages for personnel habitability. Containment fan coolers may or may not be operating for containment cooling. Since the containment purge and exhaust system is isolated in this guideline, the containment fan coolers are started to provide cooling of the containment atmosphere.

ACTIONS:

Start containment fan coolers

INSTRUMENTATION:

Containment fan cooler status indication

CONTROL/EQUIPMENT:

Containment fan cooler controls

KNOWLEDGE:

N/A

ADDITIONAL INFORMATION:

N/A

STEP 4

STEP: Determine If Any Additional Actions Are Necessary

PURPOSE: To determine if any additional actions are necessary to address the containment high radiation level

BASIS:

This step instructs the operator to determine if any additional actions are necessary to address the radiation level inside containment. The operator is responsible for providing any further actions to address the radiation level, if appropriate.

ACTIONS:

Determine if any additional actions are necessary

INSTRUMENTATION:

N/A

CONTROL/EQUIPMENT:

N/A

KNOWLEDGE:

N/A

ADDITIONAL INFORMATION:

N/A

STEP 5

STEP: Go To Appropriate Plant Procedure

PURPOSE: To direct the operator to the proper procedure following completion of the steps in this guideline

BASIS:

Now that the guideline steps have been completed, the operator should continue plant operation and/or recovery going to the appropriate normal plant procedure or abnormal plant procedure.

ACTIONS:

Go to appropriate plant procedure

INSTRUMENTATION:

N/A

CONTROL/EQUIPMENT:

N/A

KNOWLEDGE:

N/A

ADDITIONAL INFORMATION:

N/A

4.2 Step Sequence Requirements

This section consists of a table which presents the existing guideline sequence and identifies the allowed interchangeability of guideline steps for the benefit of the EOP writer.

The Step Sequence Table for SDG-3 is provided on the following page. The interchangeability of guideline steps is identified by the numbers in the column to the right of each guideline step.

STEP SEQUENCE FOR SDG-3

STEP		SEQUENCE
1.	Verify Containment Ventilation Isolation	1
2.	Initiate Actions To Establish Containment Closure	1
3.	Start Available Containment Fan Coolers	2
4.	Determine If Any Additional Actions Are Necessary	3
5.	Go To Appropriate Plant Procedure	4