

Docket File  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

July 1, 1997

50-254/265

LICENSEE: COMMONWEALTH EDISON COMPANY (ComEd)  
FACILITIES: Quad Cities Nuclear Power Station, Units 1 and 2  
SUBJECT: SUMMARY OF MEETING CONCERNING THE QUAD CITIES FIRE PROTECTION PROGRAM AND INDIVIDUAL PLANT EXAMINATION OF EXTERNAL EVENTS (IPEEE)

On June 2, 1997, the staff met with ComEd to discuss NRC concerns that were addressed in a May 22, 1997, letter to ComEd. This letter relates to a site visit by members of the NRC staff to review the plant areas associated with the more significant fire vulnerabilities and review the Interim Alternate Shutdown Method (IASM) as they relate to the licensee's IPEEE assessment. A list of attendees is provided as Enclosure 1.

The objective of the meeting was for ComEd to discuss with the staff the status of short- and long-term corrective actions and immediate fire protection compensatory measures Quad Cities has taken to reduce the possible occurrence of a fire in these vulnerable areas. The licensee also summarized the IASM and the schedule for completing the long-term conceptual designs for safe shutdown simplification. A copy of the licensee's presentation is included as Enclosure 2 and an additional handout listing existing and enhanced fire fighting equipment availability is included as Enclosure 3.

The licensee discussed its fire hazards monitoring with increased fire watch surveillance and training, stricter controls over transient combustibles, added fire fighting equipment, and enhanced fire fighting response measures. The short-term resolution and schedule for constructing a fire barrier to address the motor-generator set vulnerability issue was discussed. The administrative controls over safe shutdown equipment before the IPEEE assessment, after the IPEEE, and with the IASM was presented. The IASM was discussed as to the actions required to implement this method and the reliability of the water source. Shift manning and training was discussed to show the personnel required for safe shutdown and fire fighting. The schedule for completion of the conceptual designs for safe shutdown simplification was also addressed.

Based on the meeting, the licensee is scheduling to have the conceptual designs for IPEEE risk reduction done by July 31, 1997, and a followup meeting (tentatively being scheduled for early August) between the staff and ComEd to review the licensee's fire risk reduction activity status. The licensee

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stated that a written response to the May 22, 1997, letter will be issued within 30 days of this meeting. The response will also address facility compliance with NRC regulations.

**Original signed by**

Robert M. Pulsifer, Project Manager  
Project Directorate III-2  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Docket Nos. 50-254, 50-265

Enclosures: 1. List of Meeting Attendees  
2. Licensee Presentation  
3. Fire Equipment Listing

cc w/encls: See next page

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# MEETING BETWEEN COMMONWEALTH EDISON COMPANY AND NRC

## QUAD CITIES IPEEE

JUNE 2, 1997

<u>NAME</u>	<u>AFFILIATION</u>	<u>PHONE</u>
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Rolf Westberg	NRC\RIII\DRS	
R. Lerch	NRC\RIII\DRP	

ENCLOSURE 1

# *FIRE PROTECTION PROGRAM*

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## *■ CONTROLS AND ENHANCEMENTS*

*QUAD CITIES  
NUCLEAR POWER STATION*

# *FIRE PROTECTION PROGRAM*

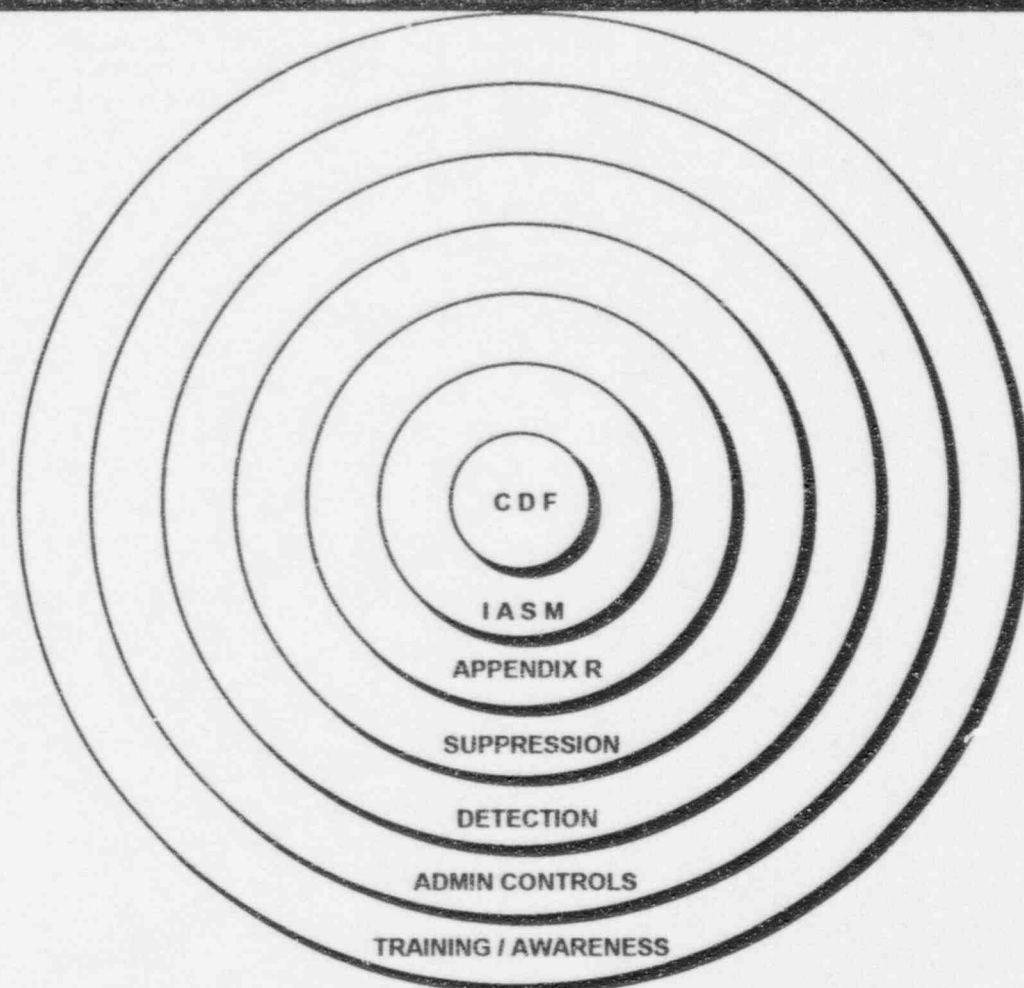
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Opening Remarks



# *Fire Protection Strategy*

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QUAD CITIES DEFENSE IN DEPTH

# *Operations - Ownership*

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## *Why am I here?*

- Engineering discussion to date
- Operations owns the cores. Responsible for:
  - FP Program implementation
  - Control of work
  - Transient combustibles
  - Fire Brigade and SSD of the Units



# *Operations - Ownership*

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## (Sept., 1994) new Operations Manager

- (Jan., 1995) Fire Protection Improvement Plan (FPIP)
  - simplify FP program and SSD procedures
  - revalidate Fire Hazards Analysis
  - review plant modifications
  - analyze pressure interfaces and spurious operations
  - new procedure for Fire Protection Reports
- (Jan., 1995) FPIP staffing increased
- (June, 1996) Staffing increased to 12 for IPEEE and FPIP

# *Operations - Concern/Actions Taken*

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(Nov., 1996) preliminary IPEEE results received

- suspended plant on-line maintenance
- commissioned engineering of Interim Alternate Shutdown Method (IASM)

Engineering begins looking for long-term solution

(March, 1997) IASM made operable to Unit 1

- Completed prior to risk significant equipment being removed from service for U-2 outage

# *Operations - Concern/Actions Taken*

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- *(April, 1997) NRC Fact-finding Visit - raised additional concerns*
  - *Recirc. MG Set Area - radiant heat concern*
    - *1. water curtain inop.- 67-day admin. timeclock*
    - *2. passive fire barrier design initiated*
    - *3. hydraulic calcs. on existing suppression systems*
  - *For "high vulnerability" areas, add'l measures taken*
    - *1. fire prevention*
    - *2. fire identification*
    - *3. quicker fire fighting response*
  - *Additional risk monitoring tool implemented*

# *Operations - Conclusions*

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- *We have looked hard to identify our problems*
- *As concerns have been raised, aggressive corrective actions have been implemented*
- *Operations recognizes the seriousness of the vulnerabilities*
- *Confidence in proper core protection due to:*
  - *defense in depth*
  - *interim measures have been taken*
  - *adequate qualified operators on shift*
    - *safe shutdown*
    - *Fire Brigade*

# *1. Hazards Monitoring*

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## ■ *Current program*

- *Inoperable fire system equipment*
- *Inoperable SSD Paths*
- *Once per hour Fire watch*
- *Hot work program*



# *1. Hazards Monitoring*

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- *Program Enhancements*
- *Reasonable assurance*
  - *monitoring*
  - *dedicated*
  - *independence*
- *Fire watch awareness training*
- *Effectiveness reviews*



## 2. *Prevention*

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- *Transient combustibles program*
  - *Admin Limits, Control by permits*
- *Program enhancements*
  - *Removing transient combustibles where possible*
  - *Required continuous manning of new combustibles*
  - *Required increased control of hot work*
  - *Changes in transient loading*

### *3. Suppression and Control*

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- Reviewed existing firefighting equipment
  - Focused equipment on vulnerable areas
- Added equipment
- Decreased response time
- Establishing Immediate Response Team

## 4. *Motor-Generator Protection*

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- *Existing condition*
  - *IPEEE estimate*
- *Design considerations*
  - *Multiple actuations*
- *Short term actions*
  - *Firewatches + equipment*
- *Long term features*
  - *Active feature replaced with passive*
  - *Operator Protection*
- *Schedule*

## *5. Administrative Controls*

### *SSD Equipment*

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■ *Pre-IPEEE*

■ *Post-IPEEE*

■ *With IASM*

- *On-line risk matrix*
- *On-line risk levels and actions*
- *Integrated risk profile*

## 5. IPEEE

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### ■ Pre-IPEEE

- Administrative control

### ■ Post-IPEEE

- Suspension of voluntary maintenance
- Only non risk-impacting maintenance allowed



## *5. Post-IASM*

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- *Risk-informed guidelines provided*
- *SSD and IASM equipment matrix*
- *Risk level recognition based on familiar color-coding for on-line maintenance*
- *Integrated risk trending and comparison*



## 5. On-Line Risk Matrix

Matrix based on unavailable equipment

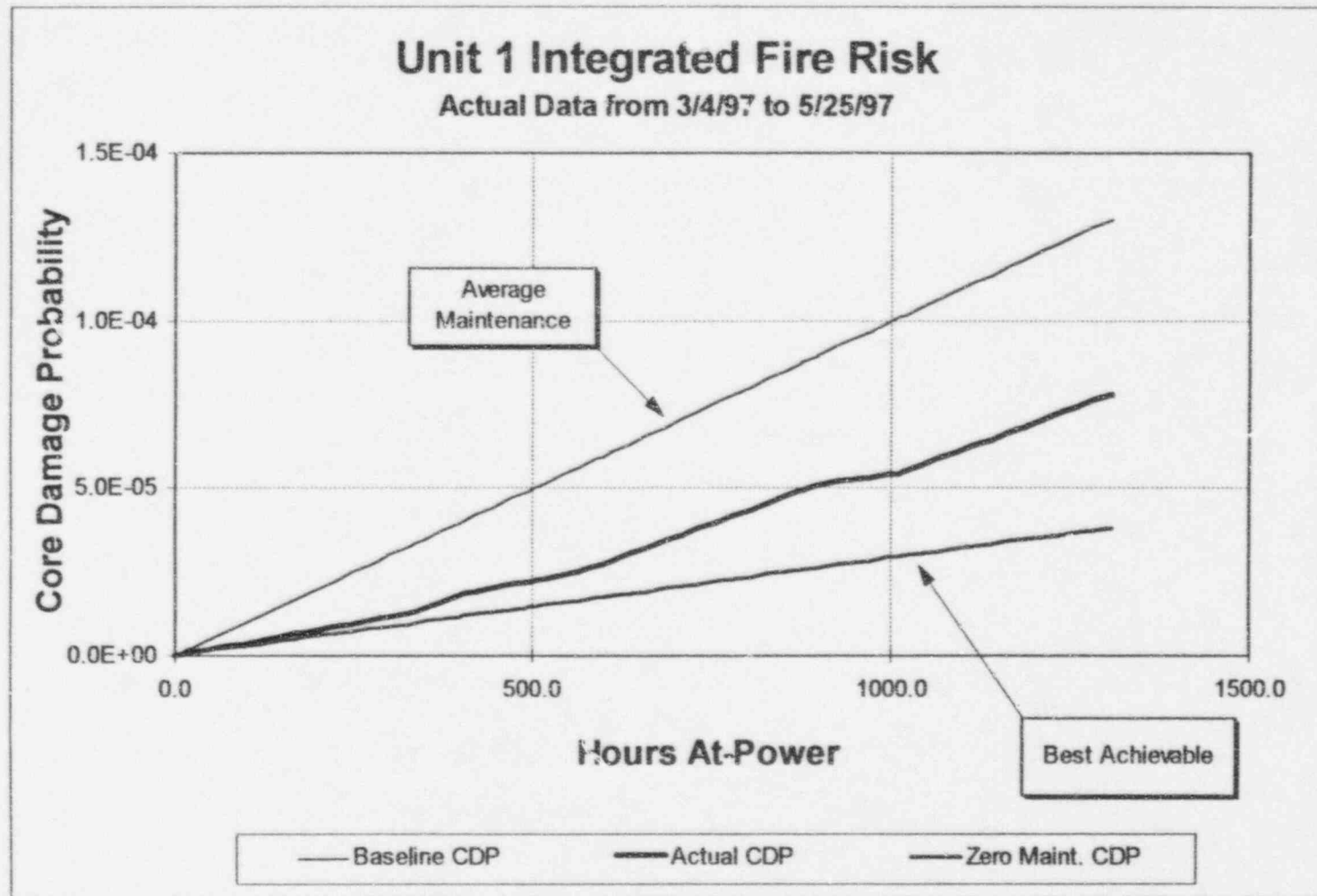
SSD Paths:	IASM Equipment:			
	None	1 RB	2 RB	All
None	Green	Green	Green	Orange
A	Green	Green	Yellow	Orange
D3	Green	Green	Orange	Orange
A & D3	Green	Green	Orange	Orange

## 5. On-Line Risk Levels and Actions

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- GREEN - no action required
- YELLOW - compensatory measures
- ORANGE - management review & approval
- RED - immediate & significant action

# 5. Integrated Risk Profile Since IASM Implemented



## 6. *Interim Alternate Shutdown Method (IASM)*

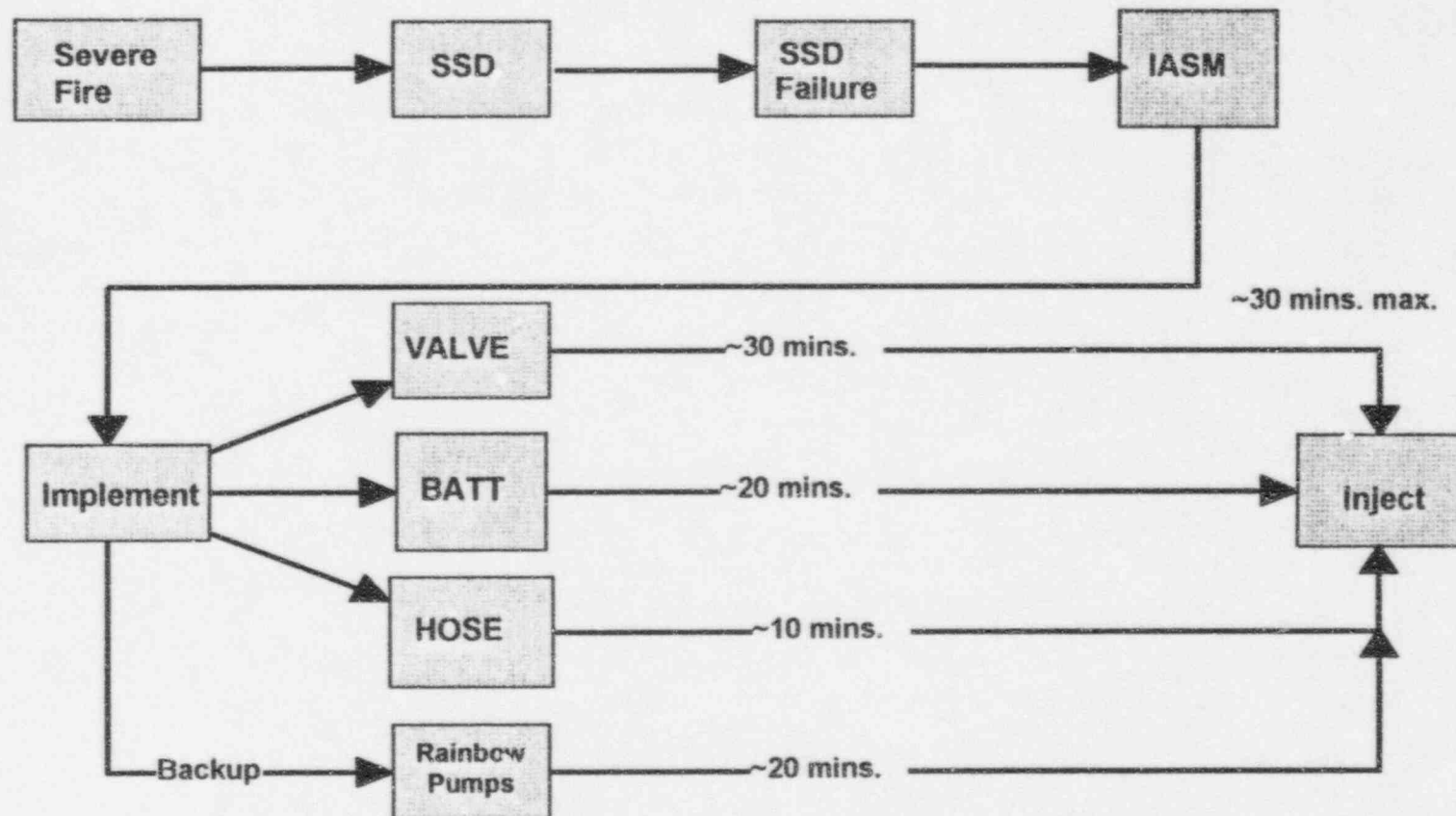
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*Timeline*

*IASM*

*Entry conditions*

## 6. IASM - When and How



QCOP 4100-17  
Reactor Core Cooling Using IASM  
(IMPLEMENTATION AND OPERATOR ACTIONS)

## 6. IASM

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- *Water source reliability*
- *Emergency lights*
- *Core cooling*
- *Upgrades*



## 7. *Shift Manning*

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■ Shift manning- all shifts

■ Training given

## 7. *Shift Manning - All Shifts*

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### UNIT ONE SHUTDOWN (QARP)

Unit 1 Supervisor, U1 US

Unit 1 NSO, U1 NSO

Unit 1 Admin NSO, AD NSO1

Unit 1 EO, EO1

Unit 1 EA, EA1

### UNIT TWO SHUTDOWN (QARP)

Unit 2 Supervisor, U2 US

Unit 2 NSO, U2 NSO

Unit 2 Admin NSO, AD NSO2

Unit 2 EO, EO2

Unit 2 EA, EA2

### FIRE BRIGADE

Shift Supervisor

Radwaste Supervisor

Outside EO

Radwaste EO

Roving or radwaste extra EA

All non licensed operators on  
site who are not filling a position  
for SSD

Shift Engineer, SE  
and  
Shift Technical Advisor, STA  
also on all shifts

## *7. Shift Manning Training for SSD*

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- *Fire Protection Systems Training*
- *Fire Brigade Training*
- *Appendix R Safe Shutdown Training*
  - *Classroom*
  - *Simulations*
  - *Walkdowns*
- *Interim Alternate Shutdown Method (IASM) Training*

## 8. *Schedule for Safe Shutdown Simplification*

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■ November 30, 1997

■ Conceptual designs by July 31, 1997

■ Concept considerations

- *IPEEE risk reduction*
- *Opposite unit reliance*
- *Operations staff requirements*
- *Manual actions*

# *Fire Protection Program*

■ Closing Remarks

## EXISTING FIRE FIGHTING EQUIPMENT DETAILS

- Radios used to dispatch brigade for improved response times and clarity
- Currently maintaining appropriate fire fighting equipment in the High Risk Zones

16 150# Dry Chemical wheeled carts

5 Foam Premixed wheeled carts

5 Foam education carts

2 Halon wheeled carts

3 Extinguisher Carts contain various types of portable extinguishers.

20 SCBA quick mounted

45 spare air bottles

Reserve foam supply

Ventilation carts

- CO2 hosereels throughout High Risk areas



## COMPLETED ENHANCEMENTS TO HIGH RISK ZONES

- Additional fire fighting gear placed adjacent to High Risk Zones
- Additional Fire Fighting equipment installed for High Risk Zones
  - (2) 150# Dry Chemical Wheeled carts installed
  - New Brigade Equipment cart installed
  - Halon cart relocated to High Risk Zone
  - Ventilation equipment relocated to High Risk Zones
  - Additional gaseous fire extinguishers installed in High Risk Zones
  - Preconnecting foam fire fighting equipment in various high risk areas to reduce Operator actions.
- Additional equipment on order to supplement areas and reduce fire brigade response time:
  - Thermography for faster discovery of cable fires
  - Additional foam carts for more capacity and reduced response time
  - Fire fighting monitors to augment the fire brigade by utilizing equipment that Operates without dedicated resources
  - Training aids to improve the quality of Fire Training