



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 14, 2001

LICENSEE: Exelon Generation Company, LLC

FACILITIES: Braidwood Station, Units 1 and 2
Byron Station, Units 1 and 2
Clinton Power Station
Dresden Nuclear Power Station, Units 2 and 3
LaSalle County Station, Units 1 and 2
Limerick Generating Station, Units 1 and 2
Oyster Creek Nuclear Generating Station
Peach Bottom Atomic Power Station, Units 2 and 3
Quad Cities Nuclear Power Station, Units 1 and 2
Three Mile Island, Unit 1

SUBJECT: SUMMARY OF FEBRUARY 7, 2001, MEETING WITH EXELON NUCLEAR TO DISCUSS EXELON'S OUTAGE MANAGEMENT

On February 7, 2001, the U. S. Nuclear Regulatory Commission (NRC) met with the management of Exelon Nuclear (Exelon), the parent company of Exelon Generation Company, LLC, at the request of Exelon to discuss Exelon's outage management program. The meeting was held at the NRC's White Flint offices with video linkage to the NRC's Region I and Region III offices. A list of those attending the meeting at White Flint is provided as Enclosure 1. Enclosure 2 is a copy of the handout used during the meeting.

Exelon stated that they have a goal to lead the industry in outage management. They have developed a management philosophy and planning tools that they believe will enable them to achieve that goal. Critical management principles are rigorous identification of outage work, planning and preparation, identification of contingencies, and well controlled and coordinated work execution. A key aspect to their program is the use of a planning template with milestones beginning 18 months before an outage. These activities are conducted by the individual sites. The licensee uses detailed performance indicators, practices strict adherence to the outage plan, and activates a strong outage control center to facilitate schedule completion.

The corporate organization's responsibilities include oversight of the pre-outage milestones, management of significant emergent issues, project management responsibility for reactor and refueling, turbine, and steam generator activities. Another key responsibility of the corporate organization is to perform benchmarking and coordination to ensure the use of the best practices across the fleet of plants.

Exelon reported that their outage performance has improved over the last several years. In addition to reducing the length of the outages, material condition of the plants has improved,

there has been an increase in plant capacity factors, and in the year 2000, 99% of the planned outage work was completed. Improvements are still expected in the areas of managing radiological performance with emphasis on controlling emergent work and changing conditions.

/RA/

George F. Dick, Jr., Project Manager, Section 2
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Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-454, STN 50-455, STN 50-456,
STN 50-457, 50-461, 50-237, 50-249, 50-373,
50-374, 50-352, 50-353, 50-219, 50-277, 50-278,
50-254, 50-265, and 50-289

Enclosures: 1. Meeting Attendees
2. Handout

cc w/encls: See next page

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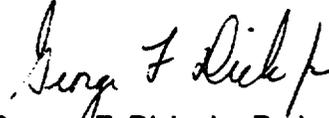
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NRC-001

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2. Handout

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FEBRUARY 7, 2001

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OUTAGE MANAGEMENT MEETING

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Exelon Nuclear Outage Management

February 7, 2001
NRC Headquarters
Rockville, MD

Agenda

- Introduction
 - Outage Planning and Preparation
 - Role of Corporate Organizations
 - Managing Online Work
 - Conduct of Outage
 - Managing risk
 - Results
 - Closing Remarks
- J. L. Skolds
 - C. M. Crane
 - C. M. Crane
 - C. G. Pardee
 - C. M. Crane
 - J. L. Skolds

Introduction

J. L. Skolds

Outage Philosophy

- Exelon Nuclear strives to lead industry in outage performance
- Short outages are a reflection of good planning in a well functioning organization
- Safety and short outages are not mutually exclusive. They are complementary when:
 - all required work is done
 - work is performed per the plan
 - shutdown safety risk is maintained at acceptable levels
- Detailed planning and management focus on execution
- Effectively executed short outages do not have a negative impact on reliability

Overall Management Principles

- Top management priority
- Planning and preparation are essential
- Fundamental work processes and standards must be in place
- Maintain in-depth knowledge of plant material condition
- Identify contingencies in advance
- Exercise appropriate Corporate support and oversight
- Rigorous identification of outage work
- Work execution must be controlled and coordinated
- All work and performance indicators are closely monitored
- Maintain focus on operating unit at dual unit sites - all required work is done
- Meet successful outage criteria
- Celebrate success

Criteria for a Successful Outage

- Personnel Safety - work executed safely, without injury
- Nuclear Safety - outage schedule appropriately considers risk and no unplanned entries into “orange” or “red” shutdown risk conditions during the outage
 - no planned entries into “red” shutdown risk conditions
- No Events - no human performance or programmatic breakdowns
- Improved material condition - all required work is completed in a high quality manner
- Aggressive ALARA goals are established and met
- Work the Plan - work is completed efficiently and in accordance with the Plan
- Good post-outage operation

Outage Planning and Preparation and the Role of the Corporate Organization

C. M. Crane

Outage Planning and Preparation

- Fleet-wide template utilized for outage preparation
- Milestone approach utilized
- Critical path defined
- Systematic identification of required work
 - material condition improvement plans
 - corrective and preventative maintenance
 - engineering programs and required modifications
- Contingency planning and resources loaded
- Partnerships established with vendors
- Utilize High Impact Teams (HIT) for key evolutions
- Dedicated site outage planning organizations
- Large fleet experience base
- Lessons learned promulgated through peer group

Outage Planning Template Key Milestones

- Identify major work scope E-18 months
- Review revision “A” outage schedule - major work E-12 months
- Engineering system and program review complete E-12 months
- Issue approved design packages to planning E-12 months
- Identify/submit regulatory requests E-12 months
- Perform materiel condition review E-9 months
- Implement outage scope control - “freeze scope” E-9 months
- Work package planning complete E-6 months
- Corporate outage readiness review E-6 months
- Review revision “B” outage schedule - logic tied E-5 months
- Radiation Work Permits complete E-3 months
- Publish revision “0” outage schedule - resource loaded E-3 months
- Final senior management readiness review E-2 months
- Package walkdowns complete E-1 month

Role of Corporate Organizations

- Provide oversight for accomplishment of pre-outage milestones
- Act as project managers for reactor and refueling, turbine, and steam generator activities
- Manage original equipment manufacturer (OEM) vendor and modification/maintenance contractor alliances
- Manage significant emergent issues
- Participate in post outage reviews
- Perform benchmarking and coordinate use of best practices across fleet

Online Maintenance

- Comprehensive maintenance process utilized
- Outage principles utilized for critical evolutions
- Process supports proper balance between online and outage work
- The risk impact of on-line maintenance is managed

Conduct of Outages

C. Pardee

Conduct of Outages

- Pre-outage activities scheduled and worked
- Utilize centralized Outage Control Center
 - Staffed with senior managers
 - Activated prior to outage and personnel trained
 - Facilitate schedule completion
 - Address emergent issues
 - Monitor shutdown risk
- Utilize project managers for critical evolutions
- Clear communication expectations established
 - 10 minute / 30 minute rules
- Use of detailed performance indicators
- “Work the plan”

Monitoring Conduct of Outages

- Site
 - Senior management directly involved
 - Structured shift turnovers
 - Daily scope control reviews with specific criteria for add/removal
 - Daily staffing / cost review
 - Maintain standard performance indicators
 - Post outage report
- Corporate
 - Daily morning status report
 - Daily senior management involvement
 - Resolution of emergent issues
 - Weekly outage indicator review
 - Post outage critique meetings

Managing Shutdown Risk

- Actions and responsibilities are proceduralized
- Applies to Hot Shutdown, Cold Shutdown, and Refueling for BWRs and PWRs as well as no mode for PWRs
- Monitors defense-in-depth for all safety functions
- Identifies high risk activities
- Identifies protected pathways (equipment)
- Requires contingency plans
- Requires authorizations and communications
- Continuously monitored by Outage Control Center

L1R08 Final Shutdown Safety Profile (30 day outage)

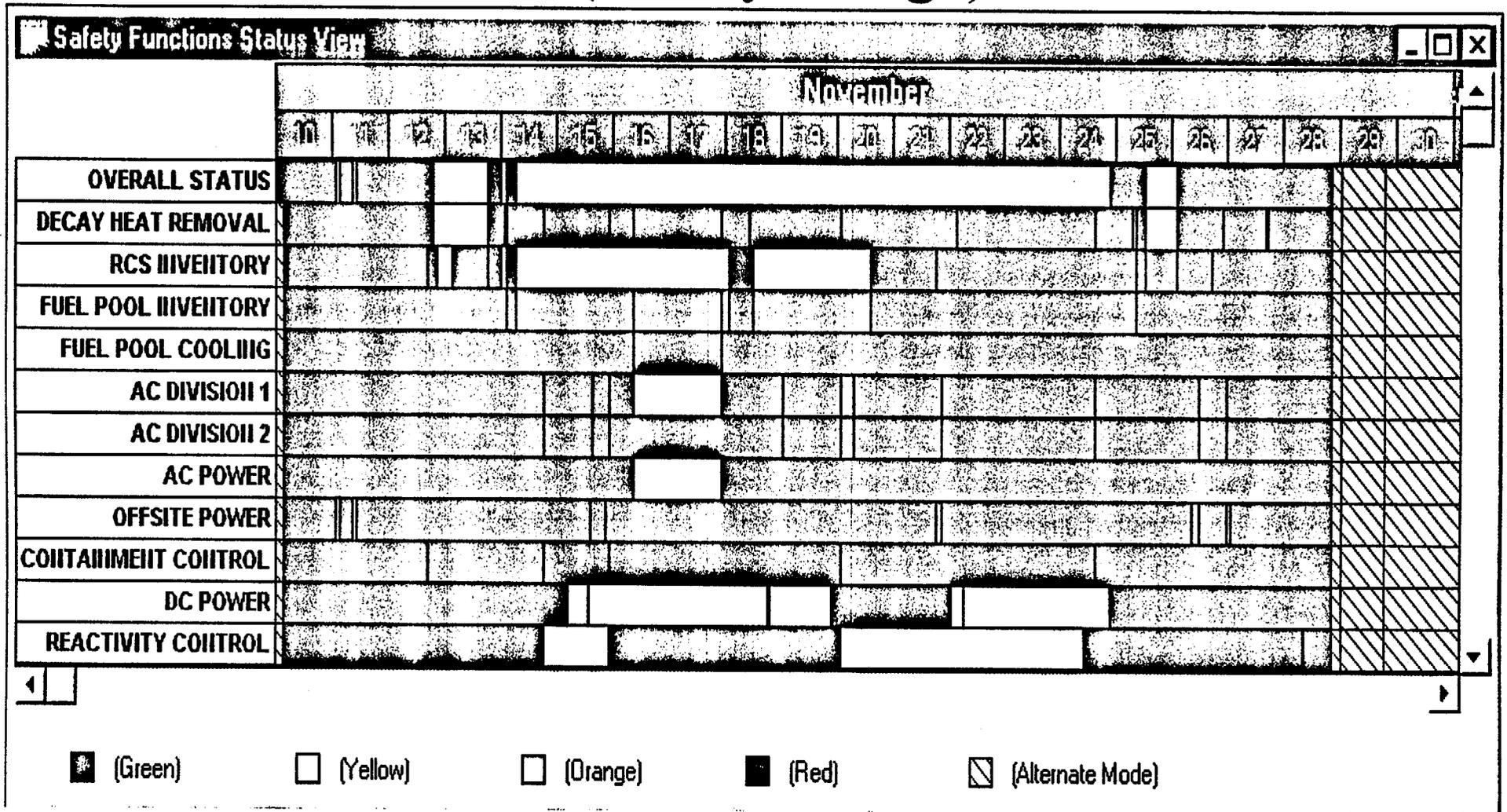
	October										November																			
	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
OVERALL STATUS																														
DECAY HEAT REMOVAL																														
RCS INVENTORY																														
FUEL POOL INVENTORY																														
FUEL POOL COOLING																														
AC DIVISION 1																														
AC DIVISION 2																														
AC POWER																														
OFFSITE POWER																														
CONTAINMENT CONTROL																														
DC POWER																														
REACTIVITY CONTROL																														

(Green)
 (Yellow)
 (Orange)
 (Red)
 (Alternate Mode)

Exelon

Nuclear

L2R08 Final Shutdown Safety Profile (20 day outage)

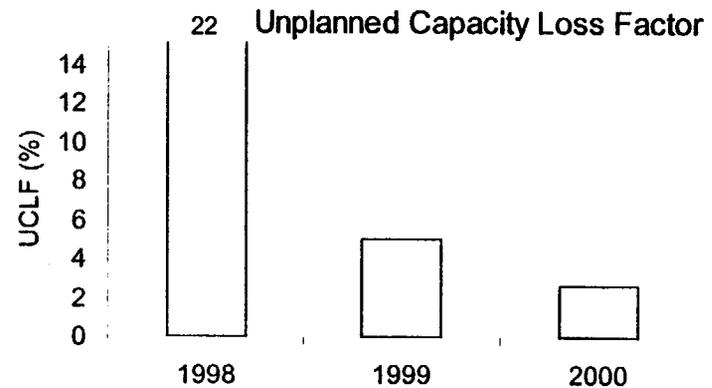
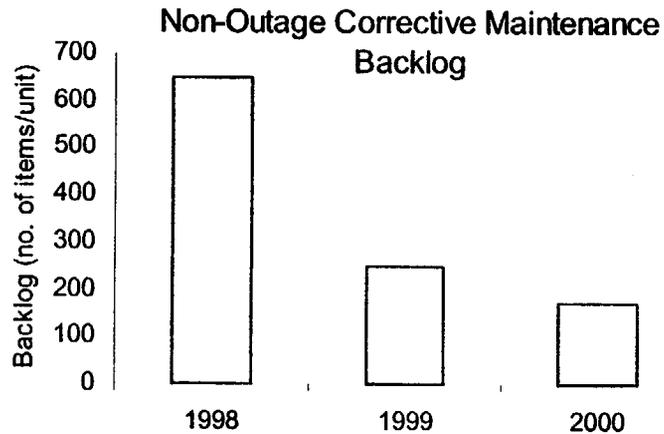
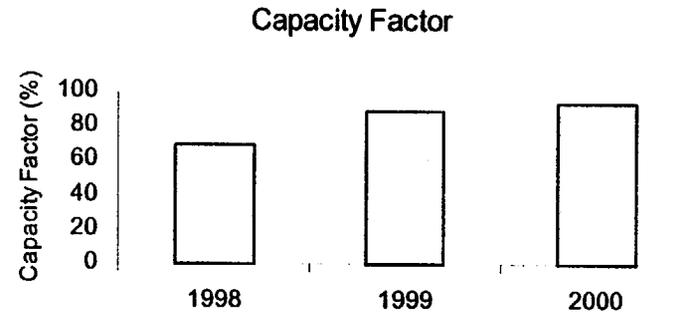
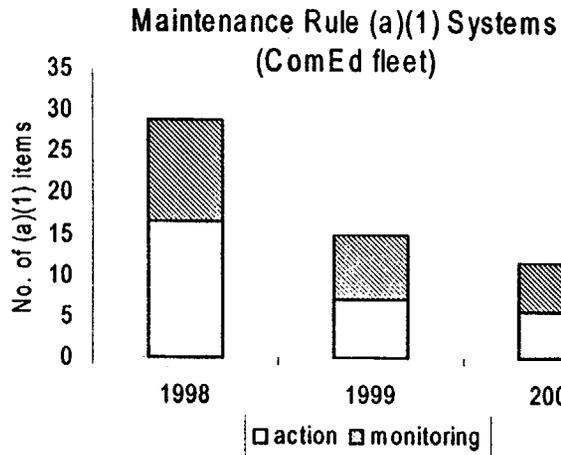


Green - A failure or error can be easily mitigated without significantly challenging the safety function
 Yellow - A failure or error can be mitigated but would challenge the safety function
 Orange - A failure or error would potentially reduce mitigation capability in the safety function
 Red - A failure or error would produce loss of that safety function

Results

C. M. Crane

Plant Material Condition Improvements



Outage Results

- **Material Condition improvements continue to be made**
 - reduced UCLF from 5.0% (1999) to 2.6% (2000), three plants top quartile
 - reduced Maintenance Rule (a)(1) systems from 29/unit (1998) to 12/unit (2000) (ComEd fleet)
 - increased capacity factor from 89.3% (1999) to 93.8% (2000) - eight of ten sites top quartile
- **Required work being completed**
 - greater than 99% of designated outage work completed in 2000
 - majority of work not performed was planned as contingency
- **Post outage operation - 237 days/unit in 1999; 88 days/unit in 2000**
 - 6/11 units refueled in 2000 still running
 - high number of unplanned scrams impacted Year 2000 performance
- **Improvements still needed in managing radiological performance**
 - emphasis on controlling emergent work and changing conditions

Site Specific Results

	Duration (Days)	% Planned Scope Completed	Mods Performed	Work Orders Completed	PMs Completed	Tests Completed
Peach Bottom 2	20	99+	7	4185	3022	661
Dresden 3	17	98.9	47	1860	1200	387
Byron 1	20	99.1	30	2500	800	1100
QC 1	20	98.1	54	1600	660	243
Clinton	29	97.4	74	450	1130	515
Oyster Creek	34	99.9	25	365	257	292
Braidwood 2	15	99.0	30	1780	615	870
LaSalle 2	20	99.0	30	2060	630	770

Note: counting conventions for work orders not yet standard across sites

Exelon

Nuclear

Closing Remarks

J. L. Skolds

Closing Remarks

- Differentiators for Exelon Nuclear
 - Top priority
 - Detailed planning
 - Management involvement
 - Outage performance focus
- Safety is not compromised by short outages - safety is enhanced
- Short outages are the result of excellent planning and execution