Exelon Industrial / Nuclear Safety and Security
Rev. 06

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STC, KENNETT SQUARE AND CANTERA

Important Phone Numbers

All Emergencies at STC, Kennett Square and Cantera    911
At Cantera, follow-up calls should also be made to (630) 393-7301 and (630) 657-2202

COMMON ITEMS FOR ALL EXELON NUCLEAR STATIONS

Applies to Braidwood, Byron, Calvert Cliffs, Clinton, Dresden, R.E. Ginna, J.A. FitzPatrick, LaSalle, Limerick, Nine Mile Point, Peach Bottom, Quad Cities Station and Three Mile Island

FITNESS FOR DUTY

EXELON FATIGUE MANAGEMENT PROGRAM

Exelon Procedure LS-AA-119, Fatigue Management and Work Hour Limits, describes Exelon’s program for preventing and dealing with conditions of worker fatigue. This procedure implements requirements for managing fatigue and controlling work hours (commonly called work hour rules) in accordance with 10CFR26, Subpart I, “Managing Fatigue.”

APPLICABILITY

The work hour limits component of the procedure applies to individuals who operate or work on equipment that is analyzed as risk significant.

The fatigue management component of the procedure applies to ALL individuals with unescorted access to a nuclear Power Reactor site.

A key aspect of the procedure is the ability of an individual to declare fatigue under the requirements of 10CFR26, at which time the individual will be removed from covered duties and be formally assessed for fatigue.

Fatigue Assessments are required per LS-AA-119, Fatigue Management and Work Hour Limits, and are required under the following conditions:

- For Cause: Conducted when an individual is observed to appear fatigued.
- Post-Event: Conducted following any event that requires post-event FFD testing.
- To support a work hour limit waiver.
- In support of a self-declaration of fatigue (if the worker is not allowed a break of at least 10 hours).
- On return to work following a self-declaration if the break given an individual was less than 10 hours.

WORK HOUR RULES (WHR)

The work hour limits portion of the procedure applies to individuals who operate or work on equipment that is analyzed as risk significant.

If you will be performing work on this type of equipment, additional information on the requirements and restrictions on your work hours will be provided to either you and/or your supervisor.
COMMON (CONTINUED)

**FATIGUE ASSESSMENT TRAINING**
Only supervisors and fatigue assessors who are trained under 10 CFR 26.29 and 10 CFR 26.203(c) on Fatigue Assessments may conduct fatigue assessments.

**FATIGUE MANAGEMENT AND WORK HOUR LIMITS**
LS-AA-119, Fatigue Management and Work Hour Limits:
Establishes requirements for managing worker fatigue and controlling work hours in compliance with 10CFR26 Subpart I (The Fatigue Rule).

- All badged workers fall under the requirements of fatigue management.
- Workers, who perform covered work (work on systems, structures, and components considered high safety significance (HSS SSCs) under the Fatigue Rule, must comply with the work hour limits required under the rule.

**Self-Declarations of Fatigue**
All workers under the Fatigue Rule have the right to self-declare fatigue if they feel they are too fatigued to perform their assigned duties effectively or safely.

- Workers should make this declaration to their supervision.
- The individual will be removed from duty as soon as practicable and be required to complete documentation of the self-declaration.
- A fatigue assessment may be performed following the self-declaration at the discretion of the supervisor. The fatigue assessment may determine that:
  - The individual is fatigued and must be sent home for a 10-hour (minimum) break.
  - The individual is NOT fatigued and may perform covered work.
  - The individual is NOT fatigued and may perform non-covered work only.
  - The individual is NOT fatigued but may require additional oversight to perform work.

- If an individual undergoes a fatigue assessment and is found to be fit, but disagrees, the individual may:
  - Request a second fatigue assessment.
  - Pursue other management paths to resolution.
- If an individual refuses a fatigue assessment, the individual:
  - Will be considered fatigued and will be removed from duty.
  - Shall be subject to disciplinary action and possible removal from unescorted access.

**Work Hour Limits**
Individuals who perform covered work must comply with the work hour limits of the Fatigue Rule. Exelon generally applies these limits to the following workers unless specifically exempted:

- Operations (Equipment Operators, Reactor Operators, Control Room Supervisors, and Shift Managers)
- Maintenance (Technicians and FLSs)
- Chemistry and Rad Protection (Technicians)
- Outage support and supplemental workforce members and FLSs (who perform maintenance activities)
- Fire Brigade Leaders and Advisors
- Security
COMMON (CONTINUED)

Limits that always apply to covered workers are as follows:

Maximum Work Hours:
• 16 hours of any 24-hour period
• 26 hours of any 48-hour period
• 72 hours of any 7-day period (168 hours)

Minimum Breaks (time between scheduled work periods):
• 10 hours between work periods (except 8 hours may be used to accommodate scheduled shift rotations)
• 34-hour break at least every 9 days

For on-line conditions:
Maximum Average Work Hours (54-Hour Rule) are followed. Individuals may not work more than a weekly average of 54 hours, calculated using an averaging period of 6 weeks, which advances (rolls) by 7 consecutive calendar days at the finish of every averaging period. The point in time each week the schedule is advanced is Monday 0000 hours (Sunday midnight).

For outage conditions:
Minimum Days-off (MDO) are followed. The requirements are specified based on work group and shift–length. The MDO requirements are as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>Outage Required Minimum Days Off</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The following minimum days off apply to the first 60 days of an outage.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>1 day off in any 7-day period (rolling 7 days)</td>
</tr>
<tr>
<td>Ops, RP, Chem, FBL</td>
<td>3 days off in each successive (non-rolling) 15-day period</td>
</tr>
<tr>
<td>Security</td>
<td>4 days off in each successive (non-rolling) 15-day period</td>
</tr>
</tbody>
</table>

Expectations for Individuals for managing fatigue (from Exelon Fitness for Duty Policy)

Individuals shall be responsible for evaluating and managing their own personal fitness-for-duty based on impairment from fatigue by:
• Managing their work hours consistent with the objective of preventing impairment from fatigue.
• Verifying their work hours are correctly documented regardless of whether they are paid for the hours worked.
• When an individual’s work shift starts at the end of a calendar day and concludes during the next calendar day, the hours worked will be attributed to the calendar days on which the hours were actually worked.
• Self-declaration when fatigued or reduced mental alertness could negatively affect their job performance and discussing these concerns with supervision.
• Monitoring and reporting concerns related to individuals’ Fitness-For-Duty (FFD) based on impairment from fatigue (i.e., Behavior Observation Program).
• Being aware of the total hours worked in the previous 14 days, the weekly average hours worked in the previous 6 weeks and notifying management if work hour limits will be exceeded if asked to work additional hours.
COMMON (CONTINUED)

EXELON SPECIFIC: LEGAL ACTIONS

Individuals are required to report legal actions against them to their immediate supervisor or department head AND Exelon Nuclear Security as soon as possible or on the first day back to work following the action.

Legal Actions do not include minor misdemeanor charges such as parking tickets, non-injury traffic and speeding tickets or minor civil actions such as zoning violations, city ordinances and citations or minor traffic violations such as moving violations when the individual was not physically taken into custody and a court appearance is not required.

Individuals who are completing activities to pursue unescorted access authorization/unescorted access are required to report any legal actions between signing the Personal History Questionnaire and the granting of unescorted access authorization/unescorted access.

Refer to SY-AA-103-500, “Access Authorization Program” for specific information on reporting legal action.

BEHAVIORAL OBSERVATION

Notify your supervisor, department head, and Security immediately when you observe unusual behavior, suspected drug use, odor of alcohol, or threats to station safety.

Failure to involve a supervisor after detecting the odor of alcohol on an individual is a violation of the FFD Program and will result in denial of unescorted access.

Any Exelon, contract or vendor employee upgraded or promoted to any supervisory position is obligated to carry out the supervisory responsibilities as defined in the Exelon Fitness for Duty Program.

For Cause drug and alcohol test is required when the odor of alcohol has been detected on an individual and confirmed by a supervisor or management employee.

Breath alcohol testing is required to begin within one (1) hour.

Security will arrange for the For Cause drug and alcohol test. Unescorted access will be suspended pending test results.

FFD SANCTIONS

A first confirmed positive DRUG test will result in an immediate unfavorable termination of the individual’s authorization and denial of authorization for a minimum of three (3) years for:

- Exelon Management Personnel
- All Exelon Nuclear Security, LLC (Management, bargaining unit and craft personnel)

A first confirmed positive DRUG test will result in an immediate unfavorable termination of the individual’s authorization for a minimum of 14 days for:

- An Exelon bargaining unit or non-union craft employee

A first confirmed positive ALCOHOL test will result in an immediate unfavorable termination of the individual’s authorization for a minimum of 14 days for:

- All Exelon Personnel
- All Exelon Nuclear Security, LLC (Management, bargaining unit and craft personnel)
COMMON (CONTINUED)

A first confirmed positive DRUG or ALCOHOL test will result in immediate unfavorable termination and denial of unescorted access for a minimum of three (3) years for:
- All Contractor Personnel

A second confirmed positive DRUG or ALCOHOL test will result in an immediate unfavorable termination of the individual’s authorization and permanent denial of authorization for a minimum of five (5) years for:
- All Exelon personnel
- All Exelon Nuclear Security, LLC Management, bargaining unit and craft personnel
- All Contractor personnel

Any individual with a positive drug test preceded or followed by a positive alcohol test or another positive drug test will be denied unescorted access and ineligible for further unescorted access to Exelon Nuclear Stations for a minimum of five (5) years. For Exelon employees, please contact your Human Resources department for how this may affect your employment status.

The following acts will result in an immediate unfavorable termination of the individual’s authorization and permanent denial of authorization thereafter:

✓ Any act or attempted act to subvert the testing process, including but not limited to:
  ✓ Refusing to provide a specimen
  ✓ Providing or attempting to provide a substituted or adulterated specimen, for any test
  ✓ If an individual has three (3) Fitness for Duty violations, nuclear, non-nuclear or a combination of the two, then the individual is NOT eligible for Authorization and the individual will be permanently Denied Authorization to Exelon.
  ✓ Any act of an Exelon, Exelon Nuclear Security, LLC employee or contractor involved in the sale, use or possession of narcotics, drugs or controlled substances while within the protected area will result in an immediate unfavorable termination of the individual’s authorization and permanent denial of authorization thereafter.

Resignation after notification to provide a specimen for testing or resignation or withdrawal of authorization of your application prior to removal for a program violation shall be considered a violation of 10CFR Part 26 and result in unfavorable termination of authorization and denial of authorization for a minimum of five (5) years.

CONSEQUENCES OF NON-ADHERENCE TO AA & FFD POLICY

If you violate the FFD policy, you can be suspended, have your unescorted access denied, and company employees will be referred to the Employee Assistance Program (EAP).

All individuals will be assessed and counseled during the termination / denial period. Fitness for duty must be approved by the Medical Review Officer (MRO) and Exelon management following a negative drug and alcohol specimen before reinstatement of unescorted access or allowing the individuals to perform duties that require them to be subject to the FFD program.

Follow-up drug and alcohol testing is required.
COMMON (continued)

Failure to follow Exelon’s fatigue management requirements or failure to complete any recommended treatment and/or follow-up testing as the result of a determination of fitness by a healthcare professional, may result in discipline up to and including termination of employment and denial of unescorted access authorization.

Failure to involve a supervisor after detecting the odor of alcohol on an individual is a violation of the FFD Program and will result in denial of unescorted access.

CONTRACTOR MANAGEMENT IN HANDLING FFD CONCERNS

Due to the transient nature of contracted work, contracting and vendor firms may not always have a full complement of management on site.

In the absence of on-site company management, contractor and vendor supervisors shall notify one of the following:

- Security,
- Exelon cognizant contact, or
- other Exelon management

following the occurrence of any Fitness For Duty issues or events.

LEAVE OF ABSENCE

You shall report a leave of absence or any situation if you are not in a behavior observation program, to your Supervisor, Security, Occupational Health Services, Emergency Preparedness, and Training prior to leaving. Some examples may include:

- Medical/Personal/Military leave of absence (immediate upon discovery)
- Extended vacation (Greater than 30 days)
- Working remotely (Greater than 30 days)
- Training at other work locations, e.g. Supervisory Development Program (Greater than 30 days)

PLANT ACCESS TRAINING

DELIBERATE MISCONDUCT

The Nuclear Industry Assessment Committee (NIAC) identified a number of instances since 2016 of deliberate information falsification at several nuclear power stations. Although Exelon was not on the list, we are dedicated to ensuring our employees understand everyone is responsible and accountable for the health and safety of the public, our personnel, and our plants. Our workers maintain high standards and integrity by following our procedures and processes, use Human and Technical Performance tools and other barriers that help us minimize the impact of a mistake and provide complete and accurate information as part of our daily jobs.

Deliberate misconduct is the intentional violation of rules, regulations, and procedures designed to protect the health and safety of the public. It can also be the result of failing to act when required or action that is known to not meet requirements.

Safety Culture Principle: Nuclear technology is recognized as special and unique.
COMMON (continued)

As a nuclear worker, you must comply with various regulations:

- 10 CFR Chapter 1 is the federal regulation that established the existence, authority and organization of the Nuclear Regulatory Commission (NRC) in 1974 and provides the rules and regulations for Nuclear Energy.
- 10 CFR 50.5, Deliberate Misconduct, states we may not knowingly cause the violation of any rule, regulation, order or license condition, or cause the licensee to be in violation. If we do, the company and the individual are subject to potential fines and/or criminal prosecution.
- 10 CFR 50.9, Completeness and Accuracy of Information, states we must provide complete and accurate information. If we do not, the company and the individual are subject to potential fines and/or criminal prosecution.

A **violation** means any action that resulted in the failure to meet any of the requirements in the federal regulations.

A **willful violation** occurs when a licensee or individual intentionally makes a decision to violate or cause a violation of federal regulations.

**How can deliberate misconduct impact the nuclear industry and the public?**

### 1986: Chernobyl

**What happened:**
Bypassing safety features caused steam explosion and destruction of a reactor, which contaminated the country side and resulted in evacuation and abandonment of the town, Pripyat

**Result:**
- 56 deaths, additional 4,000 cancer deaths
- International trust and confidence in nuclear technology and emergency response shaken
- Individuals sent to prison for negligence
- Accident cost estimates $20 billion

### 1987: Peach Bottom

**What happened:**
Inattentiveness in the control room and operational mismanagement

**Result:**
- NRC ordered plant shutdown for 2 years
- Loss of the NRC’s and public’s trust and confidence to properly operate the station
- The utility was fined
- Individual operators fined
- Some managers prohibited from ever working in the nuclear industry again

### 2002: Davis-Besse

**What happened:**
Inadequate safety conscious work environment led to significant degradation of the RPV head over several years

**Result:**
- Station shutdown for two years
- RPV head was replaced
- Five employees given NRC orders preventing them from engaging in NRC license activities
- Three individuals prosecuted (two convicted) of providing false information

### 2007: Peach Bottom

**What happened:**
Inattentiveness in the security ready room

**Result:**
- NRC’s and public’s confidence and trust in question
- The station's security contractor fired
- Exelon transition to in-house security; some individuals did not retain their jobs in the transition
- National attention on Peach Bottom and the nuclear industry

**Safety Culture Principle:** Everyone is personally responsible for nuclear safety.

**Examples of Willful Misconduct:**

- **Individual Not Promptly Reporting a DUI**
  **Result:** Individual’s employment terminated, and denial of unescorted access entered into Personal Access Database System (PADS)

- **Individual Lying on Employment Application**
  **Result:** Individual’s employment terminated and banned from involvement in NRC-licensed activities for 3 years

- **Fire Watch Round Falsification**
  **Result:** Individual’s employment terminated and local US Attorney criminally prosecuted individual
COMMON (continued)

What does this mean to you? YOU can be fined!
If an individual willfully violates federal regulations, the federal government may fine and/or impose criminal sanctions on the individual involved.

The company and the individuals were fined for the 1987 inattentiveness incident at Peach Bottom. Some individuals were prohibited from ever working again in the nuclear industry.

The NRC can also issue an order that prevents an individual from engaging in “NRC-licensed activities” for periods that typically range from one to five years.

Safety Culture Principle: Trust permeates the organization.

So what happens when I make an honest mistake?
The NRC requires nuclear stations to self-identify mistakes or deficiencies, enter them into the corrective action program, identify the cause(s) and develop and implement corrective actions to fix the problem and prevent recurrence.

If we do this and do it effectively, then the NRC is confident that we can identify and correct issues and we maintain credibility with the public.

In our daily jobs, it is following each procedure step, signing that we appropriately completed a test or action or that we have provided complete and accurate information.

We are accountable by accepting responsibility for our behavior, even when we make mistakes.

Using Human Performance and Technical Human Performance Tools, following procedures, and using the corrective action program are just a few ways to help Exelon maintain the health and safety of the public, our personnel, and plants.

SECURITY ACCESS POINTS

HAND GEOMETRY
Notify Security if your hand geometry has changed such that you are unable to obtain a match on the Hand Geometry Biometrics System.

The Hand Geometry Biometrics System "reads" an individual’s hand geometry to ensure that the security badge keycard is being used by the assigned person.

Examples: new jewelry, broken finger, large bandages, etc.

BADGES
The station uses security badges for access and identification purposes.

A security badge is an electronic key to various areas of the station.

You will be responsible for the control and custody of your security badge at all times.

If you remove your outer garment, ensure that the security badge is transferred to the new outer garment.

If it is necessary for a Security door to remain open for a period longer than the time it takes to pass through the door, contact Security first.
COMMON (CONTINUED)

Any activity that will breach the integrity (boundary) of the protected or a vital area must be approved by Security in advance of performing the work.

If an opening in a security boundary (doors, fences, equipment hatches, penetration of floor, ceiling or wall) is discovered, notify Security immediately.

CARD READER USE

1. Use your security keycard prior to using any door or turnstile equipped with a card reader.
2. Ensure a green light is received on the card reader before proceeding.
3. If a red light is received, contact Security or REMAIN at the door until Security responds if possible, contact Security while you remain at the door.
4. If no light, a flashing red light, or a continuous yellow light, is received then RETRY your card and CONTACT Security if this condition persists.

PHOTOGRAPHS/VIDEOS/2-WAY LIVE COMMUNICATION – REFER to SY-AA-101-130, “Security Responsibilities for Station Personnel,” prior to taking photographs, videotaping or using 2-way live communications

Photographs and Video may assist activities such as maintenance, repair, work processing, trouble-shooting, and Digital CAP, etc. The plan to utilize imaging devices within the Nuclear Power Plant or Owner Controlled Area must be reviewed and approved by Security - PRIOR to imagery capture and usage. Photographing, videotaping, or taking live-feed video of Security sensitive areas, equipment or documentation (e.g., security cameras, fencing, officer posts, defensive positions, security procedures, SGI, etc.) is not permitted without the approval of the Security Department reviewer prior to taking the images. To prevent the uncontrolled release of information (e.g., written text or visual image), that could be beneficial to a group or individual attempting to damage plant equipment or cause radiological sabotage it is important that the release or transmittal of Security sensitive equipment images not occur.

Photographs, videotaping, and/or video streaming of vital/sensitive areas, equipment or documentation (e.g., security cameras, fencing, officer posts, defensive positions, security procedures, SGI, etc.) is not allowed without the approval of the Security Work Control Analyst or designee.

If personnel are observed taking photographs, videos or using other electronic recording mediums of sensitive areas, equipment or documentation on or near company property, then NOTIFY Security of instances that may be suspicious or unauthorized.


STATION PERSONNEL

Station Personnel must comply with all requirements and watch for apparent security violations or deficiencies.

Any observed or known security violation or deficiency must be reported immediately to Security. It is NOT your responsibility to physically restrain security violators.

Security must grant permission to bring any vehicle into the Protected Area.
COMMON (CONTINUED)

If leaving a vehicle unattended in the Protected Area, the authorized operator shall keep the keys in their possession.

Contact Security immediately if it is not possible to remove the ignition key. An unattended vehicle with the ignition key in the vehicle is a serious security violation.

VIOLATIONS

Immediately report any observed or identified security violations (including your own) to the Security Department.

Security violations include:

- Attempts to bypass or defeat the ingress search equipment
- Holding vital door open too long
- Improper closing of doors
- Unauthorized or multiple attempts to enter a security area will cause a Security alarm to sound.
- Photographs and video taping of sensitive areas / equipment / documentation (e.g., security cameras, fencing, officer posts, defensive positions, security procedures, etc.) without the approval of Site Security Manager or designee.
- Keys left in an unattended vehicle.

Failure to comply with Security requirements may result in denial of unescorted access and possible disciplinary action up to, and including, termination of employment.

CLOSING SECURITY DOORS

If it is necessary for a security door to be open for a period longer than the time it takes to pass through the door, then contact security prior to opening the door.

Always ensure the door closes and latches completely after passing through, particularly if there is a pressure difference on the two sides of the door. Challenge the door by gently pushing or pulling on the door. Don't turn the door knob or push the crash bar which is for emergency exit only. If a door will not secure, then contact security and remain at the door until security arrives.

VEHICLES

If leaving a vehicle unattended in the Protected Area, the authorized operator shall keep the keys in their possession.

An unattended vehicle with ignition key in the vehicle is a serious security violation.
EMERGENCY PLANNING

PURPOSE OF THE E-PLAN

The Emergency Plan provides for the protection of the health and safety of the general public in the communities around the nuclear power stations and the personnel who work at the plant. Specifically, the Emergency Plan establishes the protective actions that are necessary in order to limit and mitigate the consequences of radiological emergencies.

The Emergency Plan provides for classification of emergencies into five (5) categories or conditions, covering the postulated spectrum of emergency situations.

- **Unusual Event** - Events occurred which indicate a potential degradation of the plant or indicate a security threat. No releases of radioactive material are expected.
- **Alert** - Events occurred which indicate substantial degradation of the plant or a security event that involves risk to site personnel or damage to site equipment. Any release of radioactivity is expected to be small.
- **Site Area Emergency** - Events occurred which involve major failures of plant functions or a security event that results in intentional damage or malicious acts. Any release of radioactivity is not expected to exceed Federal limits beyond the site boundary.
- **General Emergency** - Event(s) which involve substantial core degradation or melting or a security event that results in loss of physical control of the facility. Releases can be reasonably expected to exceed Federal limits offsite.
- **Recovery**: That period when the emergency phase is over and activities are being taken to return the situation to a normal state (acceptable condition). The plant is under control and no potential for further degradation to the plant or the environment is believed to exist.

STATION EMERGENCY ALARMS AND THEIR MEANING

For all emergency classifications, all personnel within the Protected Area are notified within 15 minutes of an emergency by recognizable alarms and/or verbal announcements over the plant Public Address (PA) System. Announcements include the emergency classification and response actions to be taken by all personnel onsite.

ASSEMBLY AREAS

Site Assembly areas are discussed within the station specific section of this document.

SITE AND EXCLUSION AREA EVACUATION PROCEDURES

If a Site evacuation is necessary, after listening to the PA announcement, personnel shall take the following actions:

- Place any equipment and work in progress in a safe condition.
- Escort all visitors to Security or another location identified by site procedures.
- If you are in a radiologically controlled area, exit normally unless told otherwise.

Nonessential personnel are directed to either assemble within designated Site Assembly Areas or to immediately evacuate the site and either proceed to their homes or to reassemble at designated offsite locations (station dependent) as directed.
COMMON (CONTINUED)

Visitors to the station will assemble with and follow the instructions of their escorts. Nonessential personnel within the Protected Area will normally exit through the security building. Personal transportation (if available) will normally be used. Personnel without transportation will be identified and provided transportation as necessary.

SPECIAL PRECAUTIONS AND LIMITATIONS DURING AN EMERGENCY

Evacuation is the primary protective action anticipated for onsite personnel not having immediate emergency response assignments. Evacuation shall commence in accordance with station procedures as directed by the Station Emergency Director or his/her designee, unless one of the following conditions exist:

- Severe weather conditions threaten safe transport.
- A significant radiological hazard would be encountered.
- There is a security threat occurring, which would have an adverse impact on the personnel while leaving the site.
- A condition similar to the above in magnitude, which in the opinion of the Station Emergency Director would adversely affect the site personnel.

Exelon has established the implementation of alternate onsite protective actions for certain security events that are more appropriate than the actions for radiological emergencies. These alternate protective actions could include taking immediate cover, immediate protected area evacuation, immediate owner-controlled area evacuation, and dispatch of the Emergency Response Organization to their alternate reporting center.

EMPLOYEE CONCERNS PROGRAM (ECP)

HOW TO REPORT A CONCERN

Contact your Site Employee Concerns Representative directly by phone, e-mail or stop by their office, OR

Complete and mail an ECP Brochure, Contact the ECP Hotline at 1-877-724-7783 (1-877-72-ISSUE), or send an e-mail message to employeeconcernsprogram@exeloncorp.com.

EXELON SAFETY CONSCIOUS WORK ENVIRONMENT (SCWE)

A safety conscious work environment is one important element of a strong nuclear safety culture. Exelon’s values and behaviors modeled by its leaders and internalized by its members serve to make nuclear safety the overriding priority. Personnel receive additional training on SCWE through the Generic Awareness certification in NANTeL.
COMMON (CONTINUED)

EMPLOYEE PROTECTION REGULATIONS

In Generic Awareness training, we learn NRC Regulation 10CFR50.7 prohibits discrimination by a licensee or contractor against an individual for engaging in protected activities. Within the Code of Federal Regulations, employees are also protected from retaliation and provides a personal remedy (e.g., restore job, recover lost wages) per the Department of Labor (DOL) Section 211. Both are essentially looking for a preponderance of evidence that there was a cause-and-effect relationship.

Examples of a protected activity:
- Writing an IR for a safety issue.
- Refusing to violate an NRC requirement.
- Testifying in an NRC proceeding.

Refer to EI-AA-101-1001, Employee Concerns Process for specifics.

PROTECTED PATHWAYS

SOER 09-01, Shutdown Safety (Commitment – Do Not Remove Protected Pathway information - See Action Item - 997596-04).

Protected Pathways are established to protect vital equipment when maintenance is performed on other similar equipment. Protected Pathways may also be established for equipment when similar vital equipment is non-functional (e.g., an important pump fails during testing). One example when a Protected Path may be used would be as follows: A plant has two emergency diesels. The diesels are used for emergency power to combat accidents or safely shut the plant down when offsite power is lost. One diesel will be taken out of service for a 5 Year Overhaul. The other diesel would be established as Protected Path to keep it available for safe shutdown or emergencies while the first diesel is out of service. Protected Paths are marked by cones, barriers, signs, tape or other similar devices. Do NOT work on equipment that is posted as a Protected Path. If you must go near protected equipment, contact your supervisor and Operations. Maintain a distance of at least two feet away from protected equipment by adhering to the 2 Foot Zone Human Performance Fundamental.

AIRLOCK DOORS

Across the fleet there have been a number of events associated with Reactor Building/Secondary Containment Airlock doors being opened at the same time. These events are significant in that they represent a potential loss of secondary containment safety function as presented in Technical Specifications. These airlock doors are used to control the release of radioactive material and having them open at the same time requires the station to report the event to the NRC within 8 hours.

It is important to follow all written postings and procedures with respect to the operation of the airlock doors. When entering or exiting the secondary containment, personnel need to ensure that only one door in the set is open. Ensure the airlock doors are closed and latched properly after use. Contact the Control Room if there are any issues with the doors not latching or if the two are inadvertently opened at the same time.
COMMON (CONTINUED)

NERC COMPLIANCE

Exelon Nuclear is registered with North American Electric Reliability Corporation (NERC) as a Generator Owner/Generator Operator (GO/GOP) and as a Transmission Owner (TO) [FitzPatrick only] and therefore must comply with all applicable NERC Standards.

The Electricity Reliability Organization (ERO) (NERC) may impose a penalty on a user, owner or operator of the bulk power system for a violation of a reliability standard of up to $1 million dollars/day/violation.


Exelon Reportability Manual SAF 1.54, “Reporting of NERC Standards Requirements,” provides further guidance on required communications and notifications to meet compliance to the NERC Standards.

It is your responsibility to report potential issues of non-compliance to a NERC Standard to your supervisor. You can also contact BSC Transmission Strategy and Compliance Organization at Outlook mailbox “NERC Compliance Management Team” or the Ethics Help Line at 1-800-23-ETHIC (1-800-233-8442).

SECURITY AWARENESS

SY-AA-101-132, “Security Assessment and Response to Unusual Activities (SUNSI),” implements expected actions contained in the NERC Standards which require that events such as damage or destruction of a facility from actual or suspected intentional human action or physical threats to a facility are recognized and reported to the appropriate governmental agencies and applicable interconnected entities to protect the following:

- Bulk Power System (Bulk Electric System)
- Transmission Substations (including the switchyards)
- Generation Resources (including all nuclear generating stations)

All Exelon employees are expected to be able to recognize unusual or suspicious activity that could impact the safety and security of Exelon Nuclear facilities, including station switchyards. This includes activities that are suspected or could be determined to be caused by intentional human action.

Examples of unusual or suspicious activity in the station, owner-controlled areas (OCAs) or switchyards may include but are not limited to:

- Breach of perimeter security (e.g., fence, vault)
- Surveillance activities
- Unidentified individuals conducting surveillance (camera/video)
- Suspicious packages left around facilities or equipment
- Person(s) tampering with plant equipment or transmission equipment, including cyber related tampering
- Items that are out of place, that may appear to be everyday items (e.g., handbags, briefcases, backpacks)
- System failure with no apparent cause
- Suspicious device or activity
- Suspicious actions that might adversely affect operations
- Evidence of trespassing

It is your responsibility to report any suspicious activity that could impact security of the plant, security of nuclear switchyards or any other owner-controlled area (OCA) immediately to Station Security.
COMMON (CONTINUED)

EXELON CORPORATION INDUSTRIAL SAFETY PROGRAM (IS)

Vision & Value
- Safety – for our employees, our customers and our communities.

Exelon’s Safety Policy (SA-AC-1)
- Exelon will operate in a manner that protects its employees, contractors, customers and the general public.
- We will foster a culture where everyone believes that accidents are preventable.
- Each employee understands their responsibility for maintaining a safe workplace.
- Each employee recognizes and accepts his/her right and obligation to correct unsafe conditions and behaviors.

Each business unit, including Exelon Nuclear, establishes appropriate people, processes, programs, and training to support the program.

EXELON NUCLEAR INDUSTRIAL SAFETY PROGRAM (SA-AA-11)

Designated “Functional Area” with Corporate & Site Governance, Oversight and Support.
- Complete and comprehensive (i.e., people, policies, processes, and training).
- Structured to fit Exelon Nuclear Management Model.
- Outlines the activities needed to provide a safe working environment and improve safety performance while complying with regulatory requirements.
- Assigns individual accountabilities and responsibilities across all functional areas and organizations.
- Focuses on engineering controls, administrative controls, and fundamental behaviors to prevent events and injuries.

Maintaining Commitment
- Strong safety focus established at the highest levels of the Site & Corporate Organization.
- Expectation that safety is everyone’s number one priority is continuously reinforced by all levels of management.
- Injuries, significant “near miss” events, and fundamental behaviors that are essential to event-free operation are reviewed and reinforced by Site and Corporate Senior Management during the daily Plant Status calls.
- Industrial Safety issues and activities are routinely reviewed and discussed during Station “Plan of the Day” meetings.

Engaging the Workforce
- The Site Safety Committee is comprised of management and non-management employees established to solicit employee input.
- All employees are encouraged to raise any and all safety issues or concerns to their Supervisor, and the Corrective Action Program (CAP) is used to ensure thorough resolution.

Vehicle Use around High Voltage Equipment
- OPERATE any vehicle or mechanical equipment capable of having parts of its structure elevated near exposed energized overhead lines so that a clearance of 10 ft. is maintained for 50 kV or less. If the voltage is higher than 50 kV, the clearance shall be increased 4 in. for every 10 kV over that voltage. Refer to SA-AA-129, Electrical Safety procedure, for additional detail.
COMMON (CONTINUED)

Listed below are some every day behaviors that need to be followed to stay SAFE each and every day. Personnel are expected to take action to stop unsafe jobs and unsafe behaviors they observe at the station.

Walk on sidewalks or designated pathways
- Do NOT cross over or under ropes or barriers
- Always choose the safest route even if it is longer
- Keep your eyes on path – Stop to read material or text messages
- Be aware of your surroundings, wet, ice or uneven surfaces
- Walk at a safe pace

Walk down the parking lot aisle in which you parked your vehicle
- Check for vehicle traffic prior to entering designated cross walk areas

Allow ALL doors to self-close and keep your hands out of the Line of Fire
- Do not force doors closed - Always allow them to close on their own
- Keep your hands clear and your eyes focused prior to challenging doors

Gloves
- Wear gloves when engaged in maintenance and operational work activities or other physical work activities (e.g., lifting, pushing, fabricating) in nuclear generation station industrial areas. Climbing scaffold, ladders, and on plant equipment, as permitted by station procedures, is considered a work activity. Refer to SA-AA-116, Personnel Protective Equipment (PPE) for further guidance.

2 MINUTE DRILL (ADHERENCE TO SAFETY INSTRUCTIONS PROCEDURES AND PERMITS)

Perform a 2 Minute Drill @ the Job Site

“2 Minute Drill @ the Job Site” is a human performance tool used to ensure employees focus on the critical aspects of a job and that job site conditions reflect those that are expected or were discussed during the pre-job brief and that the workers are re-focused on the critical aspects of the job immediately prior to beginning the task or re-commencing a task after a break.

The 2 Minute Drill @ the Job Site supplements, but does not supersede, pre-job briefs or other human performance tools applicable to the task.

2 Minute Drill Steps
- Are we on the right Unit / Train / component?
- What hazards are in the area/how could I get hurt?
- Do we have the proper PPE and safety barriers?
- Are the risks to the plant and actions to eliminate / mitigate understood?
- Do we understand our zone of protection and are we signed on to the tagout?
- Have all positionable components been identified within the 2 Foot Zone of work?
- Do we have the necessary permits (i.e. Fire Protection, Environmental, etc.)?
- Are the appropriate operational barriers / flagging in place / available?
- Are our planned dose reduction techniques appropriate? (Every Millirem Counts)
- What else could go wrong?
- Do we need to or have we changed our plan? (If so, then stop and contact Supervision)

If the review determines that conditions are not what you expected and/or a plan change is needed, then contact your Supervisor and resolve the situation prior to proceeding with the task.
COMMON (CONTINUED)

2 Minute Drill Review

While in the plant if you suspect that any component was bumped, repositioned, or damaged in any way, immediately contact the Operations Department so they can take appropriate action to assure the integrity of the plant and the safety of the public.

Apply 2 Foot Zone Rule:

Maintain a distance of 2 feet from positionable components in the plant to prevent inadvertent bumping and mispositioning of components. Entry within this zone is permissible following an appropriate pre-job brief or completed 2-minute drill at the job site. Exceptions are noted in the governing document.

Any violation of Exelon’s safety instructions is considered a major violation of company policy and is subject to disciplinary action up to and including termination.

The individual’s supervisor may also be subject to disciplinary action.

ELECTROMAGNETIC INTERFERENCE (EMI) / RADIO FREQUENCY INTERFERENCE (RFI)

EMI/RFI is caused by the signals transmitted from electronic devices such as two-way radios, two-way pagers, digital cameras, laptops, cell or cordless telephones. The signals can be transmitted by these devices anytime it is turned on. EMI/RFI signals can affect sensitive plant equipment and cause it to respond in a way that is undesirable. All two-way pagers are restricted from being used and/or powered on in all power block areas, including the Circ. Water Pump House, River Screen House and other areas where sensitive equipment may be present.

Approved wireless devices such as mobile phones, tablets, & fit bits are permitted for use in the Main Control Room and within the protected area of the plant.

- Use of portable wireless devices with cellular enabled is explicitly prohibited inside the power block.
- The use of portable wireless devices in Exelon Nuclear Plants inside radio exclusion zones is permissible provided the device is placed into the “airplane mode” with all transmitters disabled (i.e., cellular, Wi-Fi, NFC, and Bluetooth) PRIOR to entering the radio exclusion zone.
- The use of portable wireless devices operating in IEEE 802.11 (WIFI) modes of operation is permissible inside Exelon Nuclear Plants provided these devices are used within the evaluation restrictions (i.e., minimum stand-off distances must be maintained.)

Each Station has radio free zones that are identified with unique markings on plant floors and posted signs. See procedure CC-AA-309-1003, Table 1 for the list of approved devices that are allowed in the plant.

Any electronic devices requiring use for work activities (i.e. new WI-FI based devices) in these areas must have an Engineering Evaluation completed before use. Contact your site specific EMI/RFI subject matter expert (SME) for questions. See procedure CC-AA-309-1003, Electromagnetic Compatibility (EMC) Proximity for Various Portable Wireless Devices.
COMMON (CONTINUED)

OBEY THE POSTINGS

(This section addresses CENG Fleet Bases 0627)

Only qualified personnel may remove tags and operate components or systems.

Never hang, remove, or clear a safety tag unless it is done with the permission of the Control Room.

If a safety tag is found that is not attached to a component, or is attached to the wrong component, notify the Control Room immediately. This could be a life-threatening situation.

Authorization must always be obtained from the Control Room before starting work on equipment or components having a safety tag attached to them.

EQUIPMENT TAGS

Equipment Status Tags (ESTs)

ESTs are used to identify temporary, abnormal equipment status not governed by another approved status control mechanism to ensure restoration to normal configuration. When working in the Station, take care to read and obey any “Equipment Status” tags you may find in an area before starting work.

Equipment Status Tags shall NOT be used for:

- Personnel protection in lieu of a Clearance Order;
- Documenting equipment deficiencies in lieu of an Issue Request or Work Request;
- To provide operational instruction in lieu of an approved procedure.

Do not confuse Equipment Status Tags as Do Not Operate or Danger tags. The Equipment Status tags are used by the Operations Department for configuration control.

They do NOT provide for personal safety.

CLEARANCE PROCESS TAGS

Clearance Process Tags (Danger, Special Condition, Information/Caution)


Worker personal protection and control are provided by requiring personnel to do the following as a minimum:

- Attend the pre-job brief,
- Sign onto a Clearance (either electronically or a Worker Tracking List) before beginning work, and
- Sign off the Clearance (either electronically or a Worker Tracking List) when completing work. Workers are expected to sign off the Clearance each day prior to leaving the facility.
COMMON (CONTINUED)

WORKER TRACKING LISTS (WTL):

All personnel performing work under the protection of a Clearance are required to personally sign on and off of the Clearance. This ensures that the Clearance is not cleared (removed) while personnel are still working in the zone of protection of the Clearance. Workers perform this sign on and off in conjunction with their supervisor or designated Holder also signing onto the Clearance electronically.

NOTE: You may receive additional training to use electronic signing; if you do not, your protection is assured by your supervisor or designated Holder signing on electronically, and you signing on and off the hardcopy WTL. Electronic tracking is the preferred method, using WTL is on a case by case basis.

The tagout process tags do NOT physically restrain isolation points like locks. Tagout process tags are essentially warning devices. Exelon uses three (3) types of tags.

INFORMATION TAGS

“Information/Caution Tags” are typically used for equipment protection to identify specific restraints, limitations, or operational restrictions regarding the component to which it is attached (Caution) OR to provide indication that the associated equipment is tagged out / other pertinent information (Information). Information/Caution tags are NOT used to establish personnel protection. (Exelon uses a single combination Information/Caution Tag). These component tags may be removed by authorized station personnel only or have maintenance performed on the component.

![Image of Information Tags]

DANGER TAGS

“Danger Tags” clearly state “DANGER - Do Not Operate” and are used to ensure personnel safety or to prevent equipment damage by establishing the position of barrier valves, breakers or switches.

Operating components with “Danger Tags” attached can cause injury, death, or equipment damage and, therefore, is grounds for disciplinary action up to and including dismissal.

![Image of Danger Tag]
COMMON (CONTINUED)

SPECIAL CONDITION TAGS

“Special Condition Tags” (SCTs) are similar to “Danger Tags” in that they prevent manipulation of equipment while work is being performed. They are tags identifying specific components that may be operated during the conduct of work when directed by a specific individual. A SCT is often used when the introduction of energy is necessary to perform work such as breaker testing and pump rotation checks. A SCT cannot be used by itself to establish personnel protection.

PICTURES OF TAGS

REPORTING PROBLEMS

Reporting problems also includes temporary changes to physical plant conditions to structures, systems, or components (SSCs) such as use of bailing wire, rope, or duct tape to temporarily fix a leak or to keep items from being dangerous to personnel or damaging other plant equipment. When a worker makes a change such as these, the Supervisor must be notified to evaluate the item for the Corrective Action Program (CAP) and ensuring work orders are created to permanently fix the issue. Engineering may step in to conduct an evaluation for a Temporary Configuration Change Package (TCCP).

If you have any questions or concerns regarding the changes you are making, contact your Supervisor. Maintain a questioning attitude.
COMMON (CONTINUED)

ENVIRONMENTAL GOALS

All employees and badged personnel at Exelon Nuclear Facilities will be able to:
- Explain the importance of conformity with the environmental policy, procedures and the Environmental Management System (EMS).
- Explain the actual or potential environmental impacts associated with their job and the environmental benefits of improved personal performance.
- Explain the potential consequences of departure from specified procedures.
- Understand that they are responsible to ensure visitors under their escort conduct their activities in a manner that is consistent with the environmental policy, procedures and the Environmental Management System.

EXELON’S COMMITMENT TO THE ENVIRONMENT

To support our commitment, Exelon has:
- Established a comprehensive Environmental Policy.
- Institutionalized an Environmental Management System.
- Established environmental performance improvement goals and objectives.
- Adopted a sustainable resource management program of reduce, reuse, recycle and recover where practical.

EXELON’S ENVIRONMENTAL POLICY (EN-AC-1) AND IMPLEMENTATION

- Reinforces Exelon’s commitment to constantly improve its environmental performance.
- Establishes full compliance with all applicable laws, regulations, and other commitments is the minimum performance expectation.
- Strives for leadership in environmental management and partners with the communities we serve, to preserve, restore and enhance the environment.
- Requires that we utilize natural resources more efficiently.

This policy shall be implemented by establishing and maintaining:
- Annual objectives and expected outcomes for measuring and improving environmental performance.
- An independent Compliance Audit Program and an independent EMS Conformance Audit Program.
- Support for the development of low impact energy resources and energy efficiency.
- Training programs for employees and contractors to educate them about their environmental responsibilities.
- Support for environmental public policy based on sound science and economic analysis.
COMMON (CONTINUED)

POTENTIAL REGULATORY IMPACTS

Ensure Regulatory Compliance

- Environmental regulations govern many business activities and are becoming increasingly more challenging.
- Environmental Regulators have significant influence over our ability to operate.
- Complying with regulatory requirements can help limit potential impacts to the environment.
- Failure to operate in full compliance with regulations can result in civil and criminal action with fines exceeding $1,000,000 per incident.
- Maintaining a positive working relationship with regulators, such as the Illinois EPA can be a valuable asset when their support is needed for making permit changes.

BENEFITS OF ENVIRONMENTAL PROGRAMS

Reduce Environmental Risk through:

- Developing and maintaining Spill Response Plans.
- Training personnel who handle or use chemicals and petroleum products in the requirements of the Oil Pollution Prevention Regulations (40 CFR 112).
- Maintaining spill response equipment and supplies.
- Reporting all observed chemical or petroleum spills to the Control Room.

Minimize potential stormwater impacts, as required by the stations surface water permits National Pollutant Discharge Elimination System (NPDES).

ENVIRONMENTAL PERFORMANCE AND YOU

All employees and badged personnel environmental responsibilities include:

- Ensuring compliance with applicable environmental laws and regulations.
- Awareness of the environmental impacts of your work and how to minimize them.
- Understanding the Significant Environmental Risks associated with your work.
- Mitigating environmental risks associated with your work.
- Understanding and following the applicable procedures.
- Maintaining your own training and qualifications.
- Identifying and managing environmental risks.
- Building positive relationships with the community.
- Reporting potential and active environmental risks, including spills and other damage.
- Practicing proper housekeeping.
- Minimizing waste.
- Conserving energy.
- Ensuring any visitors, you are escorting conduct their activities in accordance with the environmental policy, procedures, and the requirements of the Environmental Management System.
COMMON (CONTINUED)

KEY POINTS

- Exelon’s vision for the future depends on improving environmental performance.
- Compliance with all applicable laws, regulations, and other commitments is the minimum performance expectation.
- Each employee and badged contractor shares responsibility for the environment and can make a difference.
- Each employee and badged contractor reports environmental risks and shares ideas for improving environmental performance.

TRITIUM AWARENESS (AR01402338)

We are committed to containing our radioactive material and preventing pollution of groundwater. Sites may have active groundwater monitoring wells installed as an early tritium detection device. Tritium is a naturally occurring radioactive form of hydrogen. It is found in very small or trace amounts in groundwater throughout the world. It is also a byproduct of the production of electricity by nuclear power plants. Tritium emits a weak form of radiation, a low-energy beta particle similar to an electron.

The tritium atom is very small and it migrates through the metal tubes of the steam generators from the primary side to the secondary side water in a PWR, or is carried in the steam in a BWR.

What is it?

- A radioactive isotope of Hydrogen (H3)
- It doesn’t behave like water; it behaves like hydrogen and may be part of a water molecule
- It has a half-life of 12.3 years
- It undergoes Beta decay
- It can be inhaled, ingested and/or absorbed through the skin
- The US EPA drinking water limit is 20,000 pCi/L
  - pCi/L=picoCuries per Liter
  - A picoCurie is $10^{-12}$ Curies (0.000000000001 Curie)

Where does it come from?

- Neutron activation of Boron
- Neutron activation of Lithium
- Reactor Coolant contains Boron and Lithium

How does it get to secondary side water or Circulating Water (CW) Blowdown?

The Tritium atom is very small and it migrates through the metal tubes of the steam generators from the primary side water to the secondary side water. Additionally, Radwaste discharges are directed to the CW Blowdown line.

What systems contain tritiated water?

- Steam Generator blowdown water (SD)
- Feedwater (FW)
- Condensate (CD)
- Reactor Coolant (RCS)
- Water processed through Treated Wastewater (TR)
- Condensate Polisher (CP) sump
- CW Blowdown (CW)
- Radwaste (WX)
COMMON (CONTINUED)

What systems do NOT contain tritiated water?
- Circulating Water (CW) except blowdown
- Essential Service (SX) Water
- Non-Essential Service (WS) Water
- Potable Water (WW)
- Demineralized Water (DM)

What should I do when I work on systems that contain tritiated water?
- Take extra precautions to ensure tritiated water does not enter the environment.
- Review work packages for additional guidance
- Contact your supervisor with questions
- Engage Radiation Protection and Environmental if needed
- Review station specific procedures related to tritium management

What are the consequences if tritiated water enters the environment?
- Spills of tritiated water to the environment can be reportable to several different groups/agencies:
  - Environmental Protection Agencies (EPA)
  - NRC
  - Emergency Management Agency (EMA)
- Unmonitored release of tritium is a violation of our operating license.

What should I do if I spill tritiated water to the environment?
- Immediately contact the Shift Manager or WEC and Environmental
- If possible, stop the source of the spill
- If possible, try to contain the spill
- Refer to EN-AA-407, Response to Inadvertent Releases of Licensed Materials to Groundwater, Surface Water, Soil or Engineered Structures, for proper response actions

Licensed material source material, byproduct material, or special nuclear material that is received, possessed, used, transferred, or disposed of under a general license or a specific license issued by the NRC or Agreement States.

Braidwood Tritium OPEX 6/12/2017:
IR 4020644

Water containing tritium from leaking CW Blowdown valves in the CW Blowdown house pit was pumped to the ground outside the CWBD house rather than an approved discharge point. This was a violation of the plant discharge permit. Lesson learned: Any fluid that is going to be pumped, drained, vented, etc. to a different point than its design at any facility on or off site, must have the appropriate approvals before commencing the activity. Contact your supervisor to ensure you are in compliance.
COMMON (CONTINUED)

BORIC ACID CORROSION CONTROL PROGRAM AT PRESSURIZED WATER REACTOR (PWR) SITES (BRAIDWOOD, BYRON, CALVERT CLIFFS, GINNA)

Why do we have a Boric Acid Corrosion Control Program?

- Industry events have revealed instances of corrosion of plant components, valves, vessels, manways, etc. due to exposure to borated water. The most notable event was the Davis Besse Reactor Head Degradation Event.
- The main purpose of a BACC Program is to identify, evaluate, and correct small borated water leaks in power plant systems BEFORE they can cause significant corrosion damage to Reactor Coolant Pressure Boundary (RCPB) components, systems, structures and components (SSCs), or other auxiliary system components, and associated leakage targets, in PWRs. The key to a BACCP is detection and proactive management (tracking, trending & cleaning) of ALL borated water leaks regardless of size. The program also ensures that all personnel involved with boric acid activities are adequately trained and knowledgeable.

A small borated water leak in the primary system is defined as a leak that is smaller than the plant technical specification limit sensitivities.

Note: Leakage greater than technical specification limits is addressed by Operations under OPS Procedures reflecting Technical Specification Requirements. These procedures are referenced under the BACCP RCS Leakage Monitoring & Action Plan (ER-AP-331-1003).

- The BACC Program is defined and controlled by 5 separate documents.
  - ER-AP-331- BACC Program Procedure
  - ER-AP-331-1001 - BACC Inspection Locations, Implementation and Inspection Guidelines
  - ER-AP-331-1002 - BACC Identification, Screening and Evaluation
  - ER-AP-331-1003 - RCS Leakage Monitoring and Action Plan
  - ER-AP-331-1004 - BACC Training and Qualification
  - ER-AP-331-1005 - BACC Program Performance Indicators

What is boric acid and what does it do?

- Boric acid is a chemical that is used to control reactivity in Pressurized Water Reactors. It is present in Reactor Coolant Systems (RCS). Boric acid is added to the water contained in the RCS and other supporting systems.
- When external leakage of boric acid exists, there is the potential that the boric acid deposits and borated water can cause corrosion of plant equipment when exposed to borated water and boric acid deposits.
- Boric acid is mildly corrosive and is generally not a personnel safety issue. However, when leakage onto plant equipment occurs over an extended period of time, degradation can occur. Components fabricated from carbon and low alloy steels are much more susceptible to corrosion than stainless steel materials.
COMMON (continued)

What does boric acid leakage look like?
- Boric acid leakage can be in the form of wet or dry deposits. Although drips, and/or streams may be present, in most cases the boric acid deposits may be wet (no drips) or dry (no moisture).
- Boric acid deposits are usually white in color and may look like snow or popcorn. However, in some cases the deposits may be discolored (brown, tan, or pink). This is an indication of the potential for corrosion of plant equipment.

Where are the typical locations boric acid leakage can be found?
- The typical locations for borated water and boric acid leakage are valve packing, instrumentation fittings, valve body to bonnet connections, and pump seals.
- It is also important that components and surfaces that are affected by the leakage (target components such as piping, floors, walls, supports, etc. that are below the leaking component) are identified if possible.

What actions do you take if you observe boric acid leakage?
- Notify your Supervisor.
- Do not touch the boric acid or leaking water. The boric acid is likely to be radioactively contaminated.
- If leakage is active and is dripping on other components or surfaces, notify the Shift Manager and request that catch containment be installed until corrective actions can be implemented. Notify Radiation Protection so the spread of contamination can be minimized.
- Generate an Issue Report using BACC IR Template number 1234543 if possible. If not, contact the Site Boric Acid Corrosion Control Program Owner so the issue can be investigated.

CONTROLLED MATERIALS PROGRAM (CHEMICAL CONTROL)

Every controlled material (chemical) needs approval prior to bringing it on site and Class 1, 2, and 3 controlled materials shall have an Exelon Controlled Materials Program label on it, in addition to the original manufacturer’s labels described in the Hazardous Chemicals section.

Never pour anything down a drain or into a trash receptor without proper authorization. Every drain at the station has a specific purpose.

If you believe a hazardous substance has been spilled or released to the environment, clean it up if you are knowledgeable enough to consider it safe to do so by following EN-AA-701, Incidental Chemical Spill Response. If the spill is beyond your capability to promptly and safely clean up, evacuate the area, notify the Main Control Room, and control access to the area until help arrives. Only specially trained personnel should attempt any rescues.

Guidance on the purchase, use and storage of chemicals and controlled materials is contained in Exelon procedure, EN-AA-501, “Controlled Materials and Hazard Communication Program”.

Requirements of this procedure include:
- Only approved chemicals and controlled materials with an approved Safety Data Sheet (SDS) or Material Safety Data Sheet (MSDS) shall be used.
- All users must know the hazards of the products they are using or to which they may be exposed. REVIEW the SDS or MSDS as it contains information such as hazards, permissible exposure levels, protective equipment requirements, handling, storage, and disposal requirements.
- Guidance on how to access the Exelon approved product SDS or MSDS.
• Failure to properly handle chemicals/controlled materials can result in harm to both workers AND plant systems and components.

• Chemicals/controlled materials must be properly labeled in accordance with site requirements. Labels identify where the chemical/controlled material may be used. Exelon Controlled Materials Program labels are not required for Class 4 products.

• Distinguish hazardous waste from radioactively contaminated hazardous waste (mixed waste) to ensure proper handling. Identify mixed hazardous/radioactive waste as such.

• Understand what disposal restrictions apply to chemical/controlled material.

• Do NOT throw anything into general trash unless you are certain it is permissible to do so.

• Do NOT put chemicals/controlled materials into any drains. Plant drains are recycled; any chemical contamination of drain system can damage plant systems.

• Examples of color-coded labels used to identify where chemicals can be used are in EN-AA-501 such as:

![Example Industry Global Harmonization Standard (GHS) Hazard Communication Label](image)

![Example Exelon Nuclear Standard CMP Label](image)

During the Industry as well as the Exelon Nuclear Transition any questions associated with a legacy or differing label on a product should be directed to your Supervisor, Safety or the Station Chemical Control Coordinator. It is essential that you know the hazards associated with the product, consult the MSDS or SDS as necessary.

Caution: Although the OSHA Hazard Communication Program requires the GHS label be placed on containers, organizations who use differing communication methods have not switched over to the Globally Harmonized System. Therefore, you may still see MSDS, SDSs, Containers or Tanks with a manufacturer's label, Hazardous Materials Identification System (HMIS) label or a National Fire Protection Association Diamond label on them.

Noteworthy is the fact that the NFPA and the HMIS severity rating system are opposite of the GHS numbering rating system. In the NFPA and the HMIS systems, the lower the number the less severe the hazard. In the GHS labeling and SDS system, the lower the number the more severe the hazard.
Examples of labels you may continue to see on containers or tanks in addition to the GHS label can be found in EN-AA-501, Attachment 5.

TRANSPORTATION/HANDLING OF HAZARDOUS MATERIALS

All Hazardous Material must be offered for transportation by a trained shipper in accordance with EN-AA-601, Non-Radioactive Hazardous Material Shipping Program.

A Hazardous Material is a substance or material that meets two criteria:

- Poses an unreasonable risk when transported in commerce.
- The Department of Transportation (DOT) designated it as a hazardous material in 49 CFR 172.

Prior to transporting, handling, packaging, storing, loading or off-loading, or driving any hazardous material (e.g., compressed gas cylinders, radioactive material, asbestos, lead, etc.) over a public road on behalf of the company, contact your supervisor, as additional training is required.

WASTE MANAGEMENT ACTIVITIES

This section’s purpose is to familiarize employees with the Resource Conservation and Recovery Act, (RCRA) regulations to ensure proper handling of waste. Reference the MSDS/SDS, work package, manufacturer recommendations, and use the pre-job brief to understand the hazards of the products you are handling.

As with the Chemical Control Programs, you should know the hazards of the products you are handling. The general employee must be aware of the site-specific processes for handling wastes.

At no time should waste products be placed in drains or thrown into the trash without proper approval through the Site’s RCRA Coordinator, usually the Site’s Environmental Group.

This general training does not qualify you to ship hazardous material, hazardous waste or be the RCRA Coordinator at your site.

Hazardous Wastes are certain wastes listed by the EPA as hazardous based on the toxicity, corrosively, ignitability, or reactivity of the product. Examples include, but are not limited to spent chlorinated solvents, unused laboratory reagents, such as cyanide compounds or hydrazine. When in doubt contact the Site’s RCRA Coordinator, usually the Environmental Group.

Universal Waste includes products such as batteries, fluorescent light bulbs and mercury switches. All handlers of universal waste must understand the hazards of the products they are transporting and know the proper storage locations on site.
COMMON (continued)

Residual Waste, Special Waste, and Medical Waste all require special handling. Careful consideration during handling and storage should be practiced just as with hazardous waste. Common examples are asbestos, PCB wastes, waste oil and oily rags, non-hazardous solvents and latex paint.

Mixed waste is waste that is both hazardous and radiologically contaminated. Only qualified RCRA and Radiation Protection personnel should handle mixed waste.

The use of products often involves the creation of waste materials such as left-over products or cleanup material. For this reason, the use of non-hazardous products is strongly encouraged at all sites. Using as few hazardous chemicals and absorbent materials as necessary to complete the job is an important factor in minimizing waste generated.

Other factors in waste minimization include proper waste segregation, capture and reuse of materials, fixing oil leaks, and using collection pans instead of pads or rags. Use material stored in the site tool rooms prior to ordering new material.

EXELON CYBER SECURITY AWARENESS UTILITY-SPECIFIC INFORMATION

This information briefing provides required information to supplement NANTeL Generic Cyber Security Awareness, specific to work at Exelon locations. The information to be covered includes:

- Who to contact if there are issues
- Exelon cyber security policies and procedures
- Exelon Critical Digital Asset (CDA) media tagging and labeling
- CDA Work Control Process
- CDA media kiosks
- Critical Group requirements

You should have already completed NANTeL Generic Cyber Security Awareness.

HOW TO REPORT SUSPICIOUS CYBER-RELATED CONDITIONS

Ensure your work is in a safe condition, and immediately report unusual or suspicious conditions related to cyber security using the following available resources depending on your location and role:

- Your Supervisor
- Security
- Station Operations Management
- Exelon Security Operations Center (ESOC) at 1-800-550-6154 (24/7)
- Exelon Help Desk at 1-877-9EXELON (1-877-939-3566)
COMMON (continued)

Procedure SY-AA-101-130, Security Responsibilities for Station Personnel, requires all individuals to promptly report any signs of cyber-related tampering. Some conditions could potentially be NRC reportable with required time limits.

System Use Signage
Certain locations may be posted with the notification below. Ensure that you perform only authorized work at all times.

MA-AA-716-235, CONTROL OF CRITICAL DIGITAL ASSET (CDA) PORTABLE MEDIA AND PORTABLE DEVICES

Only Authorized Portable Media and Digital Test Equipment may be used with Critical Digital Asset (CDA) work, and only by individuals who have completed additional Cyber Security Technical Training and are members of the Critical Group.

Authorized CDA Media has a colored tag and unique ID depending on the site.

Northeast Sites
(Calvert Cliffs, Nine-Mile Point, Ginna)
White with Green Text or Green with Black Text.

Midwest and Mid-Atlantic
(All Sites Except the Above Northeast)
Orange Tag with Black Text.
COMMON (continued)

PERMITTED MEDIA

Exelon CDA media must be resistant to malware that can be embedded in the firmware of the device and can bypass virus detection. Specially configured flash drives (Secure Media) with encrypted control software are used, along with media that has no firmware, like CDROMs and DVDs (Passive Media).

General purpose flash drives are not firmware protected and are not secure.

DO NOT USE PERSONAL MEDIA FOR CDA WORK.

In some instances, the CDA may not accept any other media except unsecure media due to design. Under strict procedural controls, the technician may use an authorized transfer kiosk to transfer data needed by the CDA to a non-secure device after scanning both for malware, and following all applicable steps in MA-AA-716-235.

Ensure that you thoroughly brief your work with specific emphasis on proper portable media controls. Always strictly follow the requirements of MA-AA-716-235 for portable media, and obtain and use only AUTHORIZED PORTABLE MEDIA obtained from Exelon that is designated for this use.

CDA MEDIA may NOT be removed from the Exelon Owner Controlled Area without System Administrator approval and then only under the controls specified in MA-AA-716-235 for an offsite transfer.

EXELON CDA WORK ACTIVITY PROCESS

In Exelon, all work on CDAs is strictly controlled to ensure that all phases incorporate all required controls. MA-AA-716-237, CDA WORK ACTIVITY PROCESS is the tool that covers CDA work from planning, through preparation, execution, and closeout. ONLY PROPERLY QUALIFIED EXELON EMPLOYEES OR SUPPLEMENTAL WORKERS UNDER DIRECT SUPERVISION MAY PERFORM CDA WORK.

This procedure contains the CDA Work Activity Checklist (MA-AA-716-237-F-01). It must be followed throughout the work process, and will be attached to the work order instructions.

If at any time prior to or during CDA work, there are signs of tampering or cyber abnormalities, THEN IMMEDIATELY stop work, contact your supervisor, and follow MA-AA-716-237.
CDA MEDIA SCANNING KIOSKS
Exelon has installed dedicated kiosks for ensuring CDA media is free of malware and to allow for secure transfer of data between portable media devices in support of CDA work. **The Kiosks are Restricted to Exelon Owned CDA Media Only.** Usage is per MA-AA-716-235 and IT-AA-235-1003, Kiosk Configuration Control and Hardening. A scan result indicating potential threats such as blocked media files must be immediately reported and the media quarantined for IT inspection. **An issue report must be written within 24 hours.**

**Blocked CDA Media Files**

**STOP!**
**NOTIFY** your Supervisor
**QUARANTINE** the media
**NOTIFY** site IT
Generate an **Issue Report within 24 hours**
Follow MA-AA-716-235

**Normal Results**
Exelon Industrial / Nuclear Safety and Security Rev. 06
COMMON (CONTINUED)

CRITICAL GROUP

Individuals who Access CDA Media and Perform Tasks Related to CDAs Must Be Qualified in the Security Critical Group.


Do NOT Handle CDAs, CDA Media, or Perform Related Tasks if your Critical Group Qualification is Missing or Red. Refer to MA-AA-716-235 and MA-AA-716-237.

A partial list of individuals required to be Critical Group Qualified is below. See SY-AA-103-500 for a full list.

- Site and Corporate Cyber Security Managers, Engineers, and Administrators
- IT staff who authorize access to CDAs
- Members of the Cyber Security Assessment Team (CSAT) and Cyber Security Incident Response Team (CSIRT)
- Systems Administrators for CDAs
- Security supervisors, managers, and instructors
- Plant network administrators and those IT personnel responsible for securing networks
- Individuals who can independently change CDA configuration or security controls
- Individuals qualified and assigned certain duties in Security and Operations departments

CDA KEY CONTROLS

Keys for non-Security CDAs are tagged, secured, and managed under OP-AA-108-103-1000, CDA Key Control Program

- Operations Shift Management controls access to keys that unlock CDAs.
- Access and usage is restricted to authorized individuals in the Critical Group where required for their work.
- All usage is logged and tracked by Operations in a key log and by individual users in Power TrakR.
- Notify Supervision and Operations if a CDA key or tag is found uncontrolled.
COMMON (continued)

FIRE PROTECTION

Fire Protection Program, CC-AA-211 describes the common Exelon Nuclear Station Fire Protection Program, including provisions for post fire safe shutdown, by identifying key program elements and organizational positions, and the responsibilities delegated to those positions.

COMPENSATORY FIRE WATCH

OP-AA-201-007, Fire Protection System Impairment Control is utilized for the tracking, reporting and restoring of impairments to fire protection structures, systems, or components (SSC) (i.e. fire pumps, detection, suppression, fire barriers, fire wrap) to minimize duration and ensure appropriate compensatory measures are implemented. It also provides instruction for establishing and performing the compensatory measure fire watch inspections.

OP-AA-201-007 defines Compensatory Measure Fire Watch as observation of a specified location for detecting and reporting any fires or fire hazards when a fire protection SSC is degraded and/or inoperable.

Work Group Supervisors shall assure the Fire Watch is in place when the fire system impairment (FSI) is initiated and assure that the completed FSI is returned to the Fire Marshal.

Fire Watches shall be performed of the correct area within the TARGET TIME and documented on the FSI.

Report any smoke, fire or conditions that could cause a fire to the Control Room. Attempt to extinguish the fire only if obviously within the capacity of the fire protection equipment available.

FIRE PROTECTION EQUIPMENT ACCESSIBILITY

Everywhere you look on site there is equipment for Fire Protection. This equipment shall be accessible at all times. ENSURE equipment, scaffolding, tools, cords, etc., being staged or stored, do not block or impede access or egress from any area, present a tripping hazard, or limit view or accessibility to:

- Fire extinguishers
- Fire Hose Stations
- Fire Control Panels
- Emergency Light Battery Packs or light illumination
- Fire Equipment Cage Lockers
- Self-Contained Breathing Apparatus (SCBA)

Access should be such that a fire brigade member in full protective clothing (e.g. turn out gear) can access the equipment.

In addition, unauthorized attachments (cables, etc.) are not to be made to Fire Protection System piping or components.
COMMON (continued)

TRANSIENT COMBUSTIBLES

Why Control Transient Combustibles?

A transient combustible is any flammable or combustible material that is not identified or accounted for as a combustible load/fire load in the Station Fire Hazards Analysis/Fire Protection Report and/or Combustible Loading Calculation.

When we bring materials (e.g., rags, packing material, lubricant) into the plant, we are adding fuel and may create a situation where the installed fire protection system is unable to put the fire out or keep it from spreading.

Combustible material controls are in place for Safety and Non-Safety related buildings. A Transient Combustible Permit (TCP) may be required for transient combustible material, combustible/flammable compressed gas cylinders, or combustible/flammable metals being used and/or staged inside a Safety Related Building. Refer to OP-AA-201-009, Control of Transient Combustible Material and MA-AA-716-026, Station Housekeeping / Material Condition Program for specific requirements regarding combustible material control.

When is a Transient Combustible Permit (TCP) required?

- The material will be left unattended in a SAFETY RELATED building.
- The materials are exposed combustible/flammable metals (Class D material) to be staged in Safety Related Buildings.
- Material is a flammable gas cylinder to be staged in a Safety Related Building.
- Material is not kept in metal containers with self-closing lids or lids maintained in the closed position in a Safety Related Building.
- The material will be staged / stored in a transient combustible control zone (CFZ, TCEZ, TCFZ, or TFZ).

What are the Worker responsibilities?

- Minimize the amount of combustibles brought into the plant to the extent practical. Limit transient combustibles to those materials and quantities needed to support the work activity.
- Place transient materials in proper containers at the end of shift or work activity.
- Remove all transient combustible material from the work area following the completion of the work.
- Do not store any combustible material underneath stairwells unless it is fitted with a sprinkler system; a fire in such a location likely would delay or prevent egress.

Combustible Control Zones

There are some areas in the plant in which a specific zone has been established as a barrier to prevent the spread of fire. These areas are known as either a Combustible Free Zone (CFZ), Transient Combustible Exclusion Zone (TCEZ), Transient Combustible Free Zone (TCFZ) or Transient Free Zone (TFZ). Transient combustible free/transient free zones and transient combustible exclusion zone in the plant should be conspicuously identified (e.g., floor markings or signs).

Combustibles shall not be placed in these areas unless approved by Fire Protection.
COMMON (continued)

OP-AA-201-009 shall be followed for controlling transient combustible materials. Contact the Work Group Supervisor or site Fire Marshal with any questions regarding transient combustible control. The attachments of OP-AA-201-009 provide site-specific information on critical buildings, combustible free zones and other instruction on transient combustible control.

Designated Staging Locations

- Specific areas in the plant have been evaluated by the site Fire Protection Engineer/Designee for a specific amount of transient combustible materials that can be used for the staging of materials in the plant to support work activities.
- Material can be STAGED for no more than 72 hours and is required to be posted in accordance with MA-AA-716-026.
- Do not place material in permanent storage locations unless agreed to by the area owner and it has been verified the combustible load calculation for the area is sufficient for the increased material.

HOT WORK

OP-AA-201-004, Fire Prevention for Hot Work, controls hot work via a permit system to protect personnel and minimize hazards to structures, systems, and components important to safety and insured buildings. This procedure is applicable when hot work is performed: within the protected area, or inside any building located outside the protected area, or within 35 feet of any site building. Additional information can be found in OP-AA-201-004.

CONTROL OF TEMPORARY HEAT SOURCES

Use of temporary equipment capable of generating temperatures sufficient to ignite combustible/flammable materials or generate smoke, fumes or other products of combustion such as portable heaters, drum heaters, sterno cans, heat lamps within the protected area and inside any building located outside the protected area may require a Temporary Heat Generating Equipment Permit. Requirements in OP-AA-201-006, Control of Temporary Heat Generating Equipment, shall be followed.

FIRE RISK

Fire is shown as one of the most dominant contributors to site risk in Probabilistic Risk Assessment (PRA). Proper control of hot work and combustibles is critical to protect the plant from fires. While all fires are of great concern to the site, there are particular areas in the plant where it is extremely important that you are aware of the controls for prevention of fire. High Risk Fire Areas (Defined in the site’s fire PRA) are conspicuously identified (e.g., doors or floors labelled) to highlight the concerns for those areas. Before commencing hot work or moving combustibles into these areas make sure that you and your supervisor are aware and the work planning addressed this additional sensitivity.

Additional information can be located in ER-AA-600-1069, High Risk Fire Area Identification.

FIRE DISCOVERY/ALARM

- If a fire is discovered, alert others in the area, call Main Control Room and leave area.
- Report all fires, even if extinguished, to the Main Control Room. State location of fire and what is burning.
COMMON (continued)

- In case of a fire, the station will sound the fire alarm or will provide a station alert followed by an announcement. Should you hear the station fire alarm, stop and place the job in a safe condition, listen to the instructions and follow them.

- The fire brigade responds to all fires. All other personnel are expected to cooperate with the responding personnel, evacuate the area, and follow any instructions on the station announcing system.

- Do not use any elevator in the same building/area (e.g., Power Block) during a fire.

HALON & CO₂ SUPPRESSION SYSTEMS

Fire suppression systems are systems intended to inhibit the growth of a fire. Some areas of the station contain gaseous fire suppression systems such as Halon or Carbon Dioxide (CO₂). These areas and surrounding areas are specifically identified (refer to signs) at each station.

Pre-discharge alarms are usually provided in these areas to alert personnel and allow safe exit from the area. Some areas with CO₂ and Halon systems use multiple senses to warn you: Sight – flashing light, Smell – wintergreen scent, and Hearing – loud alarm. When working in areas equipped with CO₂/Halon systems, be aware of the warning system utilized by the plant. Take the following pre-cautions when working in areas protected by these systems:

- Do not use radios within 4-feet of smoke detectors or the Halon Control Panels.
- System CO₂ is usually scented with wintergreen. If the alarm activates or a wintergreen odor (for CO₂ systems) is detected while you are working in a room, leave immediately closing the door behind you. Do not enter any room in which the alarm horn is sounding.
- If the alarm activates or a wintergreen odor is detected, leave the area immediately.
- The system discharge will create a great deal of noise and will greatly limit visibility.
- Avoid passing through nozzle spray paths as they can endanger a person’s safety by causing a strong chilling effect, eye injury, ear injury, or falls due to loss of balance, loss of consciousness or death.
- Special attention to housekeeping and maintaining exit paths are mandatory in CO₂/Halon protected areas. If work activities may cause a delay in leaving the area then the system should be taken out of service in accordance with station procedures.

Refer to the site-specific information for areas containing these types of suppression systems.
COMMON (continued)

WATER INTRUSION

Institute of Nuclear Power Operations (INPO) Significant Event Notification (SEN) 283 discusses the initiating event of a dual unit scram that was the result of a roof leak not recognized as a threat to plant equipment. Another contributing factor was that identified leaks were not always addressed at the site in a timely manner. The leak from the roof seeped along the outside of the conduit where it found its way into a current transformer enclosure that contained the 13-kV supply for a Reactor Coolant Pump causing a fault that tripped the pump leading to a very complicated trip scenario affecting both units.

Exelon operating experience suggests that some water leaks have not been consistently identified and tracked to resolution for similar reasons as described in the INPO SEN. At one Exelon station a safety related valve actuator failed due to corrosion of the actuator torque switch from water intrusion into the limit switch compartment of the actuator. Sometime after the failure, water was identified dripping from the roof in the area near the valve and had begun to collect at the actuator.

Water leaks and evidence of previous leaks need to be identified as soon as possible and documented in the corrective action program in order to assure the impact of the leak can be investigated and the leak prioritized for resolution. A Water Leak/Intrusion Issue Report template captures key attributes of the water leak that will support evaluation of the impact to plant equipment and help prioritize resolution of the leak. The standard template is available at each station in the "IR Templates for Backgrounding" link. Braidwood and Byron have a different template for tracking leaks. Other stations should be using the new Water Leak/Intrusion template to document water leaks or evidence of water leaks in the plant. (1344420 05)

PRINCIPLES FOR AN ENGAGED, THINKING WORKFORCE (SOER 10-2)

In 2010, the institute for Nuclear Power Operations (INPO) issued Significant Operating Event Report (SOER) 10-2. This notice to the entire nuclear industry was in response to a large number of events that had occurred in the U.S. and abroad due to the lack of workers showing appropriate thinking and engaged behaviors. In one instance, inappropriate actions made a fire condition worse, and in others, the workers failed to appropriately challenge and act on the information and indications available. Several events were in the Exelon fleet.

The underlying causes of these events involve all levels of the organizations and include inadequate recognition of risk, weaknesses in the application of significant operating experience, tolerance of equipment or personnel problems, and a significant drift in standards.

In keeping with Exelon’s commitment to a thinking and engaged work force, this material is designed for all Exelon and Supplemental Workers to communicate what occurred and the expectations for thinking and engaged behaviors for all workers.
COMMON (continued)

The Events in SOER 10-2

INPO reviewed events in the United States and Europe and pointed out where shortfalls in thinking and engagement among the work force contributed to the event or made the event worse. If previous operating experience related to level indication during shutdown conditions had been appropriately addressed, the following three (3) events could have been prevented.

**Oconee**

In April 2009, during cold shutdown, Oconee Unit 3 pressurizer level was lowered well below what was intended because an inadequate pressurizer vent path affected level indication.

Significant Operating Experience from the October 2008 Salem event was not sufficiently applied.

**Calvert Cliffs**

In February 2010, both units automatically scrammed because of an electrical fault that caused a loss of power to the reactor coolant pumps. A roof leak in the Unit 1 auxiliary building allowed water to seep down the outside of conduit into a current transformer enclosure for a reactor coolant pump 13 kV supply breaker. This caused a phase-to-ground fault and the reactor coolant pump to trip. The fault was not cleared by the supply breaker because of an overcurrent relay failure, so fault current was exposed to the Unit 2 service transformer, which isolated.

**Nine Mile Point**

In April 2010 following a Nine Mile Point Unit 2 reactor refueling, reactor water level was inadvertently lowered approximately 54” below the reactor vessel flange during drain-down of the refueling cavity.

The level indication in the control room malfunctioned and local monitoring was ineffective. As a result, the steam dryer was partially uncovered and dose rates on the refueling floor increased.
Causes of The Events

The events occurred due to a combination of organizational weaknesses, failed barriers, individual errors, and in some cases equipment failures. None of these factors alone caused these events; rather, each occurred when the various factors aligned at the same time and place. All of the events were preventable and showed a common theme of thinking and engagement among the work force. Issues existed in the performance of managers, supervisors, and individual workers:

- Supervisors did not fulfill their expected oversight roles by becoming engaged in conducting activities.
- Subtle declines in standards and performance went unnoticed because managers and supervisors were not sufficiently engaged in activities.
- Risk was not recognized or was inappropriately accepted by individuals or the organization without sufficient engagement of others in decision-making.
- Workers did not fully understand or anticipate the effects of their actions.
- Repetitive and long-standing issues were tolerated, and the consequences of not addressing them were not recognized.
- Significant operating experience was not used effectively to prevent the events, and managers were not engaged sufficiently to ensure the lessons were applied appropriately. Many of the events could have been prevented if significant operating experience had been applied organizationally and at management, supervisory, and individual levels.

Managers and Supervisors

Thinking and engaged managers and supervisors stay in an oversight role and actively enforce proper work behaviors related to industrial and nuclear safety, human performance, and configuration controls.

Individual Workers

Thinking and engaged workers understand the importance of the work they are performing and its impact to the larger scope. A thinking and engaged worker is also an effective barrier to prevent events:

- Take the time to do the job right the first time and stop if plant conditions are not as expected to seek advice from supervision.
- Be personally accountable for the preparation and safe execution of assigned work activities, including seeking out relevant operating experience.
- Understand your discipline must-know operating experience from SOER 10-2.
- Model the use of error reduction tools, including the standards for procedure use and stopping when unsure.
- Perform effective pre-job briefs that utilize operating experience and consider the most likely undesired consequence of improper action would be.
- Promptly communicate issues whenever something is not right and do not proceed if conditions are not as briefed.
- Understand and comply with standards.
- Coach peers on adherence to standards.
- Openly accept coaching from others on adherence to standards.
**COMMON (continued)**

**Supplemental Workers**

In addition to these behaviors, supplemental workers have additional challenges above those of employee’s due to the shorter period of time spent on site, the unfamiliarity with facilities, and the number of standards to apply. Considering the amount of work done on site, especially during outages, it is clearly essential that supplemental workers exhibit the same thinking and engaged behaviors as station workers. Overall supplemental workers have the same responsibilities for safe and quality work as employees. In all cases, it is your responsibility to stop and involve supervision when any aspect of the work is not clear. Do not proceed if uncertain.

**RADIATION WORKER TRAINING**

**DO NOT** take food, drink, tobacco products or cosmetic products into radiologically controlled areas. Eating, drinking, use of any type of tobacco, or applying cosmetics while inside the RCA is **PROHIBITED**. Do Not put or store items under hard hats, this is not allowed from a safety perspective and also prevents inadvertent release if items from the RCA.

**DOSIMETERS OF LEGAL RECORD (DLRS)**

DLRs are obtained through Dosimetry of the Radiation Protection Department. The DLR shall be stored with the security badge or key card when not in use.

**RADIATION WORKER POCKET RWP DATA**

Each worker will be given a “Radiation Worker Pocket RWP Data Sheet” (Trip Ticket) so they can document radiological information that is important to their specific job.

Workers are required to complete the appropriate information prior to entry into the RCA. This information can be obtained from the RWP, Survey Map, and Pre-job Brief. Trip Tickets should be with the worker during the entire work evolution in the RCA.

Additionally, workers are expected to use the Trip Ticket to perform a visible self-check when obtaining Electronic Dosimetry. This includes verifying the information on the log-in screen matches the information on the trip ticket as well as verifying the dosimeter alarms match the RWP alarm set points.

Your supervisor should provide you with a dose goal for the task you are performing. When performing a task and you recognize that the task cannot be completed within the dose goal, inform you supervisor as soon as possible.
COMMON (continued)

HIGH RADIATION AREA

A physical boundary is required to be in place at all times, except when entering the area. A High Radiation Area briefing and direction for controlling the area is required prior to entering. When exiting, ensure doors, swing gates and any device used to secure the area are returned to their original position.

As a worker in a nuclear power plant, it is important to understand the requirements for High Radiation Area entry. You are required to have a brief prior to High Radiation Area entry by Radiation Protection. From this brief, you must know:

- Dose Rates and Low Dose Area (areas will be identified during the brief via survey or location maps).
- Tasks Allowed to Be Performed.
- Required Dosimetry and Alarm Set Points.
- Proper Control of Barricades and Postings upon Entering and Exiting.
- If you find a HRA posting or Rad Rope lying on the floor, immediately contact Radiation Protection (RP), stay in the area and control access until RP arrives.
- If you find a HRA access unsecured or unguarded, immediately contact RP and control access until RP arrives.

Failure to comply with the HRA entry requirements will result in disciplinary action up to and including termination.

LOCKED HIGH RADIATION AREA

The access to this area is locked due to the high dose rates. An area that cannot be locked will be identified with a red flashing or rotating light and signs. To access a Locked High Radiation Area, special precautions are required. Contact RP for assistance.

As a worker in a nuclear power plant, it is important to understand the requirements for Locked High Radiation Area entries.

You are required to have a brief prior to Locked High Radiation Area entries by Radiation Protection. The brief provides required information to successfully work in the area such as:

- Dose Rates and Low Dose Areas. Areas identified during briefing via survey or location maps.
- Tasks Allowed to Be Performed.
- Required Dosimetry, Alarm Set Points, and Maximum Stay-Times.
- Radiation Protection (RP) job coverage and technicians assigned the job and controls of barricades and postings.
- Special Precautions and ALARA techniques.
- If you find a LHRA posting lying on the floor, immediately Contact RP, stay in the area and control access until RP arrives.
COMMON (continued)

- If you find the fencing controlling access to a LHRA has fallen down or there is unguarded access due to a fencing opening, immediately contact RP control access until RP arrives.
- If you find a LHRA access unlocked and unguarded, immediately contact RP and control access until RP arrives.

You will be asked to acknowledge that you have received this briefing by signing a briefing acknowledgment form. Failure to comply with the HRA entry requirements will result in disciplinary action up to and including termination.

ENGINEERING CONTROLS

Physical measures that prevent radioactive material from becoming airborne or that remove it from the air (such as adding filters to ventilation systems, shifting ventilation flow paths, repairing leaks quickly, and enclosing the source of the contamination).

Per the Exelon procedural requirement, all vacuum cleaners in the RCA must be equipped with HEPA filtration. Ensure tamper seal for the HEPA vacuum is intact prior to use.

No vacuum cleaner or vacuuming device can be substituted for an RP approved HEPA filtration equipped vacuum.

Do not alter or repair vacuum cleaners used in an RCA without RP concurrence and oversight.

Upon completion of the use, ensure hose ends of the HEPA vacuum are covered.

TOOL AND EQUIPMENT MONITOR (TEM) also known as (SAM) Small Article Monitor

NOTE: Some sites restrict the use of TEM to RP Techs. Always ensure you are authorized prior to use.

1. OPEN the door to the TEM and PLACE the personal item in the center of TEM. CLOSE the door. PRESS the START on the TEM within 10 seconds. MOVE 3 feet away from the TEM while it is counting.

2. IF MONITOR ALARMS, DO NOT REMOVE THE ITEM, CONTACT Radiation Protection.

3. IF the item(s) clears the TEM, REMOVE the item from the TEM and PLACE item(s) outside the RCA or IF using a two door TEM REMOVE item(s) from the non-RCA side.
**BRAIDWOOD**

**Braidwood Important Phone Numbers**

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>Emergency</td>
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<td>2241</td>
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<tr>
<td>Site Nurse</td>
<td>4204</td>
</tr>
</tbody>
</table>

**Braidwood Assembly Areas**

- Maintenance Shop Elev. 401
- Unit 1 Turbine Building Trackway Elev. 401
- Unit 2 Turbine Building Trackway Elev. 401
- OSC Elev. 451 (Access)
- TSC Elev. 451 (Access)
- Control Room Elev. 451
- Pathway to TSC
- If you are in training, the Training Building is also an assembly area.

**Miscellaneous**

At Braidwood Station, a colored stripe is provided around the wall of the room to differentiate between units.

- Unit 1 has a Yellow stripe
- Unit 2 has a Green stripe
- Unit 0 (Common equipment) has a Blue stripe

**FIRE PROTECTION**

**GASEOUS SUPPRESSION SYSTEM SAFETY**

The areas listed below are protected by gaseous suppression systems. Any entry/work in these areas is subject to the requirements as set forth in BwAP 1100-21.

- Upper Cable Spreading Rooms - Halon 1301 and CO₂.
- Lower Cable Spreading Rooms - CO₂.
- Diesel Generator and Day Tank Rooms - CO₂.
- Electrical Cable Tunnels - CO₂.
- Diesel Driven Auxiliary Feedwater Pump and Day Tank Rooms - CO₂.
- Braidwood Station QA Vault - Halon 1301.
- Comstock QA Vault - Halon 1301.

The Station Fire Marshal or designee may be contacted for further guidance.

**VISUAL WARNING LIGHTS FOR PLANT ALARMS (IR 534661)**

**Functional Description:**

The red beacons (strobe lights) located in the Auxiliary and Turbine Buildings are interlocked with the Public Address (PA) system and are designed to alert plant personnel working in high noise areas of several types of consequential plant conditions. The beacons are actuated by use of the Site Fire Alarm, Site Assembly Alarm, or use of the Emergency Page function from the PA system.

These differ from the red strobe lights in Unit 1 and Unit 2 containment, which are manually actuated from the main Control Room when a containment evacuation is necessary.
BRAIDWOOD (continued)

EXPECTATIONS BRIEFING

At Braidwood Station, our work is never so urgent or our schedule so important that work cannot be performed safely. The majority of personnel injuries are due to at-risk behaviors, not the work environment. Taking unnecessary risks while performing a task, as well as unawareness to surroundings can lead to serious and potentially fatal consequences.

- Any condition, which could be adverse to quality, is to be immediately reported to station supervision.
- Use of cell phones inside the power block is prohibited. (See policy BR-032)
- When processing through all security and fire doors, ensure they are secured prior to leaving the area.
- Handrails shall be used when traversing stairways.
- Walk on sidewalks or designated pathways.
- Approved footwear must be worn.
- Limit casual conversation while traversing the power block to prevent distraction from immediate surroundings (e.g., low hanging pipe supports).
- Piping and equipment can be extremely hot; keep a safe distance away.
- Smoking is ONLY allowed in designated areas. (See policy BR-051)
- When attending station meetings or training sessions, pagers, cell phones and Blackberries will be placed in vibrate modes.
- It is expected that all personnel stop when faced with uncertainty. Do not proceed until resolved with supervision.
- Personnel are expected to take action to stop unsafe jobs and unsafe behaviors they observe at the station.
- In case of an injury, illness or near-miss, stop work immediately and place equipment in a safe, stable condition. If a serious injury has occurred, notify the Control Room at extension 2211.

- Bollard Safety - do not walk in or around security bollards. Adhere to signs posted.

CLEARANCE AND TAGGING

When performing work under the protection of a clearance order, all workers must adhere to the requirements of OP-AA-109-101, PERSONNEL AND EQUIPMENT TAGOUT PROCESS

All workers must use the appropriate checklist and discuss the protection boundary during the PJB (pre-job brief) for their task. This MUST include a review of the clearance order Special Instructions.

If working under an Exceptional or Condition Dependent clearance order, all workers working under that clearance order must understand why. This information is contained in the Special Instructions.

Visitors performing work under the protection of a clearance order must attend the PJB for the work and sign onto the Worker Tracking List.

NEVER manipulate OR remove a component with a DANGER card attached.
BRAIDWOOD STATION

Notes:

Normally accessible RCAs at Braidwood are contained within the Auxiliary Building and the Containment Buildings.
BYRON

Byron Important Phone Numbers

<table>
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<th>Phone Type</th>
<th>Number</th>
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<tr>
<td>Radiation Protection</td>
<td>3241</td>
</tr>
<tr>
<td>Site Nurse</td>
<td>4204</td>
</tr>
</tbody>
</table>

Byron Assembly Locations within the Protected Area

- Security Gatehouse E1 401'
- Mechanical Maintenance Shop
- Unit 1 Turbine Building Trackway
- Operations Support Center (OSC) / Outage Control Center (OCC)
- Technical Support Center (TSC)
- Control Room

Miscellaneous

At Byron, a colored stripe is used on the floor to differentiate between units.

- Unit 0 Blue
- Unit 1 Yellow
- Unit 2 Green

FIRE PROTECTION

GASEOUS SUPPRESSION SYSTEM SAFETY

The areas listed below are protected by gaseous suppression systems:

- Upper Cable Spreading Rooms - Halon 1301 and CO₂ as a Back-up
- Lower Cable Spreading Rooms - CO₂
- Diesel Generator and Day Tank Rooms - CO₂
- Electrical Cable Tunnels - CO₂
- Diesel Driven Auxiliary Feedwater Pump (B) and Day Tank Rooms - CO₂
- SX M/U pumps and day tank rooms – CO₂
- Byron Station QA Vault (Service Building) - Halon 1301
- New QA Vault Room (Outside Protected Area) - FM 200
- Training Building Simulator - Halon 1301
- Training Building Computer Room - Halon 1301

Work Area Precautions:

Entry into Upper Cable Spreading Rooms 1EE2 and 2EE2 requires an emergency escape breathing apparatus when the Halon system is in service.
Notes:
Normally accessible RCA at Byron are contained within the Auxiliary Building and the Containment Buildings. Drug Screening Reporting Site is located in the Training Building.
CALVERT CLIFFS

Calvert Cliffs Important Phone Numbers

Emergency  911

From a cellular phone to the U1 Control Room Supervisor, dial 410-495-5911

Security  5222

Employee Concerns  5228

Emergency Response Assembly Areas:

- IF you are not in the Emergency Response Organization AND your regular work location is OUTSIDE the Protected Area, THEN your assembly area is your regular work location.
- IF you are not in the Emergency Response Organization AND your regular work location is INSIDE the Protected Area, THEN your assembly area is the OTF/NEF/NOF hallway. Assembly is in your designated area.

Supplemental Workers

- IF supplemental worker IS an integral part of a CCNPP group, THEN assemble with the CCNPP group with which you work.
- IF a supplemental worker is NOT an integral part of a CCNPP group, THEN assemble in the Nuclear Office Facility cafeteria.

Miscellaneous

At Calvert Cliffs, each unit is painted to differentiate between units:

Unit 1 is painted Orange

Unit 2 is painted Blue

ENVIRONMENTAL

Effluent Discharge Permit (NPDES/SPDES Permit)

A National Pollutant Discharge Elimination System (NPDES) permit is used to control plant effluent discharges from Calvert Cliffs to the Chesapeake Bay.

These permits allow release of plant effluents and wastewaters from previously approved and monitored pathways to the environment.

An unplanned release of chemicals into storm drains, plant floor drains, sanitary systems, or plant systems could potentially damage effluent systems and/or violate the plant’s NPDES/SPDES permit. Prior approval is required for all effluent discharges.

In accordance with the requirements of its NPDES Permit, Calvert Cliffs has developed a Storm Water Pollution Prevention Plan (SWPPP) to document efforts to reduce the introduction of pollutants to storm water that flows into the Chesapeake Bay. The SWPPP describes routine actions that affect storm water discharges.
FIRE PROTECTION

GASEOUS SUPPRESSION SYSTEM SAFETY

The areas listed below are protected by Halon 1301 suppression systems:
- Unit 1 Cable Spreading Rooms
- 1C Cable Chase
- Unit 2 Cable Spreading Room
- 2C Cable Chase
- Unit 1, 27’ and 45’ Switchgear Rooms
- Unit 2, 27’ and 45’ Switchgear Rooms
- Unit 1 and 2 Data Acquisition System Rooms
CLINTON

Clinton Important Phone Numbers

<table>
<thead>
<tr>
<th>Service</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>Site Emergency</td>
<td>3329, 2211</td>
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<tr>
<td>Medical Emergency</td>
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<td>Security</td>
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<td>Radiation Protection</td>
<td>3227</td>
</tr>
<tr>
<td>Site Nurse</td>
<td>4204</td>
</tr>
</tbody>
</table>

Clinton Assembly Areas

- Service Building - Contractor Outage Control Center
- 762’ Radwaste Building - Contractor Break Area

Public Address System

Clinton Power Station (CPS) also uses a Public Announcement system known as a Gaitronics that allows plant personnel to contact the Main Control Room, Security, etc. in emergency situations. Depress the ‘Page’ button to summon the department that you need (also inform them what line [1-4] to use). Use of the Gaitronics is **NOT** approved for routine business.

SECURITY

Protected Area Access

Normal access is through the Main Access Facility (MAF). The Operations Gate House (OGH) is currently only used for personnel delivering vehicles or material into the Protected Area and CPS uses a door instead of a turnstile to access the Protected Area at the OGH. Only one person may access the Protected Area through this door at a time. The door must be closed and secured by each person.

INDUSTRIAL SAFETY

Severe Weather Actions

- If you see any severe weather, call 3333.
- Announcements are made over the site communication systems, and a whistle is sounded for personnel outdoors. **When the siren sounds**, enter the nearest building and **follow any instructions provided**.
- Personnel in buildings other than the power block should go to the designated “Tornado Warning Shelter Area” in the center of that building. The Admin Building personnel should go to the first floor RP area. **Do not leave the building you are in** unless your building does **not** have a designated internal shelter area. Only then would you go to another building.
- Stay in the shelter until an “all clear” announcement is made.
- Personnel who are outdoors and unable to reach indoor shelter should seek refuge in low-lying areas such as ditches, culverts, etc.

FIRE PROTECTION

CPS has Carbon Dioxide total flooding suppression systems in the Diesel Generator room. The Main Generator Exciter in the Turbine Building is a local application system. Both are equipped with a wintergreen odorizer. If you smell the wintergreen proceed to the Radwaste Building.
CLINTON (Continued)

TRANSIENT EQUIPMENT/MATERIAL CONTROL (IR1309366)

Transient equipment/material are items that are not configured, or not configured in their current location. Examples are ladders, gang boxes, barrels, tools, carts, etc.

Control of transient equipment/material is required to ensure there is no unforeseen impact to personnel safety and safe operation of plant equipment. Failure to comply with the requirements of procedure CPS 1019.05 may affect operability of plant equipment and result in reportable conditions.

This is particularly true inside the containment and drywell. The Suppression Pool exists at the outer radius of the Drywell and lower elevation of the Containment. During certain accident conditions, the suppression pool level will swell significantly such that the increase in water level will flow up through the lower two levels of grating and dislodge items not properly secured. There are several concerns:

1. Solid loose items can become missile hazards in the pool swell and damage safety-related equipment such that it could not perform its design basis function.
2. Flexible material can be drawn into the suppression pool where it will conform to the shape of a suction strainer which would reduce the flow of water into the emergency core cooling system. Examples of flexible material are ropes, tape, plastic sheeting, paper, protective clothing, absorbent mats, decals, etc.

During Modes 1, 2, or 3, no items may be stored in Containment/Drywell without a technical evaluation. During Modes 1, 2, or 3, the quantity of flexible material in Containment/Drywell shall be controlled. During Modes 1, 2, and 3, any transient flexible material left unattended inside the containment or drywell requires permission of the Operation Work Control Supervisor and the Fire Marshall.

Contact Maintenance Services Manager if you have any questions on the use or storage of transient material in the Containment and Drywell.
Notes:
Normally accessible RCAs at CPS are contained within the Turbine Building.
**DRESDEN**

### Dresden Important Phone Numbers

<table>
<thead>
<tr>
<th>Service</th>
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<tr>
<td>Emergency</td>
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<td>Security</td>
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<td>Radiation Protection</td>
<td>2241, 2253</td>
</tr>
<tr>
<td>Site Nurse</td>
<td>4204</td>
</tr>
</tbody>
</table>

### Miscellaneous

At Dresden, the following colors are used to differentiate between units.

- **Unit 2 has a Yellow stripe**
- **Unit 3 has a Light Blue stripe**

---

**SECURITY**

### Visitors

**Badged Visitors**

Badged Visitors will stop out at the Badge Fab Office located in the Training Building on the Southwest area in the Owner Controlled Area (OCA).

**Unbadged Visitors**

Prior to entering the Main Access Facility (MAF), visitors will use the phone in the Pre-Access Facility (PAF) to contact the Visitor/Vehicle Registration Officer (VVRO). The phone number is on the sign next to the phone. The VVRO will have an escort pick the visitor up at the PAF and escort them through the turnstiles and into the MAF for processing.

Upon exiting the station, both the escort and visitor are to use the same turnstile – visitor MUST exit first. Escort duties do not end until the escort ensures that the visitor has successfully processed out through the PAF EXIT turnstiles.

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**FIRE PROTECTION**

Total flooding carbon dioxide suppression systems are provided in the AEER and the 3 Diesel generator rooms and their diesel day tank rooms.

Automatic Halon fire suppression systems are provided in the AEER and Computer Rooms.

If a carbon dioxide or Halon system is initiated, immediately clear the area to avoid the hazards associated with the suppression agents and contact the main control room at x2211.

If a fire is discovered in the power block, call the main control room at x2211 and follow instruction provided over the plant public address system and move to a location safe from the fire. If a fire is discovered in a non-power block location (administrative building, etc.), then pull the fire alarm pull box, notify the main control room at x2211 and exit the building.
Dresden Station

1. U-2 Turbine Building, Main Corridor
2. Mechanical/Electrical Maintenance Shop
3. Administration Building Lunchroom/Foyer
4. Main Control Room
5. Operation Support Center (OSC)
6. Technical Support Center (TSC)
7. Security Areas Gatehouse (CAS/SAS)

NOTES: Normal RCA Access Control Entry and Exit Point located #5. Radwaste Control Room RP Access for Operations only located #10. Chemistry Access for Chemistry and Security only located #9a. West Access available during Outage only located #9b

Exelon Industrial / Nuclear Safety and Security Rev. 06
ENVIRONMENTAL

Effluent Discharge Permit (NPDES/SPDES Permit)

State Pollutant Discharge Elimination System (SPDES) permits are used to control plant effluent
discharges from R.E. Ginna and Nine Mile Point to Lake Ontario.

These permits allow release of plant effluents and wastewaters from previously approved and
monitored pathways to the environment.

An unplanned release of chemicals into storm drains, plant floor drains, sanitary systems, or plant
systems could potentially damage effluent systems and/or violate the plant’s NPDES/SPDES
permit. Prior approval is required for all effluent discharges.

In accordance with the requirements of its SPDES Permit, Ginna has developed a Storm Water
Pollution Prevention Plan (SWPPP) to document efforts to reduce the introduction of pollutants to
storm water that flows into Lake Ontario. The SWPPP describes routine actions that affect storm
water discharges.

Employees shall ensure that the appropriate level of environmental awareness and risk recognition
are incorporated in work preparation and execution. Workers shall:

• Review potential pathways to the environment and ensure they mitigate any outcomes that
  may challenge environmental compliance.
• Review chemical labels to ensure their use is approved on the plant components identified in
  their work packages.
• Store chemicals only in approved areas.
• Properly contain, label, and dispose of waste materials.
• Manage liquids, petroleum products, and chemicals with an appropriate secondary
  containment structure.
• Evaluate and seek approval for the release of any groundwater, wastewater, and sump to an
  off-normal or unusual location.
• Understand required spill response actions that may be triggered by their work activity.
• Establish controls to minimize impacts adjacent environmentally sensitive areas (e.g., lake,
  stream, and wetlands).
• Seek assistance from Environmental staff to address questions about environmental
  compliance.
R.E. GINNA (Continued)

GASEOUS SUPPRESSION SYSTEM SAFETY

The areas listed below are protected by total flooding automatic Halon 1301 extinguishing systems in the following locations:

- Relay Room and MUX Room
- Telephone Service Room in the Turbine Building
- TSC SAS/PPCS Computer Room
- Simulator Room in the Simulator Building – Sapphire Suppression System
- NFPA 805 Diesel Enclosure – FM200 Suppression System

R.E. Ginna Power Plant: (See map on next page)

Owner Controlled Area Buildings:

Ginna’s Brookwood Training Center (GTC), Simulator buildings, Material Handling, and the Offsite Warehouse are located in the Owner Controlled Area of Ginna Station. The Security Access Unit and Fitness for Duty screening are housed in GTC East.

Emergency Assembly Areas:

Areas are located throughout the site in case of an emergency. Every individual on site is responsible for locating the nearest assembly areas to their normal work location.

Security Access Points:

These are points where you may enter the fenced-in area of the site. To do this, you must pass through the Guard House.

Radiologically Controlled Area (RCA) and Access Control Points:

The RCA has Access Control Points located between the Service Building and the Intermediate Building near the Men's Locker Room. This is the only acceptable entry and exit point to the RCA.
R.E. GINNA STATION POWER PLANT LAYOUT:
Important Phone Numbers
Contacting the Control Room:

- Emergency  6911
- Shift Manager  6664

On-site and off-site assembly areas

- (Offsite) Remote Assembly Area (RAA) is the Oswego County airport.
- Onsite is the Training bldg. auditorium / Wellness Center

EMERGENCY ACTIVITIES

There are four classifications of emergency activities. In order of least severe to most severe they are: Unusual Event, Alert, Site Area Emergency, General Emergency.

If emergency management determines that an evacuation of non-emergency personnel is necessary, an alarm will sound and an announcement will be made over the plant paging system. Non-emergency response personnel include non-ERO members and visitors/members of the public.

The station evacuation alarm is a pulsating/wavering tone. Flashing and/or rotating lights may be used in conjunction with the station/fire alarm in high noise areas. Proceed to an area where you can hear the announcement and follow the instructions given.

In the event of a station blackout, such as was experienced at the Fukushima Daiichi Nuclear Power Plant due to earthquake and subsequent tsunami or an area-wide loss of electrical grid, the site communications systems, including the public address system and ERO notification system, may be unavailable. Personnel would become aware of the event by direct observation (e.g. loss of lighting, word of mouth, media reports, etc.)

If such an event were to occur, Emergency Response Organization (ERO) personnel are to secure their work location in a safe manner and report to their assigned Emergency Response Facility. If ERO personnel were off site during an area-wide loss of electrical grid, they are to report to their ERO duty stations or to the Remote Assembly Area (RAA) if access to site is difficult or impossible, as expected even if not notified through Everbridge.

The site accountability process will be implemented to ensure all personnel within the protected area are accounted for. Once accounted for, non-essential personnel will be given further instruction and information.

If an evacuation becomes necessary, all personnel who are not part of the emergency response organization will listen to announcements and:

- Take the shortest route to the designated exit.
- Employees will take their security badges with them.
- Proceed as directed using appropriate transportation.
- Proceed to the Oswego County Airport only if directed.

JOINT INFORMATION CENTER

During declared emergencies, the Joint Information Center will serve as the single point of contact with the media, including the handling of rumors.
HOSTILE ACTION-BASED (HAB) SECURITY EVENTS

These are unique events that require rapid and specific actions by all personnel on site. Actions are generally communicated over plant public address systems when required. HAB-related announcements are situationally dependent and require all personnel to listen and follow all valid instructions during and after the event. In the event a HAB should occur, any and all verbal instructions from the site uniformed Security Officers and Law Enforcement personnel must be followed.

HAB ON-SITE PROTECTIVE MEASURES

- Duck and cover
- Evacuation of personnel from target and/or vital areas. (time permitting)
- Site evacuation by opening (while continuing to defend) security gates.
- Dispersal of licensed operators to undisclosed locations.
- Performing site accountability following the attack after the “all clear” is given.

In general, the following rules should be followed during a HAB:

- All personnel should duck and cover (shelter) to avoid becoming a hostage or hurt during an armed attack (ground or waterborne) upon the site.
- Clear all hallways, stay away from windows, and lock the access to your hiding area, if possible, as part of the duck and cover actions for an armed attack.
- All personnel should evacuate to pre-designated assembly areas for an inbound aircraft threat.
- When in doubt ask a co-worker regarding proper actions to take for a HAB Security Event.

Following a Hostile Action-Based Security Event:

- The recovery phase requires great patience as the site is now a crime scene and evidence must be gathered.
- While the active security event usually only lasts minutes, recovery could be over many hours.
- Expect to be questioned about what you saw and experienced during the event.

FIRE PROTECTION

Halon and carbon dioxide suppression systems are provided in the following areas:

- Halon – Training Building Simulator, Epic Computer Room
- CO2 – Relay Room and North and South Cable Run Rooms, Cable Spread Room, East and West Electric Bays, Emergency Diesel Generator Switch Gear Rooms North and South
**LASALLE**

<table>
<thead>
<tr>
<th>LaSalle Important Phone Numbers</th>
<th>LaSalle Assembly Area</th>
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<td></td>
<td>South Service Trackway</td>
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</tbody>
</table>

**Miscellaneous**

At LaSalle, a colored stripe is used to differentiate between Unit 1 and Unit 2.

- Unit 1 has a Yellow stripe
- Unit 2 has a Green stripe

**SECURITY**

**Vital Area Doors**
Identified with a BLUE semi-circle for single doors or a BLUE circle for double doors

**Escorts**
The number of visitors per escort is 1 at all times in the drywell during refueling outage. Escorts will NOT transfer the control of their visitor while in the drywell.

**DOORS**

**Secondary Containment Access Doors:**
Secondary Containment Access Doors are held closed magnetically. If upon approaching one of the interlock doors you see a white flashing light and hear an alarm/buzzer going off someone is using the opposite door and you need to wait for the alarm and light to clear prior to using the door. To use the door simply push the button located near the door, as directed by the sign on the door. This will release the magnet holding that door closed and allow you to access that door. Once in between the interlock doors allow the door you entered to close. Then push the button for the other door to release the magnet for the opposite door and allow you to pass through. You must ensure the door is closed prior to leaving the area.

**FIRE PROTECTION**

ENSURE DOORS ARE CLOSED AND LATCHED PROPERLY AFTER USE
Doors at LaSalle that have high differential pressure have special monitoring to ensure that they close properly. There is an audible and visual alarm that actuates when the door is opened and will keep alarming until the door is properly closed. If the alarm does NOT actuate once opened or does NOT stop alarming once closed, please contact the appropriate unit supervisor for that door. Unit 1 supervisor is at extension 2300, Unit 2 supervisor is at 2400.
LASALLE (Continued)

GASEOUS SUPPRESSION SYSTEM SAFETY

LaSalle has a Halon system installed for the Archives File room in the North Service Building, the computer room in the South Service Building and the remote record storage vault in Warehouse 30. LaSalle has a CO2 system installed for the Emergency Diesel Generator rooms, several hose reels throughout the plant and in the Generator Alternator-Exciter rooms for both units.

ENVIRONMENTAL MANAGEMENT SYSTEM – Environmental Awareness (TR 07-887)

Station Environmental Risk is any strategic, financial, operational, regulatory/compliance, regulatory risk, or any combinations of such risks as defined by RK-AC-1, Enterprise Risk Management, associated with an environmental aspect. The station SERs are reviewed annually in the Environmental MRM and are assigned and approved by the station Senior Leadership Team (SLT). LaSalle station currently has three Station Environmental Risks, which can cause a significant impact to the environment. Each has a Risk Management Plan which mitigate these impacts. The LaSalle Station Environmental Risks are as follows:

1. Waste Water Treatment Facility Lift Station Replacement
2. Refrigerant Management Program Changes
3. Diesel Tank Cleanouts by 2022

PROHIBITED FLOATABLE ITEMS (AT# 01172503-32-04)

Prohibited floatable items refer to the storage of items which may inhibit drainage flow in areas designated as “Flood Control Areas” in the UFSAR and supplements all existing housekeeping and storage procedures. Loose floatable items shall not be stored in flood-controlled areas. Floatable items include the following:

- Items composed primarily of fabric, foam, paper, plastic, rubber, or wood.
- Light-weight metal objects with the potential to block floor drains (e.g. buckets, sheet metal, or scrap metal).

The following are flood-controlled areas:

- ECCS Corner Rooms (673’ and 694’)
  a. LPCS/RCIC Rooms
  b. “A" RHR Pump Rooms
  c. “B"/ “C" RHR Pump Rooms
  d. HPCS Pump Rooms
- CSCS Pump Rooms (673’) and Mezzanines (694’)
- Diesel Fuel Storage Tank Rooms (694’)

This applies to all on-site personnel and to both units. For more information, please refer to Policy LSCS P.G. No. 134, Floatable Items prohibited in the Flood Protected Areas.
LaSalle Station rigorously takes actions to reduce radiation exposure. Strong ownership in reducing collective radiation exposure is exhibited by workers, supervisors, and managers who have internalized, advocate, and demonstrate job-site behaviors that promote excellence in radiological practices.

**Dose Initiative and Reduction Team (DIRT)**

LaSalle Station is striving to improve its performance with respect to collective radiation exposure, which is primarily driven by high source term, demonstrating the need for aggressive action to eliminate this source term and drive the station to better performance. LaSalle Station has developed an excellence plan, as implemented through the dose initiative and reduction team (DIRT), to provide an integrated approach to strengthen all facets of the station's radiation exposure performance.

**Whose Responsibility is it?**

Ultimately it is every worker's responsibility to maintain their dose ‘As Low as Reasonably Achievable’ (ALARA), and provide any possible dose saving ideas to the Radiation Protection Department.
LIMERICK

Limerick Important Phone Numbers

Control Room:

- Emergencies – Use the “Emergency Control RM / Fire” pushbutton on the page system or
  telephone Ext. 2911
- Normal calls – 2277

Security Shift Supervisor – 2043
Radiation Protection – 2222
Site Nurse – 2056

On-site and off-site assembly areas

If plant accountability is ordered, personnel will report to the following onsite assembly areas:

- Location designated in the message broadcast over the PA system.

If a site evacuation is ordered, personnel should follow the instructions given on the plant page announcement for offsite assembly (directions are available at the plant exit doors from the TSC) and report to the announced location:

- Heritage Field (Limerick Airport), or
- Phoenixville Service Building

Miscellaneous

At Limerick Generating Station (LGS), a colored stripe (with the unit number inside) around the wall of the room is used to differentiate between units.

Unit 1 has a Yellow stripe

Unit 2 has a Green stripe

RCA entry points

- Limerick - Normal entry points to the RCA are the 41 line and 5th floor Turbine Building.

FIRE PROTECTION

Actions to take upon discovery of a fire

- Use the “Emergency Control RM / Fire” pushbutton on the page system or telephone Ext. 2911 to notify the Control Room of the fire location regardless of whether the fire is out or was small.
- If in buildings other than the power block (Limerick Learning Center, Graham Leitch Building, Limerick Training Center, Personnel Processing Center, etc.), then actuate a fire alarm pull box if able, exit the building immediately, and proceed to a safe location. Use Ext. 2911 to notify the Control Room of the fire location.

Response to a station fire alarm

Upon hearing a fire alarm in-plant, remain clear of the fire area and follow instructions provided on the plant public address system. If a fire alarm sounds in a building other than the power block (Limerick Learning Center, Graham Leitch Building, Limerick Training Center, Personnel Processing Center, etc.), then immediately exit the building and proceed to a safe location.
GASEOUS SUPPRESSION SYSTEM SAFETY

The areas listed below are protected by Halon extinguishing systems:
- Auxiliary Equipment Room (separate for each unit)
- Remote Shutdown Panel
ENVIRONMENTAL

Effluent Discharge Permit (NPDES/SPDES Permit)

State Pollutant Discharge Elimination System (SPDES) permits are used to control plant effluent discharges from Ginna and Nine Mile Point to Lake Ontario.

These permits allow release of plant effluents and wastewaters from previously approved and monitored pathways to the environment.

An unplanned release of chemicals into storm drains, plant floor drains, sanitary systems, or plant systems could potentially damage effluent systems and/or violate the plant’s NPDES/SPDES permit. Prior approval is required for all effluent discharges.

In accordance with the requirements of its SPDES Permit, only clean water is allowed down drains. Clean water is defined as treated water that is acceptable for use in a nuclear reactor. Liquids in the plant that contain chemicals (e.g., surface prep solutions, cleaning chemicals, etc.) do not meet the criteria for “clean water.”

FIRE PROTECTION

Halon and carbon dioxide suppression systems are provided in the following areas:

Unit 1

Halon
H-3031: Auxiliary Control Room
H-4217: Emergency Condenser Steam Isolation Valve Room el. 298
H-9229 & H-9259: Telephone Rooms # 1 & 2 AB el. 261
H-6188: RSSB Electrical Equipment Room
H-6178: RSSB Control Room
H-9289: Security SAS
H-9279: Security CPU/Equipment Room

CO₂
Hazard C-2365 - Turbine Oil Tank Room
Hazard C-2092 - MG Motor generator sets
Hazard C-2113 - Power board room 103
Hazard C-2123 - Power board room 102
Hazard C-2141 - Diesel Generator 102
Hazard C-2151 - Diesel generator 103
Hazard C-1114 - H2 seal oil enclosure
Hazard C-1131 - Turbine oil reservoir room
Hazard C-3011 - Cable spreading room
Hazard C-1155EX - Generator exciter housing
NINE MILE POINT (Continued)

Hazard C-1185 - Turbo Generator exciter housing
Hazard C-1131TK - Turbine lube oil reservoir
Hazard C-3031 - Auxiliary control room

Unit 2
Halon
353SG- Control Bldg 288' 6" North West PGCC Relay Room Underfloor sections
354SG- Control Bldg 288' 6" North East PGCC Relay Room Underfloor sections
357XG/ 358XG- Control Bldg 288' 6" Computer Room Underfloor and Computer Room
362SG- Control Bldg 288' 6" South West PGCC Relay Room Underfloor Sections
374SG- Control Bldg 306' North West PGCC Control Room Underfloor Sections
375SG- Control Bldg 306' North East PGCC Control Room Underfloor sections
376XG- Control Bldg 306' Control Room Underfloor
381SG- Control Bldg 306' PGCC Benchboard Floor Sections
390XG- Radwaste Control Room, Radwaste Bldg. 279'

CO 2
Manual Fire Zone 253NL- RB 600V SWGR ROOM
Manual Fire Zone 333NL- CB DIV 1 STBY SWGR
Manual Fire Zone 336NL- CB DIV 2 STBY SWGR
Manual Fire Zone 342NL -HPCS SWITCHGEAR ROOM
Manual Fire Zone 395NL- RADWASTE SWGR ROOM DECON AREA
Manual Fire Zone 601NL- NORM SWGR 237 WEST
Manual Fire Zone 602NL- NORM SWGR 237 EAST
Manual Fire Zone 612NL- NORM SWGR 261 WEST
Manual Fire Zone 613NL- NORM SWGR 261 EAST/
Manual Fire Zone 726NL- TB EAST SWGR 277
Manual Fire Zone 733NL- TB LUBE OIL RESERVOIR ROOM/MANUAL−LOCAL APPLICATION
Manual Fire Zone 740NL- TB WEST SWGR 277/ AUTO-TOTAL FLOODING
Manual Fire Zone 757NL- ALT EXCITER ENCLOSURE/ MANUAL−LOCAL APPLICATION

NINE MILE POINT NUCLEAR POWER STATION: (See map on next page)

Security Access Points:
These are points where you may enter the fenced-in area of the site. To do this, you must pass through the Unit 2 Security Building.

Radiologically Controlled Area (RCA) and Access Control Points:
The RCA has Access Control Points at both Unit 1 and Unit 2. These are the only acceptable entry and exit points to the RCA.

In-Processing Building (P-Building):
Handles the in-processing of personnel and houses the following groups: Medical Services, Fitness for Duty, Security Access Unit and General Employee Training.

Owner Controlled Area Buildings:
Engineering Services Building, Nuclear Learning Center, Energy Information Center, P-Building, O-Building, Warehouse and Welding Shop are located in the Owner Controlled Area of NMPNS. All other areas reside within the Protected Area of the site.

Emergency Assembly Areas:
Areas located throughout the site in case of an emergency. Every individual on site is responsible for locating the nearest assembly areas to their normal work location.
NINE MILE POINT NUCLEAR POWER STATION LAYOUT:
PEACH BOTTOM

Peach Bottom Important Phone Numbers

Contacting the Control Room:

- Use the “Emergency Control RM / Fire” pushbutton on the page system or telephone at numbers 3911/4911 for emergencies. For routine calls, call 4221.

Miscellaneous

At Peach Bottom, a colored stripe (with the unit number inside) around the wall of the room is used to differentiate between units.

Unit 2 has a Yellow stripe

Unit 3 has a Green stripe

RCA entry points:
- Peach Bottom - 1st floor of Pearl Building and 4th Floor Administration Building

On-site and off-site assembly areas

If plant accountability is ordered, personnel will report to the following on-site assembly areas:

- Peach Bottom - Location designated in the message broadcast over the PA system.

If a site evacuation is ordered, personnel will report to the following off-site assembly areas as indicated on the plant page announcement:

- Peach Bottom - North Sub-Station or the Unit 1 / Training Center

FIRE PROTECTION

Actions to take upon discovery of a fire

If a fire alarm sounds when in buildings other than the power block (Site Management Building, Administration Building, Training Center, Personnel Processing Center, etc.), exit the building immediately and proceed to a safe location.

Gaseous Suppression System Safety

Cable Spreading Room- manually actuated CO2
Computer Room- manually actuated CO2
Unit 2 HPCI Room- manually actuated CO2
Unit 3 HPCI Room- manually actuated CO2
Emergency Diesel Generator Rooms- manually actuated CO2
Turbine 165 Unit 2 and 3- manually actuated CO2 hose reels

Contact the Station Fire Marshal or designee for further information.
PEACH BOTTOM (Continued)

ENVIRONMENTAL

We are committed to containing our radioactive material and preventing pollution of groundwater. Peach Bottom has 26 active groundwater monitoring wells installed as an early tritium detection device. Tritium is an isotope of hydrogen that produces very low levels of beta radiation with low health risk, but high public concern. The EPA limit for tritium concentration in drinking water is 20,000 picoCuries per Liter (pCi/L). While it occurs naturally, nuclear power generates a significant quantity in the reactor, which is then circulated throughout the plant systems in steam and water pipes.

OPEX: In April 2015, routine sample results showed that groundwater monitoring wells along the Unit 3 Turbine Building contained elevated levels of tritium. The investigation found contaminated water pooling in the U-3 Turbine Building had seeped into the groundwater through Moisture Separator seams and floor imperfections. The detection of elevated tritium prompted voluntary notifications to regulatory agencies and stakeholders. The source of the leakage was mitigated, and corrective actions have been implemented at the station. Tritium from system leaks has never been detected near the station boundary or in station/public drinking water.

Contaminated water pooling on the floor or leaks in the following areas are potential pathways to the environment:
- Unit 2 and Unit 3 Turbine Building Moisture Separator areas, 116’
- Recombiner Building 135’
- Unit 2 Condensate, Refuel Water Tank Moat
- Unit 3 Condensate Tank Moat
- Torus Dewatering Tank Moat

PEACH BOTTOM SIGNIFICANT ENVIRONMENTAL RISKS

Each year, site-wide risks are assessed for Environmental and Business Impacts. The current Peach Bottom Significant Environmental Risks are:
- Spill Prevention
- Tritium Management
- Waste Management
- 316(b) Cooling Water Intake Structure

RESPONSE TO STATION FIRE ALARM

Cardox/Halon/HFC-125 systems are designated by postings on the door to the room. An alarm will sound before the system is activated. Exit area immediately if alarm sounds or if a wintergreen odor (Cardox System) is detected. Initiating these systems may create an immediately dangerous to life or health (IDLH) atmosphere.

Additional actions may be required. Ensure you read and understand all signs and postings when working in areas equipped with Cardox/Halon/HFC-125 systems.
CONTROL OF HAZARD BARRIER DOORS

All Peach Bottom Hazard Barrier Doors are identified with the following sign.

![Hazard Barrier Door Sign]

Hazard Barrier Doors can be Fire, Security, Steam, Flood or Secondary Containment. All Hazard Barrier Doors SHALL be physically verified closed and latched after passing through the door. This is accomplished by either pushing or pulling on the door to verify it is latched.

In order to adequately verify the security function of a water tight door, the door must be closed, time must be allowed for the security solenoid to engage, the door must be challenged, and then the wheel must be dogged closed.

BLUE LIGHT SECONDARY CONTAINMENT DOORS

Technical Specifications require at least one inner or outer door in each access to the Secondary Containment (Reactor Building) to remain closed; the intent of which is to not breach the Secondary Containment. Simultaneous opening of both an inner and outer Secondary Containment access door causes a local “blue light” alarm. If this occurs, immediately close either the inner or outer door to restore the Secondary Containment integrity.

PRINCIPLES FOR AN ENGAGED, THINKING WORKFORCE (SOER 10-2)

OPEX: CHK-48A SWING ARM / SCAFFOLD INTERFERENCE IR Number: 1680741

PEACH BOTTOM

On 7/11/2014, during the U2 A RHR Loop testing, when the 2A RHR pump was secured the torus level began to rise. Subsequent investigation found that the 2A RHR check valve swing arm was contacting a horizontal scaffold pole which prevented the check valve from completely closing. Operations closed the valve by pushing the check valve arm slightly and it slid past the scaffold pole. The position of the scaffold pole did not prevent interference with the check valve arm for the full range of motion.

This scaffold was originally built in February to support the core bore for the U2 RHR cross tie modification. Scaffold has been added to the original build twice to support an area room heater relocation and work associated with the RHR cross-tie flow transmitters. Reviews of these moves would not have specifically changed the configuration of this particular horizontal pole. Operations waived the post build inspection for the original build.

Engineering performed a walkdown for the original scaffold on 5/6/14 and for the additional attached builds on June 26th to support 50.59 evaluations for scaffolds erected longer than 90 days. None of these inspections identified that the cross member had the potential to impact the check valve motion.
Two probable causes:

a. The original scaffold or subsequent modifications did not provide appropriate clearance from the check valve arm through the full range of motion and it went undetected by the post build inspections. Review of the scaffold request form for the later modifications indicates that the post installation walkdowns by operations were not performed as required. The RHR PVF was run successfully on 4/29/14 after the initial installation and one modification.

b. The scaffold was modified during the actual work by workers in the field during either the core bore or the room area heater work and was not precisely placed back in the correct location. Interviews with the individuals involved with this work will be conducted to determine if any scaffold was disturbed.

Another cause that was considered was that the scaffold moved due to the actual work due to vibration or agitation. This was ruled out due to multiple seismic clamps being utilized by the scaffold.
QUAD CITIES

Quad Cities Important Phone Numbers

<table>
<thead>
<tr>
<th>Service</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency</td>
<td>2211</td>
</tr>
<tr>
<td>Security</td>
<td>2940</td>
</tr>
<tr>
<td>Radiation Protection</td>
<td>2753, 2754</td>
</tr>
<tr>
<td>Site Nurse</td>
<td>4204</td>
</tr>
</tbody>
</table>

COMMUNICATIONS

Throughout the plant, there are various locations designated as “Do Not Transmit” or “No Radio Use in This Area” zones. These zones are typically signified by orange and white striped areas on the floor, or through the use of signage. At Quad Cities Station, cell phones and Blackberries must not be taken into the power block or any radio-free zone. Laptop computers must have their wireless capability disabled before entering these areas. Additionally, flash devices and digital cameras are not allowed to be used in radio-free zones.

Motorola MTS 2000 radios must be placed in ‘Transmit Inhibit’ mode or turned off prior to entering restricted zones. These radios will transmit automatically when they detect an incoming call if they are not placed in ‘Transmit Inhibit’ mode (see insert). QCOP 9000-04, Plant Radio System Operation, details these requirements along with the operating instructions for the station portable radios.

Utilize Pre-Job Briefs to address issues with radio transmission at the job site and during transit. Use Human Performance tools such as STAR, questioning attitude, and the 2-minute drill at the job site.

MISCELLANEOUS

At Quad Cities, a colored stripe (with the unit number inside) around the wall of the room is used to differentiate between units.

Unit 1 has a Blue stripe

Unit 2 has a Yellow stripe

RCA ENTRY POINTS:

Quad Cities – The normal RCA entry / exit point is on the 1st floor Service Building. An additional RCA entry / exit point is at the Unit 2 Turbine Building 595’ and is used during outages.

HAZARDOUS INDUCED VOLTAGES

Due to the location of the transmission lines at Quad Cities station, a heightened awareness is required:

Qualified electrical workers must review work to be performed by unqualified electrical workers, where:

- Any work that will take place within 70 feet of energized overhead conductors (such as: East of the Reactor Building where 345KV lines pass overhead).
- Cranes, booms, lifts or ferrous metal will be operated if used within 50 feet of energized lines.
- In-plant work will be performed within 30 feet of the main generator, line buildings, isophase bus ducts or high current bus ducts.
QUAD CITIES (Continued)

SECURITY

Security Pre-Access Facility
Prior to entering the Security Gatehouse, all individuals will process through the “Pre-Access Facility” (PAF). During normal business hours, the Visitor/Vehicle Registration Officer (VVRO) is located at the PAF. All visitors and vehicles will be processed at this desk. When the VVRO is not posted, individuals who are not badged will need to call into the gatehouse (using wall phone) Ext. 2943 or 2940.

Security Main Access Facility (MAF)
When entering the MAF entryway (foyer), you will need to remove outer garments and headgear (other than religious headgear) that can be removed without going under the feet or over the head prior to entering the Explosive Detector. Place garments into a possessions tub which is stacked on the tables to be put through the X-Ray machine for evaluation. Refer to the sign posted in the foyer for specific items to be removed. Remove any metal you have in your pockets and place in the tub along with any hand carried items. Laptops must come out of any carrying case and be run through the x-ray separate from the case. Place your possessions tub on the x-ray belt and process through the detectors. Once you have cleared the metal detector, take the possessions tub containing your items from the x-ray belt over to a table to empty the tub. Place the empty tub on a cart where they are stacked.

Safeguards Information
Electronic transfer (fax, e-mail) or development/revision of safeguards information on any network computer is PROHIBITED.

INDUSTRIAL SAFETY
The tornado siren is located at the top of the Service Building and is controlled by Security. The siren is a wailing tone that rises and falls.
QUAD CITIES STATION
BELT MANLIFT SAFETY

MANLIFT is restricted to EXELON EMPLOYEE USE ONLY

Humphrey invented the belt manlift in 1887 and over the years new technologies and procedures have been developed to dramatically increase user safety. The OSHA regulations on manlifts can be found in 29 CFR 1910.68.

Rules for use:
The following are some rules for manlift use:

- Only one rider per step.
- No tools or other objects of any kind can be carried (except those that can be completely enclosed in a pocket or carried in a close-fitting tool belt).
- Grasp the handhold firmly with both hands before placing your foot on the step.
- Step on or off only at floor levels.
- Do not leap to catch a step that has passed the floor landing. (An individual did fall 23 feet (595’ to 572’ elevation), down the manlift here at Quad Cities Station when he stepped down to catch a step that had already passed the floor level)
- Face the belt directly.
- Keep both feet square on the step.
- Keep landing spaces open and clear of any objects that might interfere with employees getting on or off the manlift.
- If the manlift stops, be sure everyone using it is in the clear before starting it up again.
- Report promptly to management any defect or irregularity in the operation of the manlift.
- Do not use the manlift as a freight-lift.

There are specific inscriptions that must be stenciled on the belt. The following is the approximate wording: Face the Belt, Use the Handholds, To Stop, Pull Rope in Direction of Travel. In addition, a directional arrow pointing in the direction of belt travel must be marked on the belt (above each handhold). Immediately below the top floor a sign must be displayed with the following words: "TOP FLOOR - GET OFF". A warning sign must be displayed at the bottom or bottom landing and have the following words: BOTTOM FLOOR - GET OFF. (AT 01165155 05) Remember: The rules are for your safety, so follow them when using the manlift.
QUAD CITIES (Continued)

FIRE PROTECTION
At Quad Cities Station the Unit 1, Unit 2 and Unit ½ Emergency Diesel Generator Rooms, the Unit 1, Unit 2 and Unit ½ Emergency Diesel Generator Day Tank Rooms and the Unit 1 and Unit 2 Generator Exciter Housings (Generator Doghouse) are protected by Cardox Systems. Halon Systems protect the site Telephone Room, the Simulator Main Control Room, the Simulator Computer Room, the New Computer Room and the New Records Storage Building. If a Cardox or Halon system is initiated, contact the site emergency number at 2211.
Upon hearing an in-plant fire alarm, remain clear of the fire area and follow instructions provided by the public address system. If a fire alarm sounds in a building other than the power block (Service Building, Professional Learning Center, Outage Support Building, etc.), then immediately exit the building and proceed to a safe location. Do not re-enter the building until notified a safe condition exists. Notification will be provided by the public address system.

ACTIONS FOR ENTRY INTO ENERGIZED ELECTRICAL PANELS (PM-10-005)
Individuals requiring access to panels will adhere to the following:

All persons shall have permission from an on-shift Operations Supervisor prior to opening any panel.

• Operations shall provide a robust challenge to ensure proper precautions against a configuration control event are taken.

Personnel will follow applicable industrial safety requirements when opening panels. Permission shall be obtained from the applicable Unit Supervisor immediately prior to opening the panel.

Individuals shall not break the plane of the open panel without express permission from Operations. The Unit Supervisor shall be notified when the applicable task is complete and the panel is closed.

WATERTIGHT SUBMARINE DOORS
Watertight submarine doors and internal flood barriers are designed to prevent the failure of critical plant equipment in the event of internal plant flooding. It is the responsibility of all personnel at Quad Cities Station to verify that watertight doors are properly closed and dogged. If the door isn’t properly closed and dogged it will be unable to stop water from entering the room.
Flood barriers protect safety-related systems by separating important areas from potential internal flooding. These systems include:

• High Pressure Coolant Injection (HPCI)
• Core Spray Systems (CS)
• Reactor Core Isolation Cooling (RCIC)
• Residual Heat Removal System (RHR)
• Residual Heat Removal Service Water (RHRSW)
• Diesel Generator Cooling Water Pumps (DGCWP)

In the event that you find a sub-door that wasn’t closed properly or is damaged, call the Control Room immediately.
**QUAD CITIES (Continued)**

## EMERGENCY RESPONSE/PREPAREDNESS

### Quad Assembly Areas

The Emergency Siren is a 2-minute constant tone over the PA system. Listen and respond to the announcements. Stay out of affected areas and proceed to the designated assembly areas, if required.

<table>
<thead>
<tr>
<th>Cafeteria</th>
<th>Room 225 (Front-Half):</th>
</tr>
</thead>
</table>

- **Technical Support Center (TSC):**
  - ERO Directors and other TSC personnel currently staffing the facility

- **Outage Support Building (OSB) – First Floor**
  - Construction and Contractors

- **Room 225 (Back-Half):**
  - Engineering, OAD/Substation, Records Management

- **MMD Break Area/Machine Shop:**
  - Mechanical Maint., Electrical Maint., Radiation Protection (except Station Laborers)
  - Personnel located in Break Area and currently staffing the OSC

- **Outage Control Center (OCC):**
  - OSC Director, Group Leads and staff located in the OCC and currently staffing the OSC

### Off-Site Assembly Areas

If a site evacuation is ordered, personnel could report to one of the following off-site relocation areas as indicated on the plant page announcement:

- **ERO Off-Site Staging Area/Relocation Center**
  - 14439 Crosby Road (Rt. 78), Morrison, Illinois 61270-9618
  - or
- **Byron Station**
  - 4450 North German Church Road, Byron, Illinois 61010-9794
Notes:
Normally accessible RCAs at Quad Cities are contained within the Turbine Building, Reactor Building, and RadWaste Buildings. Satellite RCAs located inside the protected area are posted as such. Contact Radiation Protection for information if there is a need to enter those areas.
THREE MILE ISLAND

Three Mile Island (TMI) Important Phone Numbers

Contacting the Control Room:
- Use the plant page system or telephone phone numbers 5579 or 8070 for routine calls. For emergencies, use telephone number 5911 to contact the Control Room.

On-site and off-site assembly areas

If plant accountability is ordered, personnel will report to the following on-site assembly areas:
- TMI - Location designated in the message broadcast over the PA system.

If a site evacuation is ordered, personnel will report to the following off-site assembly areas as indicated on the plant page announcement:
- TMI - Training Center Parking Lot or other location designated in the message broadcast over the PA system.

RCA entry points
- TMI - Normal entry points to the RCA is the Rad Pro Control point, 305’ elevation of the Control Building.

Areas of the station that are controlled by Security including the Owner Controlled Area (OCA), Protected Area (PA), and Vital Areas (VA)
- At TMI, an “Exclusion Zone” which is identified with orange colored chains and postings, surrounds the PA fence and is intended to create an isolation or buffer zone between the OCA and PA. No entry into this area is allowed without permission from Security.

FIRE PROTECTION

Actions to take upon discovery of a fire
- At TMI, if a fire is discovered on-site sound the local alarm (if installed) and notify the Control Room at extension 5911. If a fire is discovered at the Off-Site Training Center dial 911 for offsite response.

Response to a station fire alarm
LEAVE the area, WALK – do NOT run, to the exit. Report to the designated gathering area or as directed by plant page announcement.

GASEOUS SUPPRESSION SYSTEMS
- ISFSI Security Building – Armory, Electrical Room, Battery/UPS Room and Alarm Station
- South Office Building 1st & 2nd Floor Records Vaults – HFC 125 Systems

EVENTS THAT CHANGED THE INDUSTRY (ATI #1131916-13)

Core Damaging Loss of Coolant Event
March 28, 1979 - Three Mile Island 2 (PWR)
This was the worst accident at a U.S. commercial nuclear power plant, resulting in the meltdown of half of the reactor core and permanent closure of the plant. Although no injuries occurred, public confidence in the nuclear industry was severely shaken. Sweeping changes in emergency planning, operator training, emergency procedures, human factors engineering, regulatory oversight, and a number of other areas were the result. Nuclear utilities formed the Institute of Nuclear Power Operations to promote excellence in utility operations of nuclear power plants.
THREE MILE ISLAND (Continued)

How It All Started
The accident occurred when an open power-operated relief valve failed to reset during a plant transient, and operators did not realize it was open. This caused the core to overheat because reactor coolant escaped through the open valve. Operators were confused by the many alarms in the control room and took a series of actions that made plant conditions worse by reducing coolant flow through the core. As the core overheated, the zirconium fuel cladding ruptured and the fuel pellets began to melt.

What Happened
At 4 a.m. on March 28, 1979, the plant experienced a loss of main feedwater during a simple maintenance activity while at 100 percent power. Safety systems automatically shut down the main turbine and started the emergency feedwater pumps. However, the emergency feedwater pumps failed to pump water to the steam generators because system valves were inadvertently left closed after an earlier test. With no feedwater, the steam generators eventually stopped removing heat from the reactor, causing the temperature and pressure of the reactor coolant to increase, which resulted in the power-operated relief valve opening to relieve pressure. Instead of closing as it should have, the valve remained open. There was no indication of the actual position of the power-operated relief valve in the control room, so operators did not recognize that it was open. As a result of the open relief valve, system pressure decreased to the point where the safety injection system automatically initiated. Operators erroneously thought the core was covered with coolant because of pressurizer level, so they drastically reduced injection flow. They did not realize that a steam void had formed in the reactor vessel head, which grew to the point of uncovering fuel. Over half the core melted as a result. The reactor was permanently shut down and defueled, after only three months of operation. Ironically, a similar event had happened two years earlier at Davis-Besse, except that the open power-operated relief valve was recognized and closed by operators, stopping the event with no consequences. Weaknesses in industry programs for sharing information prevented the Three Mile Island operating crews from benefitting from the lessons learned from Davis-Besse.

How This Event Shaped the Nuclear Power Industry
- Many plant design and equipment requirements were implemented, including piping systems, auxiliary feedwater systems, containment isolation, and automatic shutdown and accident mitigation capabilities. The process of implementing the modifications took years.
- Public confidence in nuclear power was badly shaken, and support for nuclear projects evaporated. Utilities suspended plans for new nuclear projects, and some plants under construction were not completed.
- Many improvements in human factors design within the control rooms were made to assist operators in diagnostics and discernment.
- Operator training was substantially strengthened. Physics, math, and other fundamentals became requirements of operator training, and site-specific simulators were adopted to further enhance the knowledge and skills of licensed operators.
- Symptom-based emergency operating procedures were developed to ensure operators could effectively diagnose and respond to emergency and abnormal situations.
- Many changes in emergency preparedness standards were made, including prompt regulator notification of problems.
- Substantial changes to regulatory oversight were made, including inspection standards, how performance is determined, periodic reports, and analysis of vulnerabilities.
- The Institute of Nuclear Power Operations (INPO) was established to promote excellence in operations and to provide for sharing of lessons.