

# EXELON EAST SITE SPECIFIC STUDY GUIDE

**Rev. 13 – August 15, 2008**

**This student guidebook is provided as a ready reference only  
to note Exelon East stations site specific items.**

**Table of Contents**

**Oyster Creek/TMI/Limerick/Peach Bottom**

Fitness For Duty ..... 3

Station Organization and Administration ..... 4

Nuclear Power Station Overview ..... 5

Nuclear Security ..... 6

Industrial Safety ..... 7

Fire Protection ..... 10

Emergency Response/Preparedness ..... 11

Radiological Orientation ..... 12

Radiation Worker Training ..... 12

Boric Acid Corrosion Control Program ..... 13

Environmental Awareness ..... 14

Nuclear Cyber Security ..... 18

Site Maps ..... 20

    Oyster Creek ..... 20

    Three Mile Island ..... 21

    Limerick ..... 22

    Peach Bottom ..... 23

---

---

## **Oyster Creek/TMI/Limerick/Peach Bottom**

### **I. FITNESS FOR DUTY**

*State the methods used to implement the AA and FFD program including chemical testing, behavioral observation training, Employee Assistance Program (EAP)/Employee Assistance Services (EAS), and the company's chemical testing program.*

- To appeal a FFD confirmed positive drug or alcohol test, the individual must notify the Exelon East Security Manager in writing of the request for review. This request must be made within 10 days following notification of the positive test result.

*Explain the supervisor's role in the AA and FFD program including the steps for initiating appropriate corrective action.*

- If the Fitness For Duty concern is received in the form of an allegation of a past occurrence, rather than an immediate behavioral concern, contact Human Resources or the Security Department for guidance.

---

---

## STATION ORGANIZATION AND ADMINISTRATION

Issue reports are used for reporting, documenting, and evaluating problems at Peach Bottom, Limerick, TMI and Oyster Creek.

### *Miscellaneous*

- Establishing and maintaining a good Safety Culture is essential to the safe operation of our nuclear facilities. A good safety culture helps ensure that safety related issues at these facilities receive due priority in view of their importance.
- Two industry recognized attributes of a good Safety Culture are being sufficiently self-critical and having a questioning attitude
  - *Self-critical* is defined as: “Exhibiting open communication and a questioning attitude, while embracing the opportunity to learn through the open recognition of problems and deficiencies.” In a self-critical organization, employees are free to raise Safety and Compliance issues and concerns without fear of retaliation.
  - A *questioning attitude* is also a part of a sufficiently self-critical organization. Having a questioning attitude infers that:
    - Work is approached in a cautious, questioning manner
    - Tasks are not pursued in the face of uncertainty
    - Past performance is considered during the performance of duties
    - Personnel are alert for unusual conditions in the workplace
    - Questions raised are pursued and resolved

---

## II. NUCLEAR POWER STATION OVERVIEW

*Identify the appropriate communication system to be used for: reporting emergencies, locating an individual in the station and lengthy discussions.*

- Contacting the Control Room:
  - TMI - Use -the plant page system or telephone phone numbers 8069, or 8071 for routine calls. For emergencies, use telephone number 5911 to contact the Control Room.
  - Oyster Creek - Use the plant page system or telephone at phone numbers 4911 for emergencies or 4666 for routine calls.
  - Peach Bottom/Limerick - Use the “Emergency Control RM / Fire” push button on the page system or telephone at phone numbers 2911 at Limerick and 3911/4911 at Peach Bottom for emergencies. For routine calls, 2277 at Limerick and, 4221 at Peach Bottom.

---

### III. NUCLEAR SECURITY

***Recognize the types and purpose of each type of photo identification badge used at the station and where it will be worn, and actions taken if lost or found.***

- Unescorted access badges (Protected Area badges) require successful completion of Plant Access training and other requirements. This badge is composed of:
  - The front of the badge has the employee's picture, name, and a unique badge number.
  - The badge serves as a keycard or has a separate keycard attached to access the Protected Area turnstile and any Vital Area doors the employee is authorized to enter.
- At TMI, Peach Bottom, Oyster Creek, and Limerick, protected area badges are self-service.

***Describe procedure for entering and exiting the station (protected area and vital doors).***

- At TMI, Peach Bottom, Oyster Creek, and Limerick, the hand geometry reader at station entry will prompt “Place (or insert) Hand” and red lights will illuminate. Insert your hand and squeeze the pins until all red lights go out. Finally, the green proceed light will illuminate on the card reader and the rotogate/turnstile will unlock.
- At Oyster Creek, TMI, Peach Bottom and Limerick, the keycard reader is an insert style.

***Identify 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. Authorized workers working in this area are required to wear a Security provided identification vest.

---

#### IV. INDUSTRIAL SAFETY

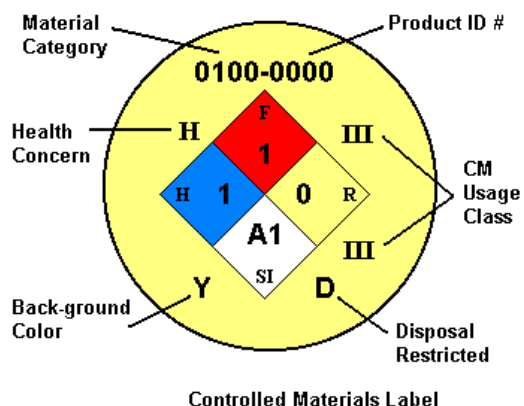
***State your industrial safety responsibilities regarding: Reporting of unsafe working conditions, reporting of industrial safety near-misses, reporting of work-related injuries/accidents, administration of first aid (if qualified), adherence to safety instructions (procedures and permits), observation of safety postings, barriers, tags, and signs, use of personal protective equipment and general location of safety equipment such as eyewash stations, first aid kits, and safety showers***

- At all sites, Special Condition Tag (SCT) allows, under very restricted conditions, a piece of equipment to be operated provided the Control Room provides clearance.
  - Special Nuclear Materials Tag is lime green. Reactor Engineering must be contacted prior to moving or removing any material displaying this tag.

***Recognize and discuss methods for reducing risk involved with the following potential health/industrial hazards: Use of asbestos on some Station components, electrical equipment, steam leaks, confined spaces, trip and fall hazards, heat stress, compressed gases, moving/rotating equipment, high noise areas, falling objects, eye hazards, hazardous chemicals, including where information may be obtained explaining risks, hazards, and handling associated with a chemical or toxic substance.***

- At all sites, in order to use any scaffolding, you must first attend a scaffolding training class.

- At TMI, PB and LGS, the CMP labeling system consists of colored background circles. These circles tell the user where the material can be used. Below is an example of the circle:



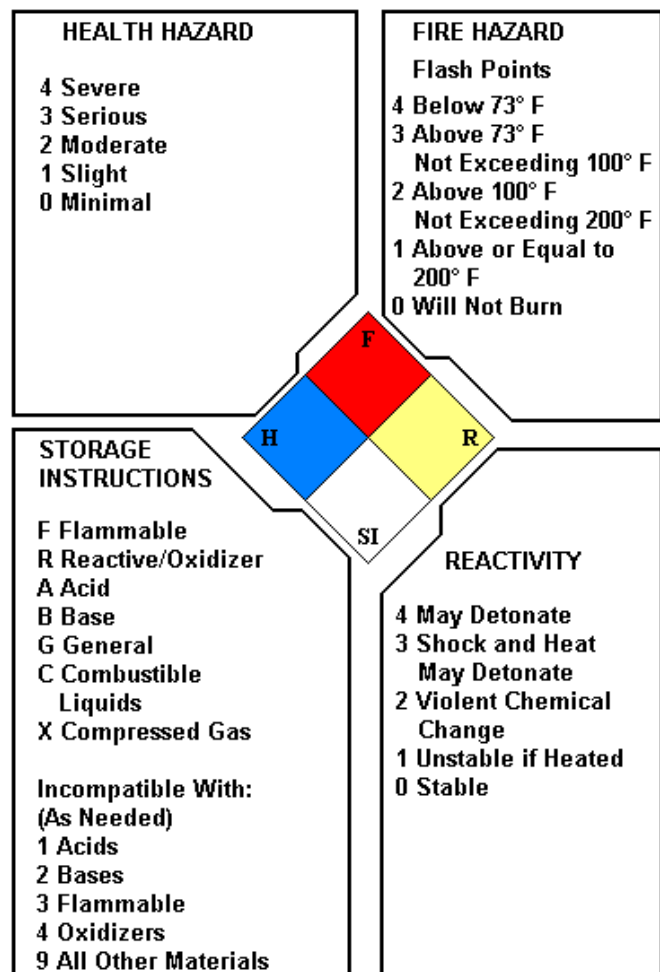
- At Oyster Creek, the New Jersey Community Right to Know Act requires a more detailed label on containers and certain plant equipment. This is a typical Oyster Creek CMP label.

MSDS#: 0100-0100		Usage Class: III	
Product Name: Joe's Oil			
Hazard Class: Health 2		Flammability 3 Reactivity 2	
Ingredient Name		CAS #	
Ingredient Name		CAS #	
Ingredient Name		CAS #	
Ingredient Name		CAS #	
Ingredient Name		CAS #	
Health Hazard: Y		Disposal Restricted: Y	
Storage: Flammable			

- Below are the different color codes and a corresponding description of where the material may be used:

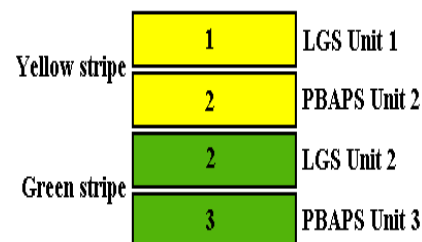
Usage #	Label Color	Classification
I	<b>B = Blue</b>	Critical system use
II	<b>G = Green</b>	Critical system use but must remove from the component (i.e. wipe off) in accordance with manufactures recommendations prior to system heat up
III	<b>Y = Yellow</b>	RCA use but not for critical system use and cannot be used on austenitic stainless steel, or inronel components that come into contact with primary coolant
IV	<b>O = Orange</b>	Office / Lab / Control Room / Outside Power Block - No RCA
V	<b>R = Red</b>	Outside power block use only

- To obtain the Material Safety Data Sheet (MSDS) for a product, search the Controlled Materials Program database or contact your supervisor. The CMP label provides information to quickly find the exact MSDS (i.e. Product name, Category and Product ID)
- At all sites, the hazard ratings are determined by the below criteria:



*Miscellaneous*

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



## V. FIRE PROTECTION

### *State actions an individual is required to take upon discovery of a fire.*

- At Peach Bottom and Limerick, 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.
- At Oyster Creek and TMI, if a fire is discovered off the main site, sound the local alarm (if installed) and call the local Fire Department (9-911) and notify Security at Extension 4954 at Oyster Creek or the Control Room at extension 8069 at TMI.

### *State individual responsibilities regarding the control of fire loading (wood, solvents, oil) and the disposal of flammable materials.*

- The following fire protection zones are established:
  - Combustible Free Zones (CFZ) - an area of the plant in which no combustible material (fixed or transient) is permitted to be stored or staged unless compensatory actions are in place. At Peach Bottom and Limerick, orange diagonal lines painted on the floors and/or walls identify these zones. At TMI and Oyster Creek, signs identify combustible free zones.
  - Transient Combustible Free Zones (TFZ) - an area of the plant in which no transient combustible material is permitted to be stored or staged unless compensatory actions are in place. At Peach Bottom the floors are painted red. At Limerick, orange diagonal lines identify these zones. At TMI and Oyster Creek, signs identify transient combustible free zones.

### *Recognize and state the response to a station fire alarm.*

- Cardox / Halon / HFC-125 systems are designated by postings on the door to the room. An alarm will sound before 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 posting when working in areas equipped with Cardox/Halon/HFC-125 systems.

### *Miscellaneous*

- At TMI, fire wardens will assist with employee exit in the event of a fire or other emergency in office buildings outside the plant.
- Notify the Control Room of the fire location via the phone or page.

---

---

## **VI. EMERGENCY RESPONSE/PREPAREDNESS**

*State the location of the employee's assigned assembly area.*

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

- Limerick, Peach Bottom, Oyster Creek, and TMI - Location designated in the message broadcast over the PA system.

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

- Limerick - Cromby Generating Station or the Limerick Airport
- Peach Bottom - North Sub-Station or the Unit 1 / Training Center
- Oyster Creek - Manchester Township High School or the Pinelands Regional High School
- TMI - Training Center or other location designated in the message broadcast over the PA system.

## **VII. RADIOLOGICAL ORIENTATION**

*State the colors and symbols used on radiological postings and identify the methods used to mark radiological areas, e.g., signs, ropes, tape.*

- In addition to the standard radiological posting when radiography is in progress, Oyster Creek utilizes an additional special octagon-shaped warning sign posted at the boundaries of areas where radiography is in progress.

## **VIII. RADIATION WORKER TRAINING**

### *Radiation Worker Training Miscellaneous*

- Radiation Dosimetry
  - Electronic Dosimeter, ED's provide both Accumulative Dose and Dose Rate alarms. An audible steady tone indicates an alarm for dose rate. An alternating tone indicates the alarm for accumulated dose. If you get an alarm, exit the area and contact Radiation Protection.
  - Peach Bottom/TMI/Oyster Creek and Limerick utilize Siemens Electronic Dosimeters.

#### **SIEMENS EXIT**

The Exit Process is initiated by inserting an ED into the access control workstation (ACW). Workers must leave the ED inserted until the ACW notifies them to remove the ED.

The workers are expected to review their exposure information and acknowledge by selecting any key to continue.

**Once the ED has been inserted, the Exit Process cannot be canceled/terminated.**

A screen is displayed notifying the worker that the Exit has been completed successfully.

Remove the ED as instructed.

- RCA entry points
  - TMI - Normal entry points to the RCA is the Rad Pro Control point, 305' elevation of the Control Building
  - Oyster Creek - Entry points into the RCA are located at the NE corner of the Reactor Bldg., Bldg 3/Turbine Bldg SW entrance and the third floor MOB.

- Limerick - Normal entry points to the RCA are the 41 line and 5th floor Turbine Building
- Peach Bottom - 1st floor of Pearl Building and 4<sup>th</sup> Floor Administration Building

## **Boric Acid Corrosion Control Program Pressurized Water Reactors Three Mile Island**

Exelon Corporation maintains a Boric Acid Corrosion Control Program at Pressurized Water Reactor (PWR) Sites. The applicable sites are Braidwood, Byron, and Three Mile Island.

Why do we have a Boric Acid Corrosion Control Program?

- Industry events have revealed instances of corrosion of plant components valves, vessels, man ways, etc. due to exposure to borated water. The most notable event was the Davis Besse Reactor Head Degradation Event. Approximately 6” of the reactor head was corroded away due to exposure to borated water / boric acid leakage over a long period of time. Valve and pump bolting has also been corroded away due to exposure to borated water and boric acid.

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. Boric acid is added to the water contained in the reactor coolant system 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.

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.

What 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 a 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 if possible. If not, contact the Site Boric Acid Corrosion Control Program Owner so the issue can be investigated.

## **Environmental Awareness**

### **OBJECTIVES**

**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; and
- 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 **Environment 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 Environment Policy**

- Reinforces Exelon's commitment to constantly improve its environmental performance
- Establishes full compliance with environmental regulations as the minimum level of acceptable performance
- Ensures, that we will strive for leadership in environmental management and that we will partner with the communities we serve, to preserve, restore and enhance the environment
- Requires that we utilize natural resources more efficiently



### **Exelon's Environment Policy Implementation**

#### **This policy shall be implemented by establishing and maintaining:**

- Annual objectives and targets 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.

### **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 US EPA can be a valuable asset when their support is needed for making permit changes.

### Benefits of Environmental Programs

#### Reduce Environment 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; and

Reporting all observed chemical or petroleum spills to the Main Control Room



### Benefits of Environmental Programs

#### Minimize potential stormwater impacts, as required by the stations surface water permits (NPDES), by:

Developing and maintaining a **Preparedness Prevention and Contingency (PPC) Plan**.

Ensure the PPC plan includes:

- Engineering control devices (e.g., secondary spill containment)
- Spill Kits
- Good Housekeeping Practices
- Soil and Erosion Control Measures
- Cover materials stored outside

Ensuring only authorized releases occur into the Stormwater Systems (e.g., fire hydrant flushes, irrigation systems foundation dewatering, etc.)

Contacting the control room before releasing any material into the stormwater system.

---

Reporting all observed releases to the control room.

### **Environmental Performance and You**

#### **All employees and badged personnel environmental responsibilities include:**

- Ensuring **compliance** with applicable environmental laws and regulations;
- 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**; and
- ensuring any visitors you are escorting conduct their activities in accordance with the environmental policy, procedures and the requirements of the environmental management system

#### **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 share ideas for improving environmental performance.**

## Nuclear Cyber Security

Following 911, the nuclear industry focused on implementing physical security measures at the nation's nuclear power plants. With the implementation of physical security measures complete, regulators then focused on improving nuclear cyber security.

The Nuclear Energy Institute (NEI) generated NEI 04-04, Guidelines for the Implementation of a Nuclear Cyber Security Program. Exelon's Chief Nuclear Officer (CNO) and all other nuclear utility CNOs agreed to develop & implement a standardized cyber security program in accordance with NEI 04-04.

Cyber security is about protecting Exelon Nuclear's **critical digital assets**.

What is a Critical Digital Asset (CDA)?

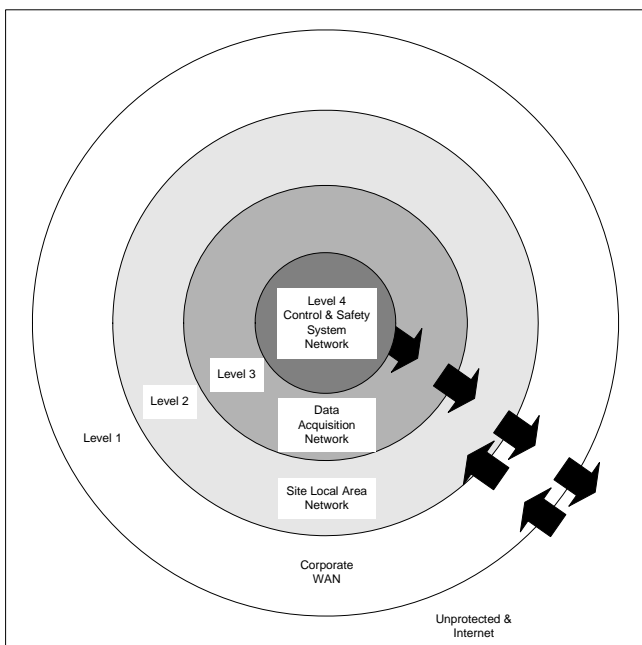
A **CDA** is a **digital device** that plays a role in the operation or maintenance of a **critical system** and can impact the functioning of that **critical system**. A **critical system** is any system that is nuclear significant (i.e., important to safety, security, or emergency response), required for continuity of power, or select business/efficiency assets. A CDA may be a component or a subsystem of a critical system, may itself be a critical system, or may have permanently installed direct communication pathway to a critical system (either hard-wired or wireless).

The cyber security assessments conducted by Exelon evaluated the **critical design parameters** of each station's CDAs. The **critical design parameters** evaluated are:

- Physical location (protected area, vital area, etc.) and
- Network location (Control & safety system network, data acquisition network, local area network, or corporate wide area network).

The cyber security assessments found the following:

- On the average, an Exelon site has 500 CDAs
- Most new instrumentation upgrades involve digital technology
- New Plant designs have a significant number of digital components that represent potential CDAs and as such the role of cyber security plays in our day-to-day work will only increase.



The defensive model of cyber security employs the recognition of four distinct access levels of Exelon's network infrastructure:

- Level 1: The wide area network (WAN) that connects Exelon sites to one another
- Level 2: The local area network (LAN) that connects desktop users at each site
- Level 3: The data acquisition network (Comprised chiefly of the plant process computer system network and associated components that collect plant system data. No plant control is allowed in this level).
- Level 4: The control & safety system network (This network includes all plant control systems. CDAs that may exist in Level 4 are considered to be "isolated" if no

network connectivity exists with another system outside of Level 4).

**CC-AA-14, Cyber Security Program Description** describes our cyber security program.

**CC-AA-213, Nuclear Cyber Security Program**, provides steps and guidance for maintaining cyber-security in levels 3, and 4.

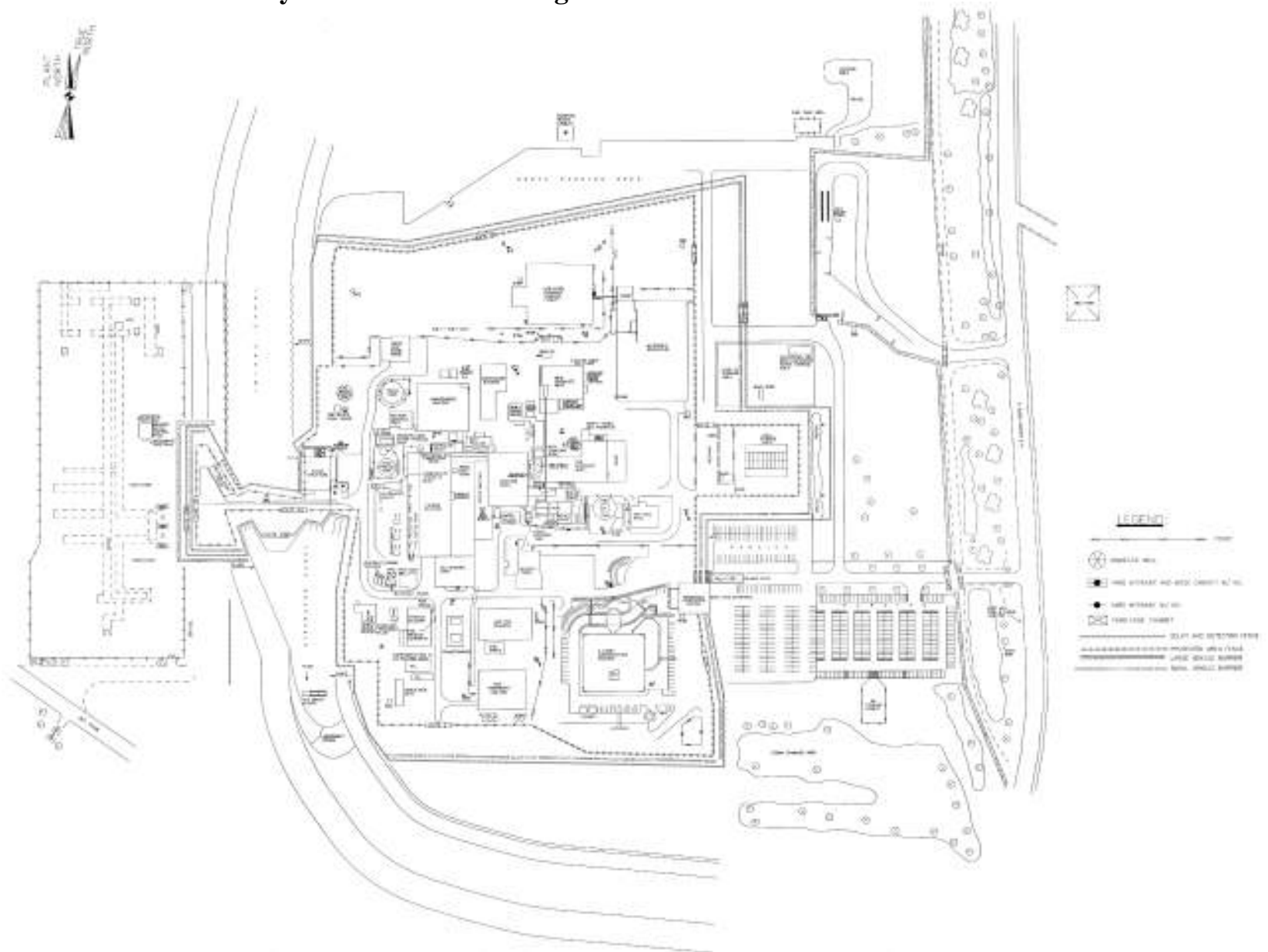
Exelon relies on the Business Services Company (BSC) to provide security in levels 1 and 2. All employees are granted access to levels 1 & 2. Care in these levels will assist in protecting levels 3 & 4.

The level of Cyber Security of a Critical Digital Asset can be negatively impacted by the inadvertent actions of authorized users. These types of errors are a significant contributor to cyber risk. Care should be taken to understand the results of any changes to CDAs so that adequate Cyber Security is maintained, as designed.

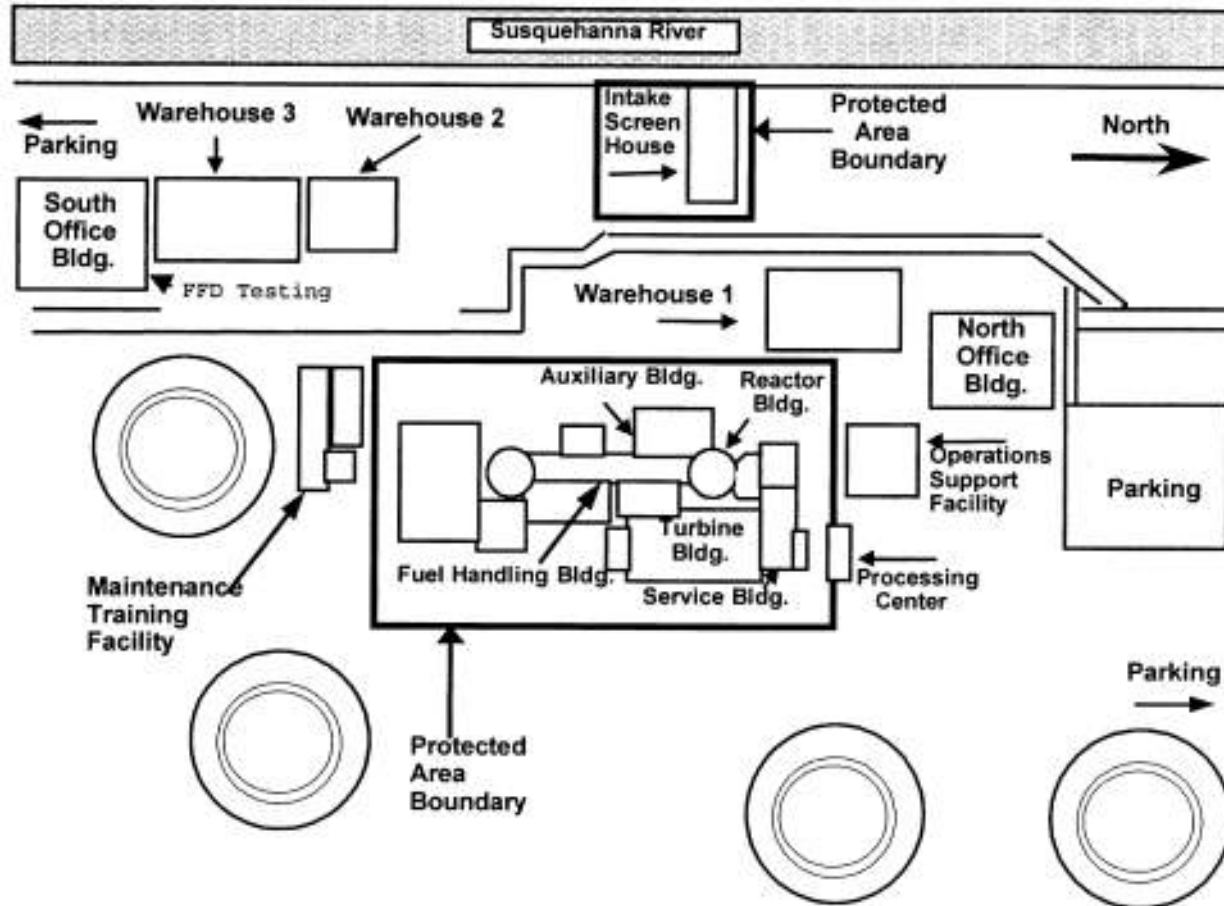
## What can we, as individuals do to support cyber security?

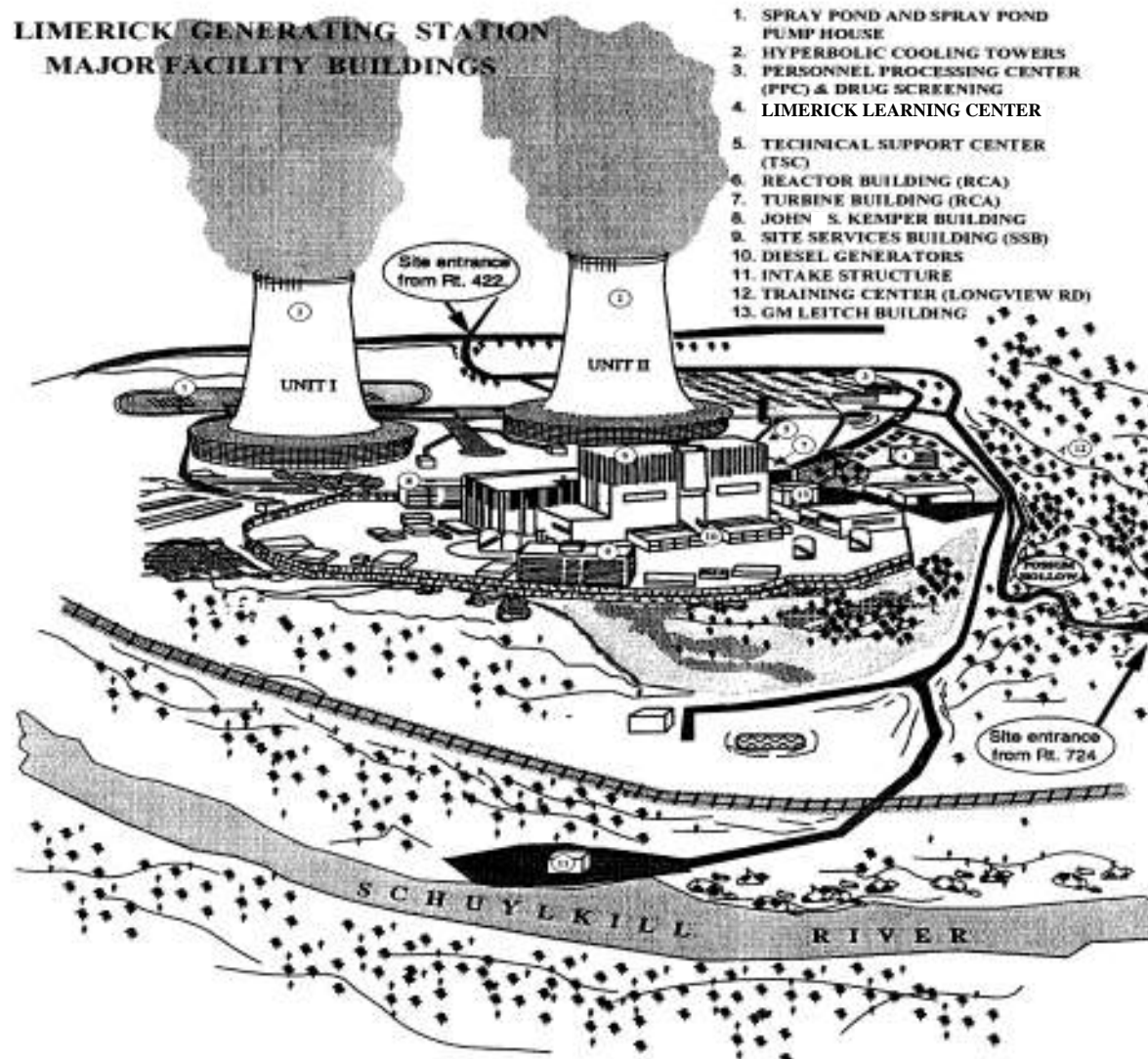
- **Be careful with your passwords**
  - Change your password frequently (every 90 days)
  - Choose strong passwords
    - Avoid common sequences (e.g., Jan01, abc123, etc)
    - Passwords should be at least 8 characters in length.
    - Use a combination of alphabetic, numeric, upper and lower case and non-alphabetic characters
    - Don't use birthdays, names, user IDs, or any other code that could be easy to guess.
    - Avoid "generic" passwords
    - Do NOT share your passwords with anyone,
- **Scan media** you load onto company digital assets (computers, PDAs, etc.).
  - From thumb drives, CDs, external drives, etc.
- **Secure CDA related Laptops** and Log-Off when you are not using or stop working with a cyber asset.
- **Use care when interacting with Internet or downloaded materials** so as to avoid infection of computing resources.
- **Contact your supervisor** if you are assigned to conduct design work, maintenance, or testing on a critical digital asset, you MAY need more training.

# Oyster Creek Generating Station



### Three Mile Island Nuclear Generating Station





**Training Center** - leave site through Pissum Hollow making a left onto Longview Rd. The building will be a quarter of a mile on your left.  
**Technical Support Center (TSC)** - is located north of the GM Leitch Building. This is the Protected Area Access Point.

