

**REGION III
INSPECTION PLAN**

TYPE OF INSPECTION: TRIENNIAL FIRE PROTECTION BASELINE INSPECTION

INSPECTION MODULE: IP,711111.05T issued January 31, 2013

FACILITY: Byron Station, Units 1 and 2

REPORT NUMBER: 05000454/2016007; 05000455/2016007

INSPECTION DATES: June 6 – July 8, 2016


ENTRANCE MEETING: Date: Tuesday, June 7, 2016
 Time: 2:00 PM
 Location: Prairie View Room

TECHNICAL DEBRIEF MEETING: Date: Thursday, July 7, 2016
 Time: TBD
 Location: TBD


EXIT MEETING: Date: Friday, July 8, 2016
 Time: 9:00 AM
 Location: Prairie View Room

INSPECTION ANNOUNCED: YES via NRC Region III Letter dated March 16, 2016

CORNERSTONES: - Initiating Events
 - Mitigating Systems

Prepared by: 
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Inspector (Lead)
Engineering Branch 3, DRS

Date: 7/29/16

Approved by: 
Robert C. Daley, Chief
Engineering Branch 3, DRS

Date: 7/29/16

KEY LICENSEE INFORMATION:

Plant Address

Byron, IL

Office Location for NRC Fire Protection Inspection Team

White Pines Room

Phone: (815) 406-2303, 2378

NRC INSPECTORS:

Fire Protection (FP) Inspection Team

| <u>Name</u> | <u>Position</u> | <u>Phone Number</u> | <u>E-mail Address</u> |
|--------------------|------------------------|----------------------------|--|
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| Alan Dahbur | Electrical | (630) 829-9810 | alan.dahbur@nrc.gov |
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| Irfan Khan | B.5.b | (630) 829-9732 | irfan.khan@nrc.gov |

Senior Resident Inspector (SRI) Office Staff

| | | | |
|----------------|--------------------------|----------------|--|
| Jim McGhee | Sr. Resident Inspector | (815) 234-5451 | james.mcghee@nrc.gov |
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| Maureen Burger | Administrative Assistant | | maureen.burger@nrc.gov |

LICENSEE CONTACTS:

Inspection Support Team Counterparts:

| <u>Name</u> | <u>Position</u> | <u>Phone Number</u> | <u>Email Address</u> |
|----------------------|---|----------------------------|--|
| Lisa Zurawski | Principal Regulatory Engineer | (815) 406-2991 | Lisa.Zurawski@exeloncorp.com |
| Jason Smith | FP Program Manager Szwarc Counterpart Electrical Design | (815) 406-2350 | |
| Brian Ledger | Manager Szwarc Counterpart | (815) 406-2379 | |
| Mohammed Asraarulhaq | Dahbur Counterpart | (815) 406-4506 | |
| Adam Vorachit | FP System Engineer Draper Counterpart | (815) 406-2604 | |
| Troy Edwards | Fire Marshall | (815) 406-2885 | |
| Fred Beutler | Design Engineering | (815) 406-2027 | |
| Response Team | | X2529 | |
| Dan Manteufel | Nexus | X2529 | |

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I. OBJECTIVES AND SCOPE

1. Fire Protection

The triennial inspection is primarily a risk-informed look at the mitigation elements of fire protection defense-in-depth (DID). The inspection focuses on the design of reactor plant fire protection and post-fire safe shutdown (SSD) systems, features, and procedures. The triennial fire protection inspection team will select at least between three and five fire areas and/or zones and conduct a risk-informed on-site inspection of the DID elements used to mitigate the consequences of a fire. The inspection team will examine the plant’s capability to meet the requirements of the NRC-approved fire protection program. The team will also review the licensee’s fire protection program problem identification and resolution.

The region based SRA and the lead inspector reviewed Byron’s list of high fire risk areas that was provided by the licensee. This list was generated by the licensee based on the plant’s fire Probabilistic Risk Assessment (PRA). The areas selected were also based on the guidance provided in Section 02.01.a of the inspection procedure. The lead inspector, after consultation with the SRA and team members and completion of plant walkdowns during the information gathering visit, will select three to five fire areas to be evaluated during the inspection.

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|--------------------------------|---|
| 5.5-1 | Unit 1 Auxiliary Electrical Equipment Room |
| 9.2-2 | 2A Emergency Diesel Generator |
| 11.5-0 | Auxiliary Building General Area 401 Elevation |
| 11.6-1 | Division 12 Cable Penetration Area |

This inspection is being performed in accordance with Inspection Procedure (IP) 71111.05T, issued January 31, 2013.

2. B.5.b Inspection

The triennial fire protection team will select one or more sample(s) of the licensee’s preparedness to handle large fires or explosions by reviewing one or more mitigating strategies. This review should ensure that the licensee continues to meet the requirements of their B.5.b related license conditions and 10 CFR 50.54(hh)(2) by determining that:

- Procedures are being maintained and adequate.
- Equipment is properly staged and is being maintained and tested.
- Station personnel are knowledgeable and can implement the procedures.
- Additionally, inspectors should review the storage, maintenance, and testing of B.5.b related equipment.

II. SPECIFIC ACTIVITIES AND ASSIGNMENTS

1. Fire Protection Inspection Activities

IP 71111.05T Section 02.02 provides detailed requirements and guidance for conducting the fire protection aspect of the inspection. The Fire Protection section is broken down into twelve sub-sections (A-L). To ensure all areas are covered, each section is assigned an inspector to evaluate the plant fire area(s) and/or zone(s) selected for review:

- A. *Protection of Safe Shutdown Capabilities* (Assigned to **Szwarc**)
- B. *Passive Fire Protection* (Assigned to **Szwarc** and **Draper**)
- C. *Active Fire Protection* (Assigned to **Szwarc** and **Draper**)
- D. *Protection from Damage from Fire Suppression Activities* (Assigned to **Szwarc**)
- E. *Alternative Shutdown Capability* (Assigned to **Dahbur** and **Szwarc**)
 - 1) *Methodology*
 - 2) *Operational Implementation*
- F. *Circuit Analyses* (Assigned to **Dahbur**)
- G. *Communications* (Assigned to **Szwarc**)
- H. *Emergency Lighting* (Assigned to **Draper**)
- I. *Cold Shutdown Repairs* (Assigned to **Draper**)
- J. *Compensatory Measures* (Assigned to **All Inspectors**)
- K. *Review and Documentation of FPP Changes* (Assigned to **All Inspectors**)
- L. *Control of Transient Combustibles and Ignition Sources* (Assigned to **Draper**)

2. B.5.b Inspection Activities

IP 71111.05T Section 02.03 provides requirements and guidance for conducting the B.5.b aspect of the inspection. The B.5.b section is broken down into three sub-sections (A-C). To ensure all areas are covered, each section is assigned an inspector to evaluate the plant fire area(s) and/or zone(s) selected for review:

- A. *Procedures are being maintained and adequate* (Assigned to **Draper** and **Szwarc**)
- B. *Equipment is properly staged, maintained, and tested* (Assigned to **Draper** and **Szwarc**)
- C. *Station personnel are knowledgeable and can implement the procedures* (Assigned to **Draper** and **Szwarc**)

3. Identification and Resolution of Problems

The inspection team should verify that the licensee is identifying issues related to this inspection area at an appropriate threshold and entering the issues in the corrective action program. For a sample of selected issues documented in the corrective action program, the

team should verify that the corrective actions are appropriate. See IP 71152, *Identification and Resolution of Problems*, for additional guidance.

III. OPERATING EXPERIENCE / LESSONS LEARNED

A. Unresolved Item 2010006, “Manual Actions Not Explicitly Approved”

Inspectors opened and unresolved item related to unapproved operator manual actions during the 2010 inspection. Subsequent to that inspection Region III submitted Task Interface Agreement (TIA) 2011-09 to the Office of Nuclear Reactor Regulation requesting clarification of Byron’s licensing basis. Region III subsequently withdrew that TIA. The inspectors will review and resolve the URI during this inspection based on the guidance that was provided during the development of TIA 2011-09, the information provided in TIA 2013-02, and based on a review of Byron’s licensing basis.

B. TIA 2013-002, “Final Response to Task Interface Agreement 2013-02, Single Spurious Assumption for Braidwood and Byron Stations Safe-Shutdown Methodology”

NRR has concluded that Braidwood and Byron are in compliance with their licensing bases which specifically provide for the assumption of only one spurious operation of a valve to occur per single fire. Therefore, if the inspectors identify issues related to multiple spurious operations those issue would likely need to be dispositioned as findings rather than violations.

C. Previous Byron Triennial Fire Protection Inspections

2001 Inspection Report 2001012

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|-------------------------|---|
| 3.2 A-1 | Unit 1 Lower Cable Spreading Room |
| 11.2-0 | Unit 1 Auxiliary Building General Area, Elevation 346’-0” |
| 11.4-0 | Unit 1 Auxiliary Building General Area, Elevation 383’-0” |
| 11.4C-0 | Remote Shutdown Panel Area |

2004 Inspection Report 2004005

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|-------------------------|--|
| 5.5-1 | Unit 1 Auxiliary Electrical Equipment Room |
| 11.5-0 | Auxiliary Building General Area 401’ |
| 11.6-0 | Auxiliary Building General Area 426’ |
| 11.6C-0 | Auxiliary Building 426’ |

2007 Inspection Report 2007008

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|-------------------------|---|
| 3.3B-2 | Unit 2 Upper Cable Spreading Room |
| 5.2-2 | Unit 2 Division 21 ESF Switchgear Room |
| 11.2-0 | Unit 1 Auxiliary Building General Area, Elevation 346’-0” |
| 11.6-0 | Unit 2 Auxiliary Building General Area, Elevation 426’-0” |

2010 Inspection Report 2010006

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|-------------------------|---|
| 3.2A-2 | Unit 2, Non-Segregated Bus Duct Area |
| 5.5-2 | Unit 2, Auxiliary Electrical Equipment Room |
| 11.3-0 | Auxiliary Building, General Area, Elevation 364'-0" |
| 11.3-2 | Unit 2, Auxiliary Building, Containment Pipe Penetration, Elevation 364'-0" |

2010 Inspection B.5.b Strategies Reviewed

| NEI 06-12, Revision 2, Section | Licensee Strategy (Table) |
|---------------------------------------|--|
| 3.3.4 | Manually Depressurize Steam Generators and Use Portable Pump (A.4-4) |

2013 Inspection Report 2013008

| <u>Fire Area (Zone)</u> | <u>Description</u> |
|-------------------------|---|
| 2.1-0 | Control Room |
| 3.1-1 | Unit 1 Cable Tunnel |
| 3.2A-1 | Unit 1 Non-Segregated Bus Duct Area |
| 11.4-0 | Auxiliary Building General Area 383'-0" |

2013 Inspection B.5.b Strategies Reviewed

| NEI 06-12, Revision 2, Section | Licensee Strategy (Table) |
|---------------------------------------|--|
| 2.3.1 | SFP Makeup – External Strategy (A.2-2) |
| 2.3.2 | SFP Spray – External Strategy (A.2-3) |

IV. INSPECTION SCHEDULE

1. Inspection Preparation & Bag Trip / B.5.b Inspection (6/6 – 6/10)

A. Fire Protection (6/6 – 6/7)

The purpose of the information gathering portion of the inspection is to allow the inspectors to examine and collect licensee documents describing plant fire protection features and systems, the post-fire safe shutdown analysis and various shutdown methods being used for the selected fire area(s) and/or zone(s). The inspection team members will request, from the licensee, additional information as necessary to support this inspection.

The inspection team members will review the documents provided by the licensee to gain an understanding of the licensee's (1) fire protection program; (2) licensing basis concerning fire protection; (3) fire hazards analysis; (4) design of the physically-installed fire protection systems and components; and (5) strategy for achieving and maintaining safe shutdown.

B. B.5.b Inspection (6/8 – 6/10)

The inspectors will review at least one sample of the licensee's preparedness to handle large fires or explosions by reviewing one or more mitigating strategies. This review should verify that the licensee continues to meet the requirements of its B.5.b related license conditions and 10 CFR 50.54 (hh)(2) by determining the following:

- Procedures are being maintained and adequate.
- Equipment is properly staged and is being maintained and tested.
- Station personnel are knowledgeable and can implement the procedures
- Additionally, inspectors should review the storage, maintenance, and testing of B.5.b related equipment.

2. Onsite Inspection (6/20 – 6/24 and 7/5 – 7/8)

Perform the inspection activities identified in the IP Section 02.02 in accordance with Section II of this inspection plan, "Specific Activities and Assignments."

Fire protections inspections normally result in a number of questions being raised. These questions are to be given to the licensee verbally or, if written, the licensee must copy the information and the inspector must retain the written document. **No written information is to be provided to the licensee.** Inspectors should request the licensee to go over the written question with them to ensure that the documented question is the one the inspector wants answered.

Inspectors should expect to receive responses within 24 hours of asking the question. If a licensee does not provide a response, or the reason why a response is delayed, then the inspectors should inform the lead inspector. The lead inspector will first bring this to the attention of licensee management in the daily debrief. If no response is obtained within 48 hours, and no reason given for the delay, then the lead inspector will go to the next level of management to question the reason for the delay.

As a reminder, in accordance with IMC 1201, inspectors shall maintain high standards of integrity in all their activities, personal and official, and conduct themselves in a manner to create and maintain public respect for the NRC and the U.S. Government.

It is imperative that inspectors conduct themselves in a professional manner. Inspectors must demonstrate, by their actions and demeanor, that as Federal employees they are committed to give the public full value of their services by putting in a full day. In addition, employees are to be aware that inappropriate behavior, both during and outside of working hours, can discredit both the individual and the NRC.

3. Offsite Inspection (6/13 – 6/17 and 6/27 – 7/1)

It is expected that each inspector uses this time to ensure the time onsite is used in the most efficient manner. Continue to review of the licensee's provided documentation and develop questions and/or strategies to complete the assessment's and inspection's

objective. NOTE: The lead inspector will not be available during the week of June 13 as he has another commitment.

4. Inspection Documentation (7/11 – 7/15)

Inspection report input is due to the lead inspector by COB on Friday, July 15. The Inspection Report input shall be prepared in accordance with the guidance in MC 0612, MC 0620, sample inspection report, and regional procedure RP-IMC 0612. Inspectors should use the latest inspection report model template that will be provided by the lead inspector. The inspectors should only include list of documents that were substantially reviewed (per new MC 0620 guidance). Finding input shall consist of both the detailed write-up for the body of the inspection report **and** the associated paragraphs for the summary of finding section of the inspection report. The lead inspector will use the input provided by the inspection team members to determine which observations and conclusions should be included in the inspection report using Manual Chapter 0612 for guidance.

V. INTERFACE AND COORDINATION MEETINGS

A. Entrance Meeting

The team will conduct the entrance meeting on Tuesday, June 7 at 2:00 p.m.

B. Licensee Debriefings

Daily debriefings with the licensee will start on Thursday, June 9. These meetings will typically be attended by the lead inspector.

C. Team Meetings

Team meetings during the onsite inspection weeks will be held as needed. It is expected that each inspector ensures the lead is informed with each inspector's status of inspection activities, issues, and any administrative or logistics items.

It is currently planned that the morning of Thursday, July 7, will be primarily devoted to team discussion and characterization of findings and to determine which issues will be mentioned at the technical debrief and exit meetings.

D. Technical Debrief

The final debrief with the licensee will be held on Thursday, July 7, at a time TBD. Each inspector will discuss in some detail the areas they inspected, observations, and any potential violations/findings. Inspectors should be prepared to state: the performance deficiency, why more than minor, any cross-cutting aspects, and any violations of NRC requirements.

E. Exit Meeting

The team will conduct the exit meeting on Friday, July 8 at 9:00 a.m. The lead inspector will normally conduct the exit; however, team members should be prepared to address questions related to their findings.

Since the exit meeting will be presented by the lead inspector on July 8, inspection team members must provide exit notes to the team leader by 1:00 p.m. on July 7. The exit notes should be concise and should include the findings including any cross-cutting aspects, their safety/risk significance, the requirements that were violated and what does

the licensee need to do to address the findings. Do not provide strengths or weaknesses. An inspector does not need to provide exit notes if not findings or violations were identified.

VI. TIME MANAGEMENT

The baseline inspection hours primarily encompasses only those hours spent starting with the first on-site inspection week and prior to the exit meeting. Time spent during the in-office preparation weeks and the information gathering week is to be charged to BIP (baseline inspection preparation). Baseline inspection hours do not include time spent in travel, entrance or exit meetings, checking on e-mail, or keeping track of hours to correctly credit them.

A. Preparation Charges

Each inspector should charge approximately 40 hours to BIP for this inspection. This includes the entrance meeting. Some preparation activities will occur during the first week onsite. If an inspector is unable to prepare due to other work demands, please discuss this with the lead inspector (who will then work with management to ensure proper inspection preparation occurs).

B. Baseline Inspection Charges

The total team direct inspection (BI) hours that should be charged to IP 71111.05T is 240-hours ± 40-hours. Therefore, each inspector should charge approximately 60 - 80 hours of baseline inspection. Of the total, approximately 30 to 40 hours (or 15 - 20 hours per inspector) will be devoted on the B.5.b inspection area.

C. Documentation Charges

The time spent documenting items is to be charged to BID. Also the time spent on the exit meeting is to be charged to BID. If the inspector has no findings, documentation time should be between 8 and 16 hours. Documentation of findings should take approximately 16 to 24 hours a finding, depending on their complexity. Hours may be adjusted, dependent upon the number, extent and complexity of findings.

D. Travel Charges

Travel times on Mondays (and Tuesday, July 5) and Fridays from the Region III area to the site are to be charged in HRMS to an IPE code of "AT". Travel on other days is considered a normal commute to a temporary duty location and is not part of the workday.

E. Overtime

Overtime for each regional inspector should be minimal and normally should not exceed 4 hours per onsite week. The overtime is to only be used to meet the inspection requirements or if an issue comes up at the end of the day that requires resolution. **Inspectors must obtain permission from the branch chief prior to working overtime.**

VII. LOGISTICS

A. Site Information

Name: Byron Station, Units 1 and 2
Utility: Exelon Generating Company, LLC
Location: Byron, IL
Licensed: 1985, 1987
Licensed to: 2044, 2046
NSSS: Westinghouse 4-Loop
Containment: PWR-DRYAMB

B. Travel

Byron is approximately 75 miles from the Region III office.

C. Per Diem

Per Diem for the area around Byron is \$89/day for lodging (excluding taxes) and \$51/day for meals and incidental expenses.

D. Site Access

Team members will receive site-specific site access training and will be processed for unescorted access.

E. Inspection Location

The inspection team will be located in the White Pines Room (Old Meeting Room 1 Back). The licensee will provide a computer and printer access for accessing licensee documents. The inspectors will obtain login information from the resident inspectors. Additionally, the licensee will provide wireless internet access for the inspection team.

F. Hours of Work

Inspectors are expected to generally adhere to their normal working hours. Significant changes should be coordinated with the lead inspector but will be accommodated to the extent possible.

G. Work at Home

It is acceptable to the lead inspector for NRC inspectors to perform work-at-home for the preparation week, any of the in-between weeks, and the documentation week, dependent upon the hours limitations discussed above. Please note that work-at-home must be approved by the appropriate branch chief. Inspectors performing work-at-home will still be required to attend the team meetings by phone.

VIII. ALLEGATIONS

As required by Inspection Manual Chapter 2515 Appendix A, "Risk Informed Baseline Inspection Program," Section 7.d, "Review of Open Allegation," the lead inspector determined that there were no open allegations at Byron and therefore no review was required.