Exelon Generation

Byron Generating Station

4450 North German Church Rd
Byron, IL 61010-9794

www.exeloncorp.com

December 9, 2016

10 CFR 72.48

LTR: BYRON 2016-0111
File: 1.10.0101 (1D.101)
2.07.0611 (5F.108)

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Byron Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: 10 CFR 72.48 Evaluation Summary Report

The purpose of this letter is to submit the initial biennial report of changes, tests, or experiments, performed by Exelon Generation Company, LLC (EGC) for the Byron Station (Byron) Independent Spent Fuel Storage Installation (ISFSI), as required by 10 CFR 72.48, "Changes, tests, and experiments," paragraph (d)(2). Subsequent reports will be provided within an interval of 24 months, as required by 10 CFR 72.48(d)(2).

The attachment to this letter provides this report, which indicates that one 10 CFR 72.48 Evaluation was performed during the interval starting from November 1, 2014 through October 31, 2016.

Should you have any questions, please contact Mr. Douglas Spitzer, Regulatory Assurance Manager, at (815) 406-2800.

Respectfully,

Mark E. Kanavos
Site Vice President
Byron Generating Station

MEK/LZ/sg

cc: NRC Regional Administrator – NRC Region III

Attachment

Attachment

Byron Station
10 CFR 72.48 Evaluation Summary Report

Evaluation Number	Title
Byron 72.48-093, Revision 1 EC 389969, Revision 1	HI-STORM / HI-TRAC Unrestrained Stack-up Supports

EXELON 72.48 REVIEW COVERSHEET FORM

Station/Unit(s): Byron/Unit 0

Activity/Document No.: EC 389969 **Revision No.:** 1

Title: HI-STORM/HI-TRAC Unrestrained Stackup Supports

NOTE: For 72.48 Evaluations, information on this form will provide the basis for preparing the biennial summary report submitted to the NRC in accordance with the requirements of 10 CFR 72.48(d)(2).

Description of Activity:
(Provide a brief, concise description of what the proposed activity involves.)

EC 389969 Revision 1 incorporates the following changes:

Note: Change Item numbers carry through the different sections of the coversheet, screening and evaluation

Change Item:

1. Revises Drawing S-804, Sheet 1 to incorporate the a new coating system (Carboguard 1340 Primer coat, Santile 945 SL Intermediate coat, Carboguard 888 Top Coat) that can be used instead of the previously specified Carboguard 888 coating system under the grillage sections and to allow the replacement of the existing plate material installed in the floor with new plate material under the floor coating system.
2. Revises Drawing S-804, Sheet 2 to add notches in the east grillage bumper plate.
3. Revises Drawings S-804, Sheets 6 & 8 to provide new grillage guide details and to make the installation of all guide details optional.
4. Allow corrugated plastic to be used as a protective cover for grillage sections when grillage sections are not being used for unrestrained stackup of HI-STORM of HI-TRAC/HI-STORM. During unrestrained stackup of the HI-STORM or HI-TRAC/HI-STORM, corrugated plastic sections shall be stored in the FHB with no limitations.
5. Incorporates Analysis No. HI-2114952, Rev. 8 and Rev. 8A, "Structural Analysis of the Byron/Braidwood Low Profile Transporter", Analysis No. HI-2114975, Rev. 3, "Dynamic Analysis of HI-STORM on LPT to Obtain Peak Loads on LPT Rollers and Slab at Byron/Braidwood" and Analysis No. HI-2135886, Rev. 0, "Structural Evaluation of HERMIT Slide Plate Lifting Device".
6. Incorporates LPT drawing (Holtec Drawing No. 5483, Revision 13, Sheets 1-13) into EC
7. Incorporates Holtec Strongback drawing (Holtec Drawing No. 9424, Revision 1, Sheets 1-5) into EC
8. Incorporates HERMIT drawing (Holtec Drawing No. 8980, Revision 3, Sheets 1-13) into EC
9. Incorporates Holtec SMDR 1676-2368 Revision 3 into EC for documentation of modified Mating Device
10. Incorporates Analysis No. 8.1.2-BYR13-045, Rev. 0A, "Evaluation of ISFSI Cask Unrestrained Stack-up Support Grillage System in the Fuel Handling Building Trackway at El. 401'-0".
11. Revises HI-TRAC/HI-STORM fire evaluation due to revised grillage sections footprint area (Design Considerations Summary Section 4.1.12)
12. Revise procedure BFP FH-69 to include a limitation that within the same shift that a loaded HI-TRAC will be staged on top of the HI-STORM; the MPC must be downloaded into the HI-STORM.
13. Incorporates evaluation of the effect on the partial blockage of the HI-STORM bottom vents due to the HI-STORM hydraulic jacks and associated shims on the effectiveness of the HI-STORM heat removal system (Design Considerations Summary Section 4.1.33).
14. Incorporates contingency jack drawing (ENERPAC Drawing No. CLP2001U103ID) and vendor information into EC and adds the requirements for use of contingency jacks (Work Package Instructions and Design Considerations Summary Section 4.1.38).
15. Revision of 10 CFR Part 50 facility Fire Protection Program documentation (CC-AA-209 Attachment 1, FDRP 26-048 and Analysis No. ATD-0026).
16. Changed new procedure number from BFP FH-78 to BFP FH-73.
17. Incorporates DCS Procurement Specification No. DCS-001-2013 Revision 2.

Reason for Activity:
(Discuss why the proposed activity is being performed.)

Reason for corresponding change number listed in "Description of Activity" section:

1. The new floor coating system and the new plate material will make the finished floor under the three grillage sections more level and thus require less shimming under the grillage sections.
2. Make the east grillage section that same as the west grillage section in order to improve installation.
3. The guide details are provided to improve the installation and removal of the center grillage section.
4. Corrugated plastic will protect surface of HERMIT material (nylatron) on grillage sections.
5. Analysis No. HI-2114952, Rev. 8 and Rev. 8A, evaluates the Low Profile Transporter (LPT) modifications per the revised LPT drawing (including addition of roller alignment guides and increased roller shim thickness) and evaluates the substitution of stainless steel plates for carbon steel plates (restrained stackup configuration) and nylatron plates (unrestrained stackup configuration). Analysis No. HI-2114975, Rev. 3, evaluates the effect of the additional weight and height of the LPT as a result of the modifications on the dynamic analysis of the HI-STORM on the LPT. Analysis No. HI-2135886, Rev. 0, evaluates the Holtec strongback (Holtec Drawing No. 9424, Revision 1, Sheets 1-5) used to rig and lift the Holtec HERMIT stainless steel plate.
6. LPT drawing (Holtec Drawing No. 5483, Revision 13, Sheets 1-13) has been revised to incorporate modifications (addition of roller alignment guides and increased roller shim thickness) required for use of LPT in unrestrained stackup configuration.
7. Holtec Strongback drawing (Holtec Drawing No. 9424, Revision 1, Sheets 1-5) documents the configuration of the strongback used to lift the stainless steel plate.
8. HERMIT drawing (Holtec Drawing No. 8980, Revision 3, Sheets 1-13) documents the configuration of the pieces of nylatron that are attached to the three grillage sections.
9. Holtec SMDR 1676-2368 Revision 3 documents the modifications made to the Byron Mating Device.
10. Analysis No. 8.1.2-BYR13-045, Rev. 0A, evaluates the use of a contingency jack in the event that one of the existing hydraulic cylinders malfunctions during a campaign with a loaded HI-STORM on the center grillage, revises the evaluation of the floor coating system underneath the grillage and incorporates the HERMIT drawing.
11. Revised grillage footprint area will give a conservative fire duration in HI-TRAC/HI-STORM fire evaluation.
12. The limitation added to procedure BFP FH-69 limits the time that the HI-TRAC can be installed on the Mating Device/HI-STORM in the unrestrained stackup configuration during the MPC download in order to minimize the time that the unrestrained stackup configuration is vulnerable to a seismic event.
13. Need to evaluate the effect on the partial blockage of the HI-STORM bottom vents due to the HI-STORM hydraulic jacks and associated shims on the HI-STORM heat removal system.
14. Incorporation of contingency jack drawing (ENERPAC Drawing No. CLP2001U103ID) and vendor information into EC is required so that contingency jacks can be used in the event that one of the primary HI-STORM hydraulic jacks malfunctions during the lifting or lowering of a loaded HI-STORM.
15. To account for the addition of combustible material (polyethylene guides and polypropylene covers for grillage) to the Fuel Handling Building (FHB) which is part of the 10 CFR Part 50 facility.
16. Procedure BFP FH-78 was already used and deleted and therefore cannot be reused for a new procedure.
17. DCS Procurement Specification No. DCS-001-2013 revised to ensure that future HI-STORMs purchased for use at Byron are painted with specific coating material required by the unrestrained stackup analysis, Analysis No. BYR13-063.

Effect of Activity:
(Discuss how the activity impacts ISFSI operations, design bases, or safety analyses described in the cask UFSAR [IFSSAR].)

Effect of Activity for corresponding change number listed in "Description of Activity" section:

1. The new floor coating system and the new plate material does not affect the structural properties of the floor nor adversely affect the frictional interaction between the grillage sections and the floor. The fire loading from the new floor coating system is enveloped by the fire loading from the previously specified floor coating system. The evaluation (PASSPORT Topic Notes EVAL DETAILS) for the effect of the coating system on the FHB HVAC system was revised and determined that the use of the new coating system did not affect the results of the evaluation.
2. The change to the east grillage section does not affect the function, structural adequacy or seismic response of the of the east grillage section.
3. The guide details are installation aids only, and do not impact the structural function of the grillage or the seismic behavior of the stackup as analyzed in the structural calculations. The fire loading increase due to the addition of the

polyethylene guides has been evaluated and does not affect the results of the previously evaluated HI-TRAC/HI-STORM fire in the unrestrained stackup configuration because the polyethylene guides do not add to the fire duration of the grillage fire due to their small amount, resulting in fire durations of less than one minute, and due to the fact they would burn concurrently with the Nylatron and Fabreeka.

4. The fire loading increase due to the addition of the polypropylene (corrugated plastic) covers for the grillage does not affect the results of the previously evaluated HI-TRAC/HI-STORM fire in the unrestrained stackup configuration because the polyethylene guides do not add to the fire duration of the grillage fire due to their small amount, resulting in fire durations of less than one minute, and due to the fact they would burn concurrently with the Nylatron and Fabreeka.
5. Analysis No. HI-2114952, Rev. 8 and Rev. 8A, and Analysis No. HI-2114975, Rev. 3, have determined that the LPT in the configuration shown on Holtec Drawing No. 5483, Revision 13, Sheets 1-13 will perform its function during a seismic event while in an unrestrained stackup configuration. Analysis No. HI-2135886, Rev. 0, has determined that the Holtec strongback will perform its function when used to rig and lift the Holtec HERMIT stainless steel plate.
6. Holtec Drawing No. 5483, Revision 13, Sheets 1-13 documents the current configuration of the LPT that has been evaluated as described above and found acceptable
7. The Holtec strongback shown on Holtec Drawing No. 9424, Revision 1, Sheets 1-5 is a tool used to lift the Holtec HERMIT stainless steel slide plate so that it can be attached to the bottom of the HI-STORM. It does not affect Part 50 facility operations, is not described in the Holtec HI-STORM 100 FSAR and performs no FSAR described design basis function or is part of any FSAR safety analyses.
8. HERMIT drawing (Holtec Drawing No. 8980, Revision 3, Sheets 1-13) documents the configuration of the pieces of nylatron that are attached to the three grillage sections. The information on the drawing is consistent with the location of the nylatron on the grillage sections that has been evaluated in Analysis No. BYR13-063.
9. The Byron Mating Device with the changes made per Holtec SMDR 1676-2368 Revision 3 is the configuration evaluated in Analysis No. BYR13-063. Analysis No. BYR13-063 has determined that the modified Mating Device is structurally adequate for all design basis loads including a design basis seismic event while in the unrestrained stackup configuration. Changes in SMDR Revision 3 modified the size of the tongue to resolve interference with stiffener plate. Changes in tongue dimensions do not affect the adequacy of the mating device analyzed in Analysis No. BYR13-063.
10. Analysis No. 8.1.2-BYR13-045, Rev. 0A, has determined that the contingency jacks are adequate to perform their function in the event that one of the existing hydraulic cylinders malfunctions during a campaign with a loaded HI-STORM on the center grillage and that the HI-STORM heat removal system performs its function in accordance with the parameters of the unrestrained stackup design basis analyses.
11. The revised grillage sections footprint area increased the MPC component temperatures and peak temperatures and the fuel cladding temperatures due to the HI-TRAC/HI-STORM fire evaluated in EC 389969 Revision 0 Design Considerations Summary Section 4.1.12 and 72.48 Evaluation 72.48-093 Revision 0. EC 389969 Revision 1 Design Considerations Summary Section 4.1.12 determined that the MPC component temperatures and peak temperatures and the fuel cladding temperatures are still below the limits specified in HI-STORM FSAR Table 2.2.3. 72.48 Evaluation 72.48-093 Revision 1 documents that the increased temperatures are still below the limits specified in HI-STORM FSAR Table 2.2.3.
12. The limitation on the length of time that the HI-TRAC can be installed on the Mating Device/HI-STORM in the unrestrained stackup configuration during the MPC download is an administrative change and it not required by any unrestrained stackup design basis analyses. Since the change is an administrative change it is not considered a change that is subject to 72.48 review.
13. The evaluation in determined that partial blockage of the HI-STORM bottom vents due to the HI-STORM hydraulic jacks and associated shims does not affect the HI-STORM heat removal system and therefore, does not affect the function of the HI-STORM or MPC.
14. Use of contingency jacks in the event that one of the primary HI-STORM hydraulic jacks malfunctions during the lifting or lowering of a loaded HI-STORM restores the function of the jacking system and does not affect the function of the HI-STORM, HI-TRAC, MPC or the FHB.
15. Additional fire loading by the addition of combustible material (polyethylene guides and polypropylene covers for grillage) to the Fuel Handling Building (FHB) fire zone is accounted for and evaluated as being acceptable.
16. Changing a procedure number is an editorial change.
17. Coating materials specified in DCS procurement specification are coating material already allowed in Holtec HSP-319. By requiring specific coating materials, other coating materials listed in HSP-319 but not evaluated in Analysis No. BYR13-063 are prohibited from being used for HI-STORM overpacks used at Byron.

Summary of Conclusion for the Activity's 72.48 Review:
(Provide justification for the conclusion, including sufficient detail to recognize and understand the essential arguments leading to the conclusion. Provide more than a simple statement that a 72.48 Screening, 72.48 Evaluation, or a Certificate of Compliance Amendment, as applicable, is not required.)

Summary of Conclusion for corresponding change number listed in "Description of Activity" section:

The changes in EC 389969 Revision 1 listed in the "Description of Activity" of the this coversheet do not change the ISFSI facility or the FSAR described function of the MPC, HI-TRAC, HI-STORM. The function of the LPT is not specifically described in the FSAR.

The functions of the MPC, HI-TRAC, HI-STORM and the Mating Device are described in the Holtec HI-STORM 100 FSAR (henceforth known as FSAR). The Low Profile Transporter (LPT) is not specifically described in the FSAR. The FSAR describes a HI-STORM transport mechanism called a "rail dolley" which is similar to the LPT. The FSAR does not describe the function of the HI-STORM stainless steel slide plate or the lifting device (strongback) used to transport the slide plate.

Change Items 1-10 and 13-14 listed in the "Description of Activity" section of the coversheet will be reviewed in 72.48 Screening 72.48-101.

Change Item 11 listed in the "Description of Activity" section of the coversheet will be reviewed in 72.48 Evaluation 72.48-093 Revision 1

Change Item 12 listed in the "Description of Activity" section of the coversheet is an administrative requirement which is an editorial change. Per LS-AA-114-1000 Section 4.3.4 an editorial change is not subject to 10CFR 72.48 and a applicability review is not required.

Change Item 15 listed in the "Description of Activity" section of the coversheet is a requirement of the 10 CFR Part 50 Facility Fire Protection Program (Section I.7 of LS-AA-114-1002) so per the 72.48 Applicability Review (LS-AA-104-1002 Section I.1.g) a 72.48 Screening or Evaluation is not required.

Change Item 16 listed in the "Description of Activity" section of the coversheet is an editorial change and per LS-AA-114-1000, Section 4.3.4, an editorial change is not subject to 10CFR 72.48 and an Applicability Review is not required.

Change Item 17 is not a change so therefore a 72.48 review is not required.

Per 72.48 Screening 72.48-101 Revision 0:
None of the changes described in Change Items 1-10 and 13-14 affect the function of the MPC, HI-TRAC, HI-STORM, Mating Device and LPT. None of the changes described in Change Items 1-10 and 13-14 affect or require a procedure. The only change items that involve an evaluation methodology are the revisions to the LPT structural and dynamic analyses and the stainless steel slide plate strongback evaluation (Change Item 5) and the revision to the grillage analysis to include the contingency jack evaluation and the evaluation of the grillage/floor coating interface (Change Item 10). The methodologies for these analyses are not described in the FSAR and are standard structural, dynamic and frictional coefficient determination methodologies. None of the changes described in Change Items 1-10 and 13-14 are tests or experiments. None of the changes described in Change Items 1-10 and 13-14 involve items described or addressed in the HI-STORM 100 Certificate of Compliance Amendment 7 (CoC 1014-7) or Amendment 9 (CoC 1014-9) nor do they affect the terms, conditions, or specifications incorporated therein.

Per 72.48 Evaluation 72.48-093 Revision 1:
The changes described in Change Item 11 do not result in more than a minimal increase in the frequency of the occurrence or consequences of an accident described in the FSAR, do not result in more than a minimal increase in the likelihood or consequences of a malfunction of a SSC important to safety described in the FSAR, do not create a possibility for an accident of a different type than any previously evaluated in the FSAR, do not create the possibility for a malfunction of an SSC important to safety with a different result previously evaluated in the FSAR, do not result in a design basis limit for a fission product barrier as described in the FSAR being exceeded or altered and do not result in a departure from a method of evaluation described in the FSAR used in establishing the design bases or in the safety analyses.

EXELON 72.48 REVIEW COVERSHEET FORM

Based upon the 72.48 Applicability Review, 72.48 Screening No. 72.48-101 Revision 0 and 72.48 Evaluation No. 72.48-093 Revision 1 no CoC amendment or NRC approval is for the proposed Activity.

Attachments:
Attach all 72.48 Review forms completed, as appropriate.

Forms Attached: (Check all that apply.)

☒	**Applicability Review**			
☒	**72.48 Screening**	**72.48 Screening No.:** 72.48-101	**Rev**	0
☒	**72.48 Evaluation**	**72.48 Evaluation No.:** 72.48-093	**Rev.**	1