J. Todd Conner
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DTE Energy

10 CFR 50.54(f)

November 26, 2012
NRC-12-0076

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Letter, "Request For Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012

3) Detroit Edison Letter, "Detroit Edison's 90-Day Response to March 12, 2012 Information Request Regarding Flooding Evaluations and Walkdowns," NRC-12-0036, dated June 8, 2012

Subject: Detroit Edison's Response to March 12, 2012
Information Request Regarding Flood Protection Walkdowns

On March 12, 2012, the NRC issued Reference 2 to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 4 to Reference 2 contains specific Requested Actions, Requested Information and Required Responses associated with Recommendation 2.3 regarding flooding walkdowns.

In Reference 3, Detroit Edison confirmed that Fermi 2 would follow the NRC-endorsed guidance for performing the flood protection walkdowns to respond to the information request. Submittal of the walkdown report is due November 27, 2012 which is 180 days following NRC endorsement of the guidance for performing the walkdowns. The required information is provided in Enclosure 1 to this letter.

The regulatory commitments contained in this submittal are listed in Enclosure 2.

Should you have any questions or require additional information, please contact Mr. Kirk R. Snyder, Manager, Industry Interface at (734) 586-5020.

Sincerely,

cc: Director, Office of Nuclear Reactor Regulation
NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, J. Todd Conner, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

J. Todd Conner
Site Vice President, Nuclear Generation

On this 26 day of November, 2012 before me personally appeared J. Todd Conner, being first duly sworn and says that he executed the foregoing as his free act and deed.

Sharon S. Marshall
Notary Public

SHARON S. MARSHALL
NOTARY PUBLIC, STATE OF MI
COUNTY OF MONROE
MY COMMISSION EXPIRES Jun 14, 2013
ACTING IN COUNTY OF Monroe

Fermi 2 NPP

External Flooding Walkdown Report

10 CFR 50.54(f) Section 2.3 Flood Response

Prepared By: Ethan Hauser/s/ 11/7/12
Print/Signature Date

Reviewed By: Charles Byrd/s/ 11/8/12
Print/Signature Date

Approved By: Kendra Hullman Lawson/s/ 11/9/12
Print Signature Date

Fermi 2 NPP External Flooding Walkdown Report

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Introduction:

This report provides a summary of the walkdown and assessment of external flood protection and mitigation features at the Fermi 2 Nuclear Power Plant in accordance with NRC Recommendation 2.3 of SECY 11-0137 and Enclosure 4 of the March 12, 2012, "Request for Information Pursuant to Title 10 CFR 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident" [1] & [2].

The walkdowns and inspections performed on identified plant flood protection features were carried out in accordance with Nuclear Energy Institute (NEI) document NEI 12-07 "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features" [3]. The Fermi flood walkdown process was designed in such a way to verify that structures, systems, components (SSCs), and procedures needed during a flood event are acceptable and capable of performing their design function as credited in the Current Licensing Basis (CLB). This report addresses the eight information requests (a-h) listed in Appendix D of NEI 12-07[3].

a. **Describe the design basis flood hazard level(s) for all flood-causing mechanisms, including groundwater ingress.**

b. **Describe protection and mitigation features that are considered in the licensing basis evaluation to protect against external ingress of water into SSCs important to safety.**

c. **Describe any warning systems to detect the presence of water in rooms important to safety.**

d. **Discuss the effectiveness of flood protection systems and exterior, incorporated, and temporary flood barriers. Discuss how these systems and barriers were evaluated using the acceptance criteria developed as part of Requested Information Item 1.h.**

e. **Present information related to the implementation of the walkdown process (e.g., details of selection of the walkdown team and procedures,) using the documentation template discussed in Requested Information Item 1.j, including actions taken in response to the peer review.**

f. **Results of the walkdown including key findings and identified degraded, non-conforming, or unanalyzed conditions. Include a detailed description of the actions taken or planned to address these conditions using the guidance in Regulatory Issues Summary 2005-20, Rev 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Conditions Adverse to Quality or Safety," including entering the condition in the corrective action program.**

g. **Document any cliff-edge effects identified and the associated basis. Indicate those that were entered into the corrective action program. Also include a detailed description of the actions taken or planned to address these effects.**

h. **Describe any other planned or newly installed flood protection systems or flood mitigation measures including flood barriers that further enhance the flood protection. Identify results and any subsequent actions taken in response to the peer review.**

Response to Information Request:

a. Describe the design basis flood hazard level(s) for all flood-causing mechanisms, including groundwater ingress.

The licensing basis for probable flood conditions is described in the Fermi 2 UFSAR Sections 2.4 & 3.4[4]. The following outlines the key aspects of the design basis. The Fermi site is located adjacent to the western shore of Lake Erie. The site for Fermi 2 was prepared by excavating soft soils and rock, and constructing rock fill to a nominal plant grade elevation of 583 feet. (All elevations refer to New York Mean Tide, 1935.) Category I structures housing safety-related equipment consist of the reactor/auxiliary building and the residual heat removal (RHR) complex. UFSAR Section 2.4.1.1

The plant site is not susceptible to flooding caused by surface runoff because of the shoreline location and the distance of the site from major streams. Plant grade is raised approximately 11 feet above the surrounding area to further minimize the possibility of flooding. Flooding of the site is conceivable only as the result of an extremely severe storm with a storm-generated rise in the level of Lake Erie. Protection of safety-related structures and equipment against this type of flooding is provided through the location, arrangement, and design of the structures with respect to the shoreline and possible storm-generated waves. UFSAR Section 2.4.1.1

The following basic types of hypothetical flooding conditions were considered in the design:

i. The Probable Maximum Flood (PMF) of 89,000 cfs on Swan Creek coinciding with the mean monthly maximum water level of 575.3 feet in Lake Erie. In the backwater computations, the resulting PMF flow elevation of 577.3 feet would provide a safety margin of 5.7 feet. Even by the use of a conservative slope/area computation, the PMF elevation would be less than 582 feet, or 1 foot below plant grade at 583 feet and 1.5 feet below the elevation of reactor/auxiliary building door sills. UFSAR Section 2.4.2.2.1

ii. The maximum probable wind tide of 11.6 feet coinciding with a maximum monthly mean lake level of 575.3 feet. The resulting stillwater flood elevation at the plant site area in this case is 586.9 feet, or 3.90 feet above the plant grade elevation. UFSAR Section 2.4.2.2.1 based upon UFSAR Figure 2.4-17 [4], the maximum duration when the flood level exceeds plant grade is less than one day.

iii. The local probable maximum precipitation (PMP) runoff on the plant site coincident with runoff from the 2-square mile area above the plant site, assuming blockage of plant drainage, would result in no adverse effects on the safety-related (Category I) facilities. The estimated PMF of 25,300 cfs with a corresponding elevation of less than 582 feet, and the 15-minute PMP of 4.9 in. over the plant site with a grade elevation of 583 feet and reactor/auxiliary building door sills at 583.5 feet would not result in adverse plant site flooding. The temporary local water buildup due to the assumed failure of the plant drainage system will flow into the lower land and swamps at the northern end of the plant area and eventually discharge into Lake Erie through estuaries. The local temporary

water buildup elevation will be substantially lower than the flood elevation due to the maximum wind tide, as described in item ii above. UFSAR Section 2.4.2.2.1.

iv. The potential dam failure effect is not applicable. There are no regulatory structures on Swan Creek nor are there dams on other streams or rivers in southeastern Michigan that should failure result because of seismic or other disturbances would affect water levels in Lake Erie along the plant shoreline. UFSAR Section 2.4.4

v. Tsunami flooding is not applicable. The Fermi site is located in an area of the United States designated as having potentially minor seismic activity. Any tsunami activity in Lake Erie could only be generated by local seismic disturbances. Based on the history of the area, local seismic disturbances would result only in minor excitations in the lake. No tsunami has been recorded in Lake Erie; the only remotely similar phenomena observed have been low-amplitude seiches resulting from sudden barometric pressure differences. The low-amplitude seiches that could occur would be of negligible concern to the site. UFSAR Section 2.4.6

vi. Ice flooding is not a design basis at the Fermi site. The grade elevation of the plant site is at least 10 feet above the normal winter level of Lake Erie, and the emergency supply of water for cooling is not dependent upon natural bodies of water or the operation of intakes located where ice flooding could occur. UFSAR Section 2.4.7

The water level at the site is controlled by Lake Erie. The PMF flow from Swan Creek has no significant effect on the design water level at the site. The maximum lake stillwater level due to storm surge is Elevation 586.9 feet. Plant grade is at Elevation 583.0 feet. At plant grade elevation, the lake water would extend approximately 2.5 miles inland from the plant site and even further inland at maximum stillwater level. The case (item ii) above is clearly the most critical condition and is defined as the Probable Maximum Meteorological Event (PMME). UFSAR Section 2.4.2.2.1

The stillwater level of Lake Erie near the Fermi site constantly changes in elevation with respect to the rest of the lake during the PMME. This difference in water levels effectively damps out any seiche activity near the site. It is unlikely, therefore, that any seiche will occur simultaneously with the PMME. Consequently, for design purposes, no rise in water elevation from a seiche is considered. UFSAR Section 2.4.5.2.3

No differences or contradictions in flood hazard levels were found in design or licensing basis documentation.

b. Describe protection and mitigation features that are considered in the licensing basis evaluation to protect against external ingress of water into SSCs important to safety.

The licensing basis does not specifically state modes of operation for flood protection features. However the condition is understood to be at power operations. Sufficient warning would be obtained, such that flood protection features could be restored to required configuration regardless of operational mode. Per Fermi 2 UFSAR 2.4.12 "Technical Specifications and Emergency Operation Requirements" - Fermi 2, together with its associated safety-related

facilities, is designed to function in a safe manner despite the occurrence of any of the adverse hydrologic events previously discussed. These events have been postulated to occur in appropriate combinations, and such provisions for the safe operation of the plant have been incorporated into the design.

The licensing basis for flood protection is described in the Fermi 2 UFSAR Sections 2.4 & 3.4[4]. The following outlines the key aspects of the design basis.

Reactor/Auxiliary Building

The Category I reactor/auxiliary building, which houses safety-related systems and components, is designed against flooding to Elevation 588.0 feet, or 1.1 feet above the PMME stillwater flood elevation of 586.9 feet UFSAR Section 2.4.2.2.2. Based upon UFSAR Figure 2.4-17[4], the maximum duration when the flood level exceeds plant grade is less than one day. All doors and penetrations through the outside walls below the design flood elevation are of watertight design. All safety-related systems and equipment located inside this Category I structure are protected from the PMME flood. The reactor/auxiliary building is also designed to withstand wave action associated with this flooding. Shore protection is not required to preclude flooding of this structure, UFSAR Section 2.4.2.2.2.

All interior floor drain systems inside the reactor/auxiliary building are not connected to the yard storm drainage system and, therefore, no potential water backflow into the structure is anticipated during the design flood condition. UFSAR Section 2.4.2.2.2 Flood water could enter the reactor building equipment or floor drainage sump discharge piping systems through the collector tanks and their overflow lines in the radwaste building basement. As the floodwaters rise, the collection tanks would be filled through the overflow line and the system piping would be backfilled to the check valves in the 6-inch transfer lines. Redundant check valves and a manual isolation valve in both the floor and equipment drain transfer lines are located near the secondary containment boundary just before the pipe exits into the turbine building. The design configuration allows for periodic leak testing of the check valves and this combined with redundancy of the check valves, and the presence of a manual isolation valve ensures that no single active failure will result in backflow flooding into the reactor building, UFSAR Section 3.4.4.4.2.

The reactor/auxiliary building has only a few essential penetrations in the exterior walls. All of these penetrations below Elevation 588 feet are watertight. The presence of the turbine building and cable vault prevents waves and wave runup above the sill elevations on the east and south walls of the reactor/ auxiliary building, thereby preventing flooding of the buildings. The south wall of the reactor/auxiliary building has two large openings, two rail pockets with waterproofed seals and several waterproofed pipe-sleeved openings. These large openings are in air-locked watertight railroad airlock doors with inflatable seals and an air-locked watertight personnel door. UFSAR Section 3.4.4.1 The safety-related non-interruptible air supply (NIAS) system supplies the reactor building railroad airlock door inflatable seals, providing a safety-related air supply to prevent potential loss of seal pressure and secondary containment air and water leakage

integrity. The inner door is supplied from NIAS Division I and the outer door is supplied from Division II. Each NIAS division has an orifice to restrict the flow to approximately 8 scfm in the event of a line break or rupture of the inflatable seals. Each NIAS division supplies air to an accumulator sized to provide the amount of air leakage through each door seal for a 10-minute period during a loss of air supply caused by a loss of offsite power [9].

All watertight doors have signs on both sides stating that the door is to be secured closed except for immediate use. When a flood warning is issued by Weather Bureau, a step in the Abnormal Operating Procedure [7], for acts of nature verifies that all external watertight doors are closed and dogged.

There is no defined time requirement for this action, as there are several hours between anticipated flood warning and flood waters reaching plant grade. No other adverse weather conditions are assumed to be concurrent with flood protection features and associated actions as all flood protection features are operated internal to the plant.

The several watertight sleeve openings, the walls of the building, and the watertight doors are designed to withstand the hydrostatic head of the maximum flood level. Leakage is not expected through the several watertight access openings and the waterproofed sleeved openings in the reactor/ auxiliary building. The walls of the reactor/auxiliary building are waterproofed below the finished grade elevation of 583.0 ft. Waterstops on all construction joints and water seal rings on all penetrations are provided on all openings below the maximum flood level. Waterstops are joined to form a continuous watertight seal. Joint preparation and joint sealants are in conformance with the recommendations and the guidelines of American Concrete Institute (ACI) standards, UFSAR Section 3.4.4.1

RHR Complex

The RHR complex is watertight to Elevation 590.0 ft. The RHR complex water reservoir is floodproof. All active equipment that could be damaged by water (pump motors, switchgear, and diesel generators) is located above the maximum water flood level. The north, south, and west walls have no openings below maximum flood level. The east wall has approximately 30 waterproofed pipe-sleeved openings, UFSAR Section 2.4.2.2.3. However, if any amount of leakage should occur, it would go directly into an RHR Complex compartment that doesn't have any active safety-related equipment. The east wall also has four sets of double 3 feet by 7 feet doors for access to the building that are not watertight. These doors are normally closed and locked, and have their thresholds at Elevation 590.0 feet and extend to Elevation 597.0 feet. They are of steel construction and are shielded behind reinforced-concrete missile walls. Waves reaching the east wall of the RHR complex across the flooded site would be diminished considerably by the stairs, the missile wall, and the landing at Elevation 590.0 feet in front of the doors. The insignificant amount of runup above the flooded elevation of 586.9 feet, or generated by the reduced waves, may find its way through the door threshold and door jambs, at Elevation 590.0 feet, and be diverted into the floor drain system in the building. The structure is also

designed to withstand the wave action associated with this flooding. Shore protection is not required to preclude flooding of this structure, UFSAR Section 3.4.4.2.

Category I Yard Structures

The (buried) Category I piping and electrical ducts between the RHR complex and the reactor building are below the site flood elevation of 586.9 feet during the PMME. The RHR service water and emergency equipment service water pipelines to both divisions will continue to function during the flood, UFSAR Section 3.4.4.3.

There are two sets of Category I ductbanks between the RHR complex and the Reactor/Auxiliary building, with a Division I and Division II ductbank in each set. In each case, the buried cable ducts between the RHR complex and the Reactor/Auxiliary building provide adequate cable separation to maintain independence of redundant circuits, UFSAR Section 3.4.4.3.

The first set of ductbanks was installed during plant construction. Each circuit is separately housed in a cast-in-place, rectangular reinforced-concrete duct. The duct is covered by successive layers of compacted-rock fill placed up to the finished site nominal grade of 583 feet. The duct runs vary in elevation from 573 feet minimum to 580 feet maximum. The maximum ground-water elevation is 576 feet and the cables are not specifically designed for continuous underwater service. For low voltage power, control and instrumentation cables, there is no long term mechanism for water related insulation degradation due to lack of voltage stressor or a credible common mode failure mechanism. Therefore, low voltage cables perform their design functions while their external surface remains continuously wetted due to surrounding water 4160-V essential power circuits are not routed within these ductbanks, UFSAR Section 3.4.4.3.

The second set of 4160-V RHR cable vaults, ductbanks and associated manholes is installed above the maximum ground water elevation of 576.0 feet with ducts sloped to the manholes, such that circuits contained are not subject to continuous wetting. These are also cast-in-place, rectangular reinforced concrete ductbanks, but are located with the ductbank top approximately six inches below the surface and manhole covers at grade level. 4160-V essential power circuits are routed within these ductbanks. Although the manholes and cable vaults may be subject to flooding during the duration of the PMME, the 4160-V essential bus tie cables are qualified for wet conditions in excess of six months, which is greater than this duration, UFSAR Section 3.4.4.3. The ductbanks rise above grade and enter above ground cable vaults at the RHR Complex and also rise above grade at the entrance to the reactor/auxiliary building cable vaults. The minimum elevation for cable termination in either the RHR complex or the reactor building is 588.7 feet, which is above the site probable stillwater elevation of 586.9 feet, UFSAR Section 2.4.2.2.4.

c. Describe any warning systems to detect the presence of water in rooms important to safety.

The Fermi 2 current licensing basis does not credit room water level warning systems as having an external flood protection function.

d. Discuss the effectiveness of flood protection systems and exterior, incorporated, and temporary flood barriers. Discuss how these systems and barriers were evaluated using the acceptance criteria developed as part of Requested Information Item 1.h.

The purpose of the recommendation 2.3 flood protection walkdowns were to verify that plant protection features credited in the Current Licensing Basis (CLB) for protection and mitigation from external flood events are available, functional and properly maintained [3]. The adequacy of the CLB will be addressed as part of the recommendation 2.1 reevaluate flooding hazards if an integrated assessment is required [3]. External flood protection features, Structures, Systems and Components (SSC) credited in the CLB have been described under section (b.) of this report. All features were classified, under NEI 12-07[3], section 5.5 as "Incorporated or Exterior Passive" with the exception of watertight doors and which were also classified as "Incorporated or Exterior Active" (operator action required). Fermi 2 has no CLB credited "Temporary Active" or "Temporary Passive" flood protection features. Waterstops on all construction joints described in section (b.) are integral to the Reactor/Auxiliary building walls. Visual inspections of walls below flood protection elevation of 588' were performed in accordance with NEI 12-07[3].

All features requiring visual inspection were accessible, with the exception of a watertight door (RB-1, Plant Identification System (PIS) # A7000Y033) which was classified as "Restricted Access." Section (f.) of this report provides further details for this feature. It was determined that visual inspections of penetration boot seals (silicone fabric boot) were insufficient to detect possible flaws (split, tears, etc.). Therefore a hands-on inspection was necessitated to pull folds out, checking for flaws and seam separation.

The Generic Acceptance Criteria for flood protection features established by NEI 12-07 Section 6 [3] was used as the basis to determine acceptability for all features in conjunction with site specific parameters as indicated in Part B.1 of the Walkdown Record Form(s). All flood protection features deemed to have a condition adverse to quality, "those that prevent the flood protection feature from performing its credited function during a design basis external flooding event and are 'deficiencies'", were entered into the Fermi 2 CAP system. The results of which are provided in section (f.) of this report.

Fermi 2 has one implementing procedure for flood protection features: Plant Technical Procedure, Abnormal Operating Procedure, and Acts of Nature 20.000.01 [7]. This procedure initiates the actions taken to verify exterior watertight doors are properly closed and dogged, and to close T4500-F601 HPCI Room Floor & Trench Drain Isolation motor operated valve. Walkthrough and Reasonable simulation of this procedure was performed demonstrating that

operator action is feasible and that all features are available, functional and implementable, this is documented on the Walkdown Record Forms, further discussed in Section (f) below. (Note: MOV T4500-F601 is an internal not external flood protection feature).

Visual inspections encompassed 60 penetrations, 5 watertight doors, and external flood walls (Reactor Building and Auxiliary Building). The walkdowns observed three "deficiencies" which were entered into the CAP system and are fully described in section (f.) of this report. It was determined that all three "deficiencies" could be mitigated in the event of external flooding scenario. All other findings not deemed to be "deficiencies" were also entered into the CAP system and are indicated on the relevant Walkdown Record Form.

The results of the walkdown, which are further discussed in section (f.), indicate that the overall effectiveness of the Fermi 2 flood protection features to perform their credited CLB function, described in sections (a.) and (b.), to be adequate. The aggregate effect of the "deficiencies" to the plant external flood protection procedures, features, and their associated actions identified in this report would not prevent their design functions from being performed as credited in the Current Licensing Basis (CLB). No additional existing plant equipment, structures, or procedures, not part of the flooding CLB are considered for use to mitigate an external flood. Flood protection features are categorized under the following systems, Reactor & Auxiliary Building Substructure (T2100), Reactor & Auxiliary Building Superstructure (T2200), & Turbine Building Superstructure (U2200), which are governed by Maintenance Rule [8]. No credit was taken for Maintenance Rule activities by the walkdowns.

e. Present information related to the implementation of the walkdown process (e.g., details of selection of the walkdown team and procedures,) using the documentation template discussed in Requested Information Item 1.j, including actions taken in response to the peer review.

The assembly of the flood walkdown team and establishment of the training curriculum were conducted per NEI 12-07[3] guidance to ensure that the team was prepared to conduct the site flood inspection.

The walkdown team consisted of six individuals trained in accordance with Appendix C of NEI 12-07[3] to perform visual inspections of plant structures, systems, and components. This team consisted of individuals with varying engineering backgrounds and experience to ensure differing viewpoints when conducting the visual plant inspection. The team consisted of two Civil Engineers and one Mechanical Engineer from the Plant Support Engineering Design group, and three Mechanical Engineers from the Systems Engineering group. Two technical advisors and one peer reviewer, each with 30 plus years' experience in the nuclear industry, were available for consulting and review purposes throughout the training and walkdown process. Each individual flood protection feature was independently inspected by two members of the walkdown team. It was ensured that each time an inspection occurred, the two members paired to do the independent visual inspection had complementary backgrounds in accordance with Section 5.3 of NEI 12-07[3]. For example, an inspector with a background in Civil Engineering

was paired with someone with a background in Mechanical Engineering, or a System Engineer was paired with a Design Engineer. The signatures in all Appendix B Walkdown Record Forms are consistent with the recommendation that two people should participate in the walkdown inspection of each individual flood protection feature while only one person may be used for procedure and maintenance/testing reviews.

Personnel performing visual inspections were initially trained through utilizing the INPO NANTeL training developed by the NEI Fukushima Flooding Task Force. All members of the walkdown team successfully completed the examination at the end of the course with a passing grade of 80% or higher. All members of the team, along with the project peer reviewer, then completed a site specific Just-In-Time (JIT) Training course (LP-GN-909-6152D)[5] that had the Terminal Objective of ensuring that all trainees would be able to identify and evaluate Fermi 2 external flood protection features and document findings as required by NEI 12-07[3]. The enabling objectives of this course included a review of the Current Licensing Basis (CLB) for external flooding, types of flood protection features and how they function (water tight doors, walls, seals, and penetrations), and the correct method for filling out the NEI 12-07 Appendix B Walkdown Record Form [3]. NEI 12-07 Appendix C [3] was used as a template for creating this JIT training course. This course was approved for use through site procedures governing the training approval process.

Upon completion of this site-specific JIT Training course, each trainee attained a single activity qualification (PSE-54)[6] for performing the external flood walkdowns and inspections. The Work Orders utilized when carrying out the visual inspections in the field required the signature of the team lead, ensuring that all inspectors performing the work under that particular Work Order had attained the flood inspection qualification.
For the purposes of the flooding design basis walkdown verification, the peer review is the process described in section 7 (of NEI-12-07). The only actions and results that should be reported (per NEI 12-07) are those that resulted in a change to the walkdown process or methodology. Corrections and resolution of differences resulting from the normal process of performer / reviewer interaction are not reported [1]. No changes were made to the walkdown process or methodology.

f. Results of the walkdown including key findings and identified degraded, non-conforming, or unanalyzed conditions. Include a detailed description of the actions taken or planned to address these conditions using the guidance in Regulatory Issues Summary 2005-20, Rev 1, Revision to NRC Inspection Manual Part 9900 Technical Guidance, "Operability Conditions Adverse to Quality or Safety," including entering the condition in the corrective action program.

Walkdowns were performed in accordance with NEI 12-07: Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features [3], utilizing the supplied Appendix B, Walkdown Record Form. Walkdown Record Forms are not submitted as part of this report; rather they are retained on site for NRC inspection and will be vaulted under document serial number TMPE-12-0298 [10]. The results of the walkdown are as follows.

All conditions classified as a "deficiency" as defined by NEI 12-07 [3] are reported in this section. Including actions taken to address the "deficiency" under the Fermi 2 Corrective Action Program (CAP) through the Condition Assessment Resolution Document (CARD) process. All observations made as a result of the walkdowns have been dispositioned (determination/classification made regarding "deficiency") at the time of report submittal. Observations not dispositioned as deficiencies have not been included in this report. However they have been entered in to the CARD system, and are documented on the appropriate Walkdown Record Form discussed above. One flood protection feature affected by Restricted Access could not be inspected, which is further discussed in this section. There were no "Inaccessible" features identified within the Scope of this walkdown.

Three conditions adverse to quality were identified as follows: degraded boot seal, small gap between sealing surfaces in the outer railroad (RR) airlock door, and absence of seals for four electrical conduits inside the RR airlock. Details are provided for each condition adverse to quality, including a description of the deficiencies and plans to address each.

CARD 12-28027 documents "deficiencies" identified with penetration P-165 (PIS # T2215X043) Steam Drain to Hotwell, double boot seal type M0547. Small splits/tears were identified in the outer boots: two approximately 1" and 1.5" on the Turbine Building side and one approximately 0.5" on the Auxiliary Building side. CARD 12-28027 requested a work order to replace the boot seal. The "deficiency" was determined to be able to be mitigated in the event of a flooding scenario. Postulated flooding would come from the Turbine Building side of penetration. Water level on this side would compress the outer boot to the inner boot reducing the likelihood of propagating the tear. Work order 35407588 was created to resolve the identified issue. Work will follow the normal work control process to be completed, with oversight by the Plant Health Committee (PHC).

CARD 12-28071 documents "deficiencies" identified with outer railroad (RR) air lock door R1-1 (PIS #T2200Y002). A one-eighth inch gap was observed between the inflatable seals just above the door stop. There were no signs of damage or degradation of the inflatable seal, and seal pressure is stable when inflated. The gap compromises the door's ability to fully function as a flood barrier, as it is no longer water tight. The inner RR airlock door R1-2 (PIS # T2200Y001) maintains the ability to fully protect the reactor building from an external flooding event. No SSCs important to safety are located inside of the RR airlock. Work order 3205844 was created to resolve the identified issue. Work will follow the normal work control process to be completed, with oversight by the PHC.

CARD 12-27999 documents "deficiencies" identified with RR airlock floor penetrations E-12350, E-12349, E-12348, and P-12347. Each penetration E-12350, E-12349, E-12348, and P-12347 connects to a pull box CC-068, CC-640, CC-641, and CC-642 respectively. The conduit is embedded in the floor, turns and goes thru the west wall of the RR airlock (below grade) and heads north to the Nitrogen Inert System Control Building, where the conduit connects to pull boxes. When the pull boxes inside the RR airlock were opened for inspection, no internal seals

were present. This condition was anticipated as the penetration schedule did not list an internal conduit seal for any of these penetrations. The conduit was identified as possible leak path during a design flood event. Work order 35407564 has been requested to install seals. Work will follow the normal work control process to be completed, with oversight by the PHC. The inner RR airlock door provides the same protection as described above.

Watertight door RB-1(A7000Y033) has been classified as "Restricted Access" per NEI 12-07[3] section 3.7 "areas not normally accessible for direct visual inspection, & risk to plant operation." A visual inspection was not performed for RB-1. Watertight door RB-1 is locked closed and behind a security barrier wall installed in 2007 and is no longer normally accessed. Contingency measures were planned for temporary removal of the wall for inspection. However during walkdown preparations, through the work order approval process it was identified that there is a probable internal flood risk (postulated circulating water expansion joint failure with a flow of 200,000 gpm) opposed to opening RB-1 during at power operations. The Probabilistic Safety Analysis (PSA) group classified the risk (flood risk to HPCI, RCIC, both divisions of core spray and possibly both divisions of RHR) as "unacceptable" per MMR12 "Equipment Out of Service Risk Management," exceeding the acceptable risk criteria to perform work. Given that the door has remained shut for several years, the possibility exists that the seal could be bonded to the mating surface. If the door were to be opened, damage to the seal would likely occur. The time required to repair the seal if it were to be damaged would be unacceptable due to the high risk of the activity. Therefore it was determined that the door could only be opened off-line. The condition was entered into the Fermi 2 CAP system, CARD 12-27521 requesting a work order to open and inspect RB-1 per NEI 12-07[3], during the next scheduled outage. Work Order 35334258 was generated in response to CARD 12-27521. This inspection is to be completed no later than during RF 16, currently scheduled for first quarter of 2014. This report will be updated and submitted within 90 days of the outage completion.

g. Document any cliff-edge effects identified and the associated basis. Indicate those that were entered into the corrective action program. Also include a detailed description of the actions taken or planned to address these effects.

Available Physical Margins (APM) have been collected and documented in the Walkdown Record form (Appendix B) [3]. This information will be used in the flood hazard reevaluations performed in response to Item 2.1: Flooding in the 50.54(f) letter. The Appendix B walkdown records will be retained and available for NRC audits and inspections.

No conditions related to small APM with large consequences (indicative of a potential cliff-edge effect) were identified. The approach followed for determining APM was in accordance with NEI 12-07[3].

h. Describe any other planned or newly installed flood protection systems or flood mitigation measures including flood barriers that further enhance the flood protection. Identify results and any subsequent actions taken in response to the peer review.

Based on the observations made, deficiencies identified and the review of the functional testing or preventative maintenance program (PM) as prescribed by NEI 12-07[3], recommendations for several enhancements to flood protection have been identified. These enhancements have been entered into the Fermi 2 CAP system for tracking and resolution, described below. All CARDs associated with these improvements have been documented on the Walkdown Record Form of the affected feature.

Flood protection features not covered by a PM or Surveillance have been identified. This gap has been entered into the Fermi 2 CAP system (CARD 12-28435) to determine the appropriate PM or Surveillance that the feature should be included under. If it is determined that there is not an appropriate existing PM or Surveillance a new one will be created (CARD 12-28437). In some cases features that are covered by a Surveillance or a PM, lack proper emphasis on the flood protection aspect of the feature, or sufficient detail is lacking for acceptance criteria. Actions to close these gaps include, adding additional detail for gasket acceptance criteria to PM for water tight doors (CARD 12-28436), and specifically identifying flood protection features (penetrations and doors) by name/PIS number to be inspected (CARD 12-28439).

As mentioned previously in section (d.), visual inspection of boot seals are inadequate to detect flaws that would compromise the boot seal to perform its flood protection function. Boot seals are currently only visually inspected using the acceptance criteria of Fermi 2 Plant Technical Procedure, Fire Protection Procedure, and "Inspection of Penetration Fire Stops." A more thorough hands on inspection is required to verify boot seal integrity. This gap has been identified in the Fermi 2 CAP system for resolution via CARD 12-28436.

For the purposes of the flooding design basis walkdown verification, the peer review is the process described in section 7 (of NEI-12-07). The only actions and results that should be reported (per NEI 12-07) are those that resulted in a change to the walkdown process or methodology. Corrections and resolution of differences resulting from the normal process of performer / reviewer interaction are not reported [1]. No changes were made to the walkdown process or methodology.

References

1. Nuclear Energy Institute, 2012, *Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features,* NEI 12-07 rev. 0-A, May 2012.
2. U.S. Nuclear Regulatory Commission (NRC), 2011, *Prioritization of Recommended Actions To Be Taken In Response to Fukushima Lessons Learned*, SECY-11-0137, October 3, 2011.
3. U.S. Nuclear Regulatory Commission (NRC), 2011, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near Term Task Force Review of Insights from the Fukushima Daiichi Accident,* 50.54(f) letter, March 12, 2012.
4. Fermi 2 Nuclear Power Plant, 2012, *Fermi 2 UFSAR Revision 18*, (Detroit Edison Company), October 2012.
5. Fermi 2 Nuclear Power Plant, 2012, *Flood Walkdowns Just-In-Time Training Course,* LP-GN-909-6152D.
6. Fermi 2 Nuclear Power Plant, 2012, *External Flood Engineer Walkdown Qualification Guide (PSE-54),* AQ-ES-070-0700-054 Rev. 0.
7. Fermi 2 Nuclear Power Plant, 2012, Plant Technical Procedure, Abnormal Operating Procedure, Acts of Nature 20.000.01 Rev. 44.
8. Fermi 2 Nuclear Power Plant, 2012, Maintenance Rule Conduct Manual, MMR Appendix E Revision 14.
9. Fermi 2 Nuclear Power Plant, 2012, Control Air and Breathing Air System Design Basis Document, P50-02, 03 Revision C.
10. Fermi 2 Nuclear Power Plant, 2012, TMPE-12-0298, NEI 12-07 Appendix B, Walkdown Record Forms.

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by Detroit Edison in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments. Please direct questions regarding these commitments to Mr. Zackary W. Rad, Manager - Nuclear Licensing, at (734) 586-5076.

REGULATORY COMMITMENTS	DUE DATE/EVENT
Watertight door RB-1(A7000Y033) will be inspected no later than during refueling outage 16 (RF16), currently scheduled for the first quarter of 2014.	RF16 (currently scheduled for the first quarter of 2014)
The results of the inspection of watertight door RB-1 will be submitted within 90 days of the outage completion.	90 days following completion of RF16