

ATTACHMENT

PALISADES NUCLEAR PLANT

FINAL SAFETY ANALYSIS REPORT (FSAR) REVISION 32

LIST OF CHANGES

9 pages follow

Palisades Nuclear Plant
Final Safety Analysis Report (FSAR) Revision 32 List of Changes

Log No.	Affected FSAR Sections, Tables, and Figures	Description of Change
11-043	Figure 9-11 sheet 1	This FSAR figure revision reflects the installation of tubing drains under Engineering Change (EC) 32865, located at the dedicated pump bowl drain port connections for diesel driven fire pump P-9B and diesel driven cooling tower fire pump P-41 in order to route normal packing leak-by to a floor drain. This allows excess packing leakage at P-9B and P-41 to discharge through the pump drain ports directly to the floor drains in the area, rather than overflowing onto the floor and creating a slipping hazard and housekeeping problem.
12-028	Figure 9-11 sheet 1	The FSAR figure was revised due to replacement of the diesel fire pump P-9B battery charger, ED-37, under EC37492. This change also eliminated low voltage alarm relays EVS-1610A and EVS-1610B, which presently alarm on low voltage for the fire pump battery banks. New voltmeters were installed in place of the low voltage alarm relays.
13-020	Figure 9-7 sheet 3	This figure change corrected the configuration of the component cooling water surge tank vent control valve CV-0915 under EC43719. The "shelf state" depiction of the control valve on the figure was incorrect. The valve will fail with the side port (vent to room) closed and bottom port (vent to vent gas collection header) open, and has been configured in that manner since plant construction.

13-036	Section 8.3.5.2	This revision removed discussion of a temporary modification installed under EC32131. This temporary modification, which was installed for one fuel cycle as a compensatory measure, involved lifting an alarm input from public address system undervoltage to avoid masking other DC system trouble inputs. The temporary modification was no longer required to address the condition and has been removed, and the FSAR was revised to remove discussion of the temporary modification.
14-0010	Figures 6-2 sheets 1 and 1A, Figure 8-5 sheet 2, Figure 9-1 sheet 2, Figure 9-8, Figure 9-9 sheet 2, and Figure 9-12	These FSAR figure changes were due implementation of the NRC Fukushima Order EA-12-049 FLEX coping strategies under EC46465. Palisades was required to have implemented the FLEX coping strategies upon completion of the most recent refueling outage, which ended in October 2015. The FSAR changes were limited to only the interfaces between FLEX equipment installed to support the coping strategies and existing plant equipment.
14-0012	Figure 9-8	This figure was revised to reflect installation of spent fuel pool level instrumentation for NRC Fukushima Order EA-12-051 under EC46466. Palisades was required to have installed the instrumentation upon completion of the most recent refueling outage, which ended in October 2015.
14-0013	Figure 1-1 sheet 2	This was a revision to a site plan drawing to depict the installation of storage buildings under EC46467 that house the Phase 2 portable FLEX equipment required by NRC Fukushima Order EA-12-049. Palisades was required to have implemented the FLEX coping strategies upon completion of the most recent refueling outage, which ended in October 2015.
14-0014	Figure 9-14 sheet 3	This figure was revised to reflect replacement of auxiliary building air conditioning units under EC49986.

14-0015	Figure 9-18 sheet 1A	The revision to this figure was due to EC51025, which replaced a one-inch manual globe valve with a ball valve in the chemical and volume control system.
14-0016	Figure 9-14 sheet 4	EC51690 added roughing filters to the cooling air intakes of the instrument air compressors, and Figure 9-14 sheet 4 was updated to reflect associated changes to the equipment.
14-0017	Figure 9-9 sheet 1	A note was added to the figure to reflect EC-51950, which installed a procedurally controlled temporary modification to supply service air from instrument air compressor C-2C while service air header isolation valve CV-1212 is out of service.
14-0019	Section 6.9	Section 6.9 was revised to change the name of the ISI Program Master Plan from "Palisades Nuclear Plant 40 Year Master Inservice Inspection Plan" to SEP-ISI-PLP-003, "Palisades Inservice Inspection Master Plan Fourth Interval, ASME Section XI, Division 1." This was an administrative change only and did not affect the content of the plan.
14-0020	Figure 8-5 sheet 1	The figure revision reflects EC52058, which permanently installed a manual transfer switch inside containment for temporary power needs during outages.
14-0023	Figure 9-7 sheet 3 and Figure 9-11 sheet 2	These figure changes removed a procedurized temporary modification installed under EC53930. The temporary modification provided for filling the component cooling water surge tank from the fire water system, and was removed because the use of fire system water for this purpose was not considered in Palisades' implementation of the National Fire Protection Association (NFPA) 805 project.

14-0024	Tables 8-6 and 8-7	The nameplate horsepower values for miscellaneous 480 volt loads are updated in Tables 8-6, "Diesel 1-1 Sequence Start," and 8-7, "Diesel 1-2 Sequence Start," as a result of a revision to calculation EA-ELEC-LDTAB-005, "Emergency Diesel Generators 1-1 & 1-2 Steady State Loadings." This calculation was revised under EC50073.
14-0026	Figure 9-1 sheet 1B	The figure was changed per EC53734 to reflect that the installed service water system valves MV-SW289, "Control RM HVAC Condenser VC-10 SW Inlet Vent," and MV-SW292, "VC-10 SW Inlet Press PI-1662B Root," are actually globe valves, as documented in Condition Report CR-PLP-2014-05093.
15-0003	Section 5.2, and Tables 5.2-1 and 5.2-3	The section was revised to clarify the use of Regulatory Guide 1.26 in establishing piping system class boundaries. The tables were revised to clarify the site's commitment to Regulatory Guides 1.26 and 1.29. The tables were also revised to clarify that the majority of the plant's original mechanical design was to the 1955 Edition of ANSI B31.1 instead of the 1965 Edition of ASME Section III. Lastly, the tables were revised to clarify that only portions of the piping associated with the condensate storage tank is installed with quality requirements. The changes were made under EC53181.
15-0004	Section 1.9.2.1, Table 1-6, Chapter 1 References, Section 4.5.3, and Chapter 4 References	The FSAR was revised to reflect the equivalent margins analysis EMA that was performed as required by 10 CFR 50, Appendix G, Section IV, and was approved in license amendment number 258, NRC letter titled "Palisades Nuclear Plant - Issuance of Amendment Re: Request for Approval of 10 CFR Part 50 Appendix G Equivalent Margins Analysis (CAC No. MF5163)," dated November 23, 2015" (ADAMS Accession Number ML15106A682).

15-0005	Sections 1.9.2.1, 3.3.2.6, and 4.5.3, and Chapters 1, 3, and 4 References	The FSAR was updated to reflect the revised date that Palisades is projected to reach the pressurized thermal shock (PTS) screening criterion as defined in 10 CFR 50.61. An updated reactor vessel fluence evaluation that reflected actual reactor operation determined that the PTS screening criteria would be reached in August 2017 rather than in April 2017. This updated fluence evaluation was subsequently approved in NRC letter, "Palisades Nuclear Plant – Updated Reactor Vessel Fluence Evaluation Supporting a Revised Pressurized Thermal Shock Screening Criteria Limit (TAC No. MF2326)," dated December 18, 2013 (ADAMS Accession No. ML13346A136).
15-0006	Figures 4-1 sheet 2, 6-2 sheet 1, 6-5 sheets 1, 2, 2A, and 3, 9-8, 9-2, 9-9 sheet 1, 9-14 sheet 2, 9-16, 9-18 sheet 1, 11-1 sheets 1A and 2, 11-2 sheet 1, and 11-3 sheet 1	The figures were revised due to replacement of pipe caps with quick disconnect fittings on containment penetration local leak rate test connections under EC47885.
15-0007	Section 9.4 and Chapter 9 References	This updated Section 9.4 and the references to reflect a revision of the spent fuel pool heat load calculation (revised under EC47885) and deleted a calculation that has been superseded by the revised calculation.
15-0008	Figure 8-7 sheet 1	The figure was revised due to EC54434, which added fuse protection for the four non-safety related DC lift pump circuits (pumps P-81A thru D) and for the public address system motor generator circuit.

15-0009	Section 9.7.2.3	EC55520 increased the overspeed trip setting of the auxiliary feedwater pump P-8B turbine driver K-8 from 3,880-3,916 rpm to 3,890-3,968 rpm to provide greater margin between the K-8 rated speed (3,560 rpm) and the K-8 overspeed trip setting in order to prevent spurious overspeed trips of K-8 during overspeed trip testing. This resulted in a revision to FSAR Section 9.7.2.3, which previously stated that the [K-8] turbine "...is protected by a 10% overspeed trip." The FSAR section now states that K-8 "...is protected by an overspeed trip set within 110% of maximum continuous speed." The typical industry practice is to provide overspeed trip devices set to 110% of maximum continued speed, which would be 4,111 rpm for the P-8B driver. The trip setting continues to be well below the manufacturer's maximum overspeed of 4,300 rpm.
15-0010	Figure 9-11 sheet 1	The drawing was revised to show that fire pump battery voltmeters EVI-1600, EVI-1601, EVI-1602, and EVI-1603 are connected to diesel engine trouble alarms EK-1139 and EK-3519. The circuitry was modified under EC55648 to prevent a nuisance alarm that can mask other engine alarms when a diesel engine is running.
15-0011	Figure 8-1 sheet 1 and Figure 8-4	The figures were revised to change the feeder cable from the start-up transformer 1-2 to the safeguard busses 1C and 1D as a result of EC55367.
15-0012	Sections 1.4, 5.1, 6.1, 6.2, 6.3, 7.2, 7.4, 7.7, 8.1, 8.3, 8.4, 8.5, 8.7, 8.9, 9.5, 9.6, Chapter 9 References, and Table 9-21	These FSAR changes were due to license amendment 254, which was issued in NRC letter "Palisades Nuclear Plant – Issuance of Amendment Regarding Transition to a Risk-Informed, Performance-Based Fire Protection Program in Accordance with 10 CFR 50.48(c) (TAC No. MF0382)," dated February 27, 2015 (ADAMS Accession No. ML15007A191).
15-0014	Table 4-16	The upper limit for primary coolant system hydrogen in the table was aligned with site procedural requirements.

15-0015	Section 10.2.1.2 and Figure 10-1	The section and figure were revised due to EC17951, which replaced the moisture separator reheaters (MSRs). The previous MSRs had demister pads and an inefficient heat exchanger design. The new MSR design has stacked chevrons and a more efficient tube heat exchanger design.
15-0016	Section 1.9.1.17 and Chapter 1 References	The FSAR was updated to reflect NRC approval of the revised program plan for aging management of the reactor vessel in NRC letter, "Palisades Nuclear Plant – Staff Assessment Re: Revised Program Plan for Aging Management of Reactor Vessel Internals (TAC No. ME9569)," dated December 11, 2014 (ADAMS Accession No. ML14336A397).
15-0017	Table 9-2	Table 9-2, "Service Water System Design Ratings and Construction of Components," was revised to list all of the materials of construction for Item #3 "Piping, Fittings and Valves." Specifically, cast iron and ductile iron are used for some valves in the system and therefore are added to the table.
15-0018	Figure 9-11 sheet 2 and Figure 11-1 sheet 1C	Notes on the figures were revised to reflect that demineralized water system will be used rather than fire protection system (FPS) water to flush tap valve MV-RW518 under a proceduralized temporary modification implemented under EC57140. The use of FPS water is being phased out under upcoming NFPA-805 mandates to limit the use of FPS water in other systems wherever possible.
15-0020	Section 14.1.1, Section 14.1 References, Section 14.16.2.3, 14.16.3.1.2, Table 14.1-4, and Table 14.1-5	These changes reflected the Palisades fuel cycle 25 core reload package, developed under EC52260. The reload package provided the bases for the startup testing and operation of fuel cycle 25, in accordance with safety analyses prepared by AREVA.
15-0021	Figure 8-3 sheet 1	The figure was updated due to replacement of the four feeder cables that connect the startup transformer to the 4160 V bus 1B with cables of higher capacity under EC59551.

15-0022	Figure 6-1 sheet 2, Figure 6-5 sheet 1, and Table 5.8-4	The figures and table were revised due to the addition of a vent line and an associated containment isolation valve installed in the high pressure safety injection (HPSI) system under EC59222. The vent is located at an accessible location to allow gas purging during power operation at a location of as-found gas accumulation in the HPSI system.
15-0023	Table 9-1	In the table, the list of equipment for design basis accident (DBA) operations includes an instrument air compressor service water flow requirement of 16 gpm, however, the instrument air compressors are not required for DBA response. A footnote was added to the table indicating that service water is provided to the compressors in a DBA scenario, but is not required.
15-0024	Sections 3.2.3, 5.8.8, 14.1, 14.14, 14.15, 14.16, and 14.22, Tables 14.11-1, 14.11-3, and 14.24-2	The FSAR was updated to clarify the descriptions of the maximum hypothetical accident, to incorporate references to 10 CFR 50.67, "Alternate source term," to delete superseded Chapter 14 references, and to add offsite and onsite atmospheric dispersion factors to Table 14.11-3.
15-0031	Sections 1.6.2, 1.9.1.2, 5.2.2.5, 6.9, and 6.9.1, and Table 5.2-1	The FSAR was updated to reflect the inservice inspection (ISI) program update for the fifth inspection interval at Palisades. The fifth ISI interval started at Palisades on December 13, 2015.
16-0001	Sections 1.9.1.16, 1.9.2.1, 3.3.2.6, 4.5.3, and 5.1.5.2, Table 1-7, and References for Chapters 1, 3, and 4	The FSAR was updated due to license amendment number 257, approved by the NRC on November 23, 2015 (ADAMS ML15209A791), which permitted implementation of the alternate pressurized thermal shock regulation 10 CFR 50.61a, "Alternate Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events," at Palisades.

16-0006	Table 14.1-6	This change request corrected reference numbers in two of the Notes following FSAR Table 14.1-6, "Summary of Radiological Consequences of the Chapter 14 Events." Note #4 should refer to Reference 41 rather than Reference 46 since it pertains to the control room habitability analysis rather than a NRC letter for a Systematic Evaluation Program topic concerning the radiological consequences of fuel damaging accidents. The first reference in Note #5 should be Reference 54 (Regulatory Guide 1.183) rather than Reference 49 (Palisades Cycle 20 Safety Analysis Report) since this portion of the note is referring to the Regulatory Guide.
16-0021	Table 1-10	Palisades' transition from an Appendix R program to a NFPA 805 fire protection program resulted in newly credited component, supplemental diesel generator fuel oil tank (T-1001), that is now in-scope of license renewal in support of the fire protection regulated event under 10 CFR 54.4(a)(3). An evaluation performed under 10 CFR 54.37(b) determined that T-1001 should be reported to the NRC in accordance with the 10 CFR 54.37(b) process, and FSAR Table 1-10 should be updated with the newly identified component.
16-0022	Sections 5.3.3 and 5.5	Reference 3 in Section 5.3 is corrected to refer to NUREG-0820 (Systematic Evaluation Program) Section 4.6 for Topic III-2 and Reference 4 in Section 5.5 is corrected to refer to NUREG-0820 Section 4.8 for Topic III-4.A.

ENCLOSURE

CD-ROM CONTAINING FINAL SAFETY ANALYSIS REPORT – REVISION 32

1 CD-ROM Enclosed