

**CHRONOLOGICAL LICENSING EVENTS**

| <b><u>Date</u></b> | <b><u>Docket 50-255<br/>CPOL Application</u></b> | <b><u>FSAR</u></b>                              | <b><u>Operating License</u></b>                                       | <b><u>Other</u></b>                                |
|--------------------|--|---|---|--|
| June 2, 1966       | CP Co Files CPOL Application                     | PSAR Included With Application                  |   |  |
| March 14, 1967     | AEC Issues CPPR-25                               |   |   |  |
| November 1, 1968   | CP Co Files Amendment 9 to CPOL Application      | FSAR, Rev 0, Included                           | Initial Operating License Application for Operation at 2,200 MWt Core |  |
| October 9, 1970    |  |   |   | CP Co File Construction Stage Environmental Report |
| March 24, 1971     |  |   | NRC Issues IDPR-20 (1 MW)   |  |
| August 18, 1971    |  |   |   | CP Co Files ER Supplement (Special Report 4)       |
| November 20, 1971  |  |   | Amendment 1 - Authorization for 20% Power (440 MW)                    |  |
| March 10, 1972     |  |   | Amendment 2 - Authorization for 60% power (1,320 MW)                  |  |
| June 1972          |  |   |   | NRC Issues Final Environmental Statement           |
| July 1972          |  |   |   | CP Co Files Operating Stage ER                     |
| September 1, 1972  | NRC Issues OL DPR-20                             |   | Amendment 3 - Authorized 60% Power                                    |  |
| October 16, 1972   |  |   | Amendment 4 - Authorized 100% Power (Limited to 60% Power)            |  |
| March 23, 1973     |  |   | Authorization for 100% Power (Limited to 85% Power)                   |  |
| January 22, 1974   | CP Co Files Amendment 28 to CPOL                 | Full Revision to FSAR (Denoted as Amendment 28) | CP Co Application for Full-Term Operating License at 2,638 MWt Core   |  |

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| <b><u>Date</u></b> | <b><u>Docket 50-255<br/>CPOL Application</u></b> | <b><u>FSAR</u></b>  | <b><u>Operating License</u></b>  | <b><u>Other</u></b>  |
|--------------------|--|---|--|--|
| December 12, 1974  |  |   |  | NPDES Permit Granted by Michigan DNR                                     |
| August 2, 1976     |  |   |  | Modified NPDES Permit Granted  |
| August 12, 1977    |  |   | CP Co Requests the OL Limit Be Increased to 2,530 MWt Core Power           |  |
| November 1, 1977   |  |   | NRC Issues Amendment 31 to DPR-20 Granting Power Operation up to 2,530 MWt |  |
| February 1978      |  |   |  | NRC Initiated Systematic Evaluation Program (SEP)                        |
| October 1978       |  |   |  | NRC Issues Final Addendum to the Final Environmental Statement           |
| October 1982       |  |   |  | SEP Integrated Plant Safety Assessment Final Report (NUREG 0820) issued  |
| November, 1983     |  |   |  | Supplement 1 to SEP Integrated Plant Safety Assessment Report issued.    |
| June 28, 1984      |  | Revision 0, Initial FSAR Update Pursuant to 10 CFR 50.71(e) |  |  |
| October 22, 1990   |  |   |  | NRC issues Environmental Assessment in support of POL to FTOL conversion |
| November 21, 1991  |  |   |  | NRC issues SER (NUREG 1424) in support of POL to FTOL conversion         |
| February 21, 1991  |  |   | FTOL issued by NRC   |  |

**CHRONOLOGICAL LICENSING EVENTS**

|                   |  |  |  |  |
|-------------------|--|--|--|--|
| November 30, 1999 |  |  | NRC approved conversion to Improved Technical Specifications Amendment 189 based on NUREG 1432, Standard Technical Specifications.   |  |
| October 24, 2000  |  |  | Improved Technical Specifications implemented.   |  |
| December 14, 2000 |  |  | Construction period recaptured with change of License expiration date to March 24, 2011. Amendment 192   |  |
| June 23, 2004     |  |  | NRC issued Amendment 216 to Palisades Operating License to authorize operation of the facility at steady state reactor core power levels up to 2565.4 Megawatts thermal [FC-977].  |  |
| January 17, 2007  |  |  | On January 17, 2007, the Renewed Facility Operating License was issued by the NRC, extending the license expiration date to March 24, 2031.  |  |
| April 11, 2007    |  |  | On April 11, 2007, the NRC issued Amendment 224 to the Palisades Renewed Facility Operating License to reflect the transfer of ownership to Entergy Nuclear Palisades, LLC, and operating authority Entergy Nuclear Operations, Inc. |  |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)****Plant**

|   |         |
|---|---------|
| Net Electrical Power Output @ 2,200 MWt                 | 700 MWe |
| Net Electrical Power Output @ 2,565.4 MWt               | 750 MWe |
| Maximum Expected Gross Electrical Output<br>@ 2,650 MWt | 845 MWe |

**Nuclear Steam Supply System**

|                                    |  |
|------------------------------------|--|
| Core Thermal Output                | 2,200 MWt Initial,<br>2,638 MWt Ultimate,<br>2,565.4 MWt Presently                           |
| Operating Pressure                 | 2,100 psia Initial Rating,<br>2,250 psia for Ultimate Rating,<br>2060 present nominal rating |
| Design Pressure                    | 2,500 psia   |
| Primary Coolant Inlet Temperature  | 545°F Initial Rating,<br>537°F Presently   |
| Primary Coolant Outlet Temperature | 591°F Initial Rating,<br>583°F Presently   |
| Pipe Size: Outlet (ID)             | 42"  |
| (Wall Thickness)                   | 4"   |
| Inlet (ID)                         | 30"  |
| (Wall Thickness)                   | 3"   |
| Flow per Loop                      | 62.5 x 10 <sup>6</sup> lb/h original<br>72.3 x 10 <sup>6</sup> lb/h present nominal          |
| Number of Loops                    | 2  |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|                  |  |
|------------------|--|
| Number of Pumps  | 4  |
| Type             | Vertical, Centrifugal,<br>Mechanical Seals |
| Design Flow/Pump | 83,000 gpm                                 |
| Design Head      | 260'                                       |

**Core**

|  |   |
|--|---|
| Total Heat Output  | 2,565.4 MWt                                       |
| Heat Generated in Fuel   | 97.4%   |
| Design Thermal Overpower   | 15%   |
| DNB Ratio at Nominal Conditions  | 2.00  |
| Core Power Density   | 69.3 kW/Liter original<br>79.8 kW/Liter presently |
| Number of Fuel Bundles   | 204   |
| Number of Fuel Rods/Bundle Initial Core Loading (A, B, C1 + Typical Reload Fuel) | 212   |
| Number of Fuel Rods/Bundle   | 216 typical                                       |
| Fuel Rod Pitch   | 0.550"  |
| Fuel Clad Material   | Zircaloy-4 or M5                                  |
| Number of Full-Length Control Rods   | 41  |
| Number of Part-Length Control Rods   | 4   |
| Control Rod Pitch  | 16.97"  |
| Absorber Material  | Silver-Indium-Cadmium                             |
| Control Rod Drive Type   | Rack and Pinion                                   |
| Equivalent Core Diameter   | 136.7"  |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)****Reactor Vessel**

|                             |  |
|-----------------------------|--|
| Inside Diameter             | 172"   |
| Overall Length              | 40'-3/4"   |
| Wall Thickness Without Clad | 8-1/2"   |
| Wall Material               | SA-302   |
| Cladding Thickness          | 3/16"  |
| Cladding Material           | SS-308/309   |
| Design Temperature          | 650°F  |
| Design Pressure             | 2,500 psia   |
| NDT Temperature (Initial)   | 40°F (This value does not apply to the vessel head. The vessel head RT-ndt is 72°F, Reference 14.) |
| Total Weight                | 426 Tons   |

**Steam Generators**

|                  |                              |
|------------------|------------------------------|
| Number of Units  | 2                            |
| Type             | Vertical "U" Tube            |
| Outside Diameter | 20'-10"                      |
| Length           | 59'-2"                       |
| Number of Tubes  | 8,219 Initial Design         |
| Tube OD          | 3/4"                         |
| Tube Material    | Inconel                      |
| Shell Material   | SA-302B and<br>SA-516, Gr 70 |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

## Primary Side

|                                      |            |
|--------------------------------------|------------|
| Tube Side Design Pressure            | 2,500 psia |
| Tube Side Design Temperature         | 650°F      |
| Tube Side Operating Pressure         | 2,060 psia |
| Coolant Inlet Temperature (nominal)  | 582.7°F    |
| Coolant Outlet Temperature (nominal) | 537.3°F    |
| Bottom Head Clad Material            | SS-304     |

## Secondary Side

|   |                        |
|---|------------------------|
| Shell Side Design Pressure  | 1,000 psia             |
| Shell Side Design Temperature   | 550°F                  |
| Operating Pressure<br>(Steam Generator Outlet at<br>Plant Rating of 2,565.4 MWt Core) | 760-770 psia presently |
| Operating Temperature   | 512°F                  |
| Quality   | 99.8%                  |
| Feedwater Inlet Temperature   | 440.7°F                |
| Steam Flow/Steam Generator ( $10^6$ lb/h)   | 5.649                  |

Turbine Cycle

|  |   |
|--|---|
| Turbine Design                               | Tandem-Compound,<br>1 HP, 2 LP Turbines |
| Exhaust Pressure                             | 1.8 inHg                                |
| Makeup                                       | 0.25%                                   |
| Steam Atmospheric Dump (Rated Steam Flow)    | 35%                                     |
| Steam Bypass to Condenser (Rated Steam Flow) | 5%                                      |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|                                      |                   |
|--------------------------------------|-------------------|
| Feedwater Heater Stages              | 6                 |
| Condensate Pumps - Number            | 2 - Half Capacity |
| Design Flow                          | 9,250 gpm         |
| Design Head                          | 1,000'            |
| Feedwater Pumps - Number             | 2 - Half Capacity |
| Design Flow                          | 13,500 gpm        |
| Design Head                          | 1,920'            |
| Condenser Circulating Pumps - Number | 2 - Half Capacity |
| Design Flow                          | 205,000 gpm/Pump  |
| Design Head                          | 90'               |

**Generator**

|                  |         |
|------------------|---------|
| Design Rating    | 955 MVA |
| Power Factor     | 0.85    |
| Terminal Voltage | 22,000  |

**NSSS Auxiliary Systems**1. **Chemical and Volume Control System**

|                           |   |
|---------------------------|---|
| Normal Letdown Flow Rate  | 40 gpm                                      |
| Maximum Letdown Flow Rate | 133 gpm                                     |
| Charging Pumps - Number   | 2 - Fixed Capacity<br>1 - Variable Capacity |
| Design Flow               | 40 gpm                                      |
| Design Head               | 6,375'                                      |



**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|                                      |                                    |
|--------------------------------------|------------------------------------|
| Metering Pumps - Number              | 1                                  |
| Design Flow Range                    | 0 to 35 gpm                        |
| Maximum Outlet Pressure              | 120 psig                           |
| Regenerative Heat Exchanger - Number | 1 - Full Capacity                  |
| Design Heat Transfer                 | $6.6 \times 10^6$ Btu/h            |
| Letdown Heat Exchanger - Number      | 1 - Full Capacity                  |
| Design Heat Transfer                 | $19.1 \times 10^6$ Btu/h           |
| Demineralizers - Number              | 2 - Purification<br>1 - Deborating |
| Nominal Rating                       | 40 gpm                             |
| Maximum Flow                         | 160 gpm                            |
| Resin Type                           | H-OH                               |
| Resin Volume                         | 32 ft <sup>3</sup>                 |
| Filter - Number                      | 2                                  |
| Type                                 | Cartridge                          |
| Design Rating                        | 120 gpm                            |
| Filter Size                          | 2 Microns                          |
| 2. <u>Safety Injection System</u>    |                                    |
| Safety Injection Tanks - Number      | 4                                  |
| Volume - Total                       | 2,000 ft <sup>3</sup>              |
| Borated Water                        | 1,000 ft <sup>3</sup>              |
| Nitrogen @ 200 psia                  | 1,000 ft <sup>3</sup>              |
| Design Pressure                      | 250 psia                           |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|  |                                      |
|--|--------------------------------------|
| Design Temperature   | 200°F                                |
| High-Pressure Pumps - Number                                   | 2 - Full Capacity                    |
| Rating, Each   | 300 gpm                              |
| Head   | 2,500'                               |
| Low-Pressure Pumps - Number                                    | 2 - Full Capacity                    |
| Rating, Each   | 3,000 gpm                            |
| Head   | 350'                                 |
| <b>3. <u>Containment Air Cooling System</u></b>                |                                      |
| Air Coolers - Number   | 4 (3-safety related)                 |
| Rating, Each Safety Related Cooler<br>(Btu/h) @ 283°F, 55 psig | $87.2 \times 10^6$ (DBA)             |
| Cooling Water Flow, Each                                       | Set per FSAR Sect 9.1.2.3 (DBA)      |
| Airflow  | 30,000 ft <sup>3</sup> /min (DBA)    |
| Rating (Safety Related Cooler)                                 | $1.98 \times 10^6$ Btu/h (Normal)*   |
| (Non-safety Related Cooler)                                    | $1.98 \times 10^6$ Btu/h (Normal)*   |
| Cooling Water Flow, Each                                       | 500 gpm (Normal)                     |
| Airflow  | 60,000 ft <sup>3</sup> /min (Normal) |

\*Cooler performance based on 115°F EAT & 81.5°F EWT

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**4. Containment Spray System

|   |                            |
|---|----------------------------|
| Spray Pumps - Number                                  | 3 - Half Capacity          |
| Rating, Each  | 1,340 gpm                  |
| Head  | 450'                       |
| Heat Exchangers<br>(Shutdown Cooling Heat Exchangers) | 2                          |
| Rating, Each (Btu/h)                                  | $83.5 \times 10^6$ @ 283°F |

## 5. Deleted

6. SIRW Tank

|                     |                 |
|---------------------|-----------------|
| Fluid Volume        | 285,000 Gallons |
| Boron Concentration | 1720-2500 ppm   |

7. Shutdown Cooling System

|                                    |                   |
|------------------------------------|-------------------|
| Auxiliary Feedwater Pumps - Number | 3 - Full Capacity |
| Turbine Driven - Number            | 1                 |
| Rating                             | 415 gpm           |
| Head                               | 2,730'            |
| Motor Driven - Number              | 2                 |
| Approximate Rating<br>(Pump P8A)   | 415 gpm           |
| (Pump P8C)                         | 330 gpm           |
| At Approximate Head<br>(Pump P8A)  | 2,730'            |
| (Pump P8C)                         | 2,260'            |

Pumps - Use Low-Pressure Safety Injection Pumps

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|                                     |   |
|-------------------------------------|---|
| Heat Exchangers - Number            | 2 - Half Capacity                       |
| Rating, Each                        | 80.0 x 10 <sup>6</sup> Btu/h            |
| 8. <u>Component Cooling System</u>  |   |
| Component Cooling Pumps - Number    | 3 - Half Capacity                       |
| Rating, Each                        | 6,000 gpm                               |
| Head                                | 164'                                    |
| Heat Exchangers - Number            | 2                                       |
| Rating, Each                        | 50.5 x 10 <sup>6</sup> Btu/h (Normal)   |
| Rating, Each                        | 85.0 x 10 <sup>6</sup> Btu/h (Post-DBA) |
| 9. <u>Spent Fuel Cooling System</u> |   |
| Spent Fuel Pool Capacity            | 4 Cores                                 |
| Volume of Empty SFP Cavity          | 21,885 ft <sup>3</sup>                  |
| Fuel Assemblies                     | 892                                     |
| Pumps - Number                      | 2 - Half Capacity                       |
| Rating, Each                        | 1,700 gpm                               |
| Head                                | 64'                                     |
| Heat Exchanger - Number             | 2                                       |
| Combined Rating                     | 23 x 10 <sup>6</sup> Btu/h              |
| Filter - Number                     | 1                                       |
| Type                                | Cartridge                               |
| Rating                              | 150 gpm                                 |
| Size                                | 25 Microns                              |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|   |                           |
|---|---------------------------|
| Demineralizer - Number                      | 1                         |
| Resin Type                                  | H-OH                      |
| Bed Size                                    | 68 ft <sup>3</sup>        |
| Nominal Flow                                | 150 gpm                   |
| 10. <u>Shield Cooling System</u>            |                           |
| Pumps - Number                              | 2 - Full Capacity         |
| Rating, Each                                | 180 gpm                   |
| Head  | 79'                       |
| Heat Exchanger - Number                     | 1 - Full Capacity         |
| Rating                                      | 2 x 10 <sup>5</sup> Btu/h |
| Sets of Cooling Coils - Number              | 2 - Full Capacity         |
| <u>Conventional Plant Auxiliary Systems</u> |                           |
| 1. <u>Service Water System</u>              |                           |
| Service Water Pumps - Number                | 3 - Half Capacity         |
| Rating                                      | 8,000 gpm                 |
| Head  | 140'                      |
| 2. <u>Compressed Air System</u>             |                           |
| Compressors - Number                        | 3                         |
| Rating                                      | 288 scfm                  |
| Discharge Pressure                          | 100 psig                  |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**3. High-Pressure Air Systems

|                      |           |
|----------------------|-----------|
| Compressors - Number | 3         |
| Rating, Each         | 22.3 scfm |
| Discharge Pressure   | 325 psig  |

Containment

|                    |   |
|--------------------|---|
| Type               | Reinforced Concrete,<br>Prestressed, Post-Tensioned |
| Diameter           | 116'-0" ID (Inside)                                 |
| Height             | 190'-6" (Inside)                                    |
| Liner - Material   | A442 Plate  |
| Thickness          | 1/4"  |
| Design Pressure    | 55 psig   |
| Design Temperature | 283°F   |
| Free Volume        | $1.64 \times 10^6 \text{ ft}^3$                     |
| Leak Rate          | 0.1%/Day  |

Electrical Equipment

|                            |                        |
|----------------------------|------------------------|
| Main Transformer - Rating  | 875 MVA                |
| Voltage                    | 345 kV                 |
| Diesel Generators - Number | 2 - Full Capacity      |
| Rating                     | 3,000 kVA              |
| Fuel Oil Capacity          | 1 Week Following a DBA |

**PALISADES DESIGN CHARACTERISTICS**  
**(NOMINAL VALUES)**

|                          |                 |
|--------------------------|-----------------|
| Station Battery - Number | 2               |
| Type                     | Lead Calcium    |
| Number of Cells          | 59              |
| Rating                   | 125 V, 1,800 Ah |
| Chargers - Number        | 4               |
| Inverters - Number       | 4               |
| AC/DC Voltage            | 120/125         |
| Rating                   | 6 kVA           |

**SYSTEMATIC EVALUATION PROGRAM (SEP) AND INTEGRATED ASSESSMENT PROGRAM (IAP)**  
**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>   | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>  |
|--------------|--|------------------|--|
| II-1.A       | Exclusion Area Authority and Control   | 4/N              | (Evaluation acceptable.) Section 2.1.  |
| II-1.B       | Population Distribution  | S                | Section 2.1.2.   |
| II-1.C       | Potential Hazards or Changes in Potential Hazards Due to Transportation, Institutional, Industrial and Military Facilities | S                | Sections 2.1.3 and 5.5.4.  |
| II-2.A       | Severe Weather Phenomena   | S                | Sections 8.7.1, 8.7.2 and 8.7.3.   |
| II-2.C       | Atmospheric Transport and Diffusion Characteristics for Accident Analysis  | S                | Section 2.5.   |
| II-3.A       | Hydrologic Description   | S                | Section 2.2.   |
| II-3.B       | Flooding Potential and Protection Requirements   | 3/C              | (CP Co seiche evaluation established maximum flood level of 593.5 MSL accepted by staff October 7, 1982.)<br>Sections 2.2.2 and 5.4.1. |
| II-3.B.1     | Capability of Operating Plant To Cope With Design-Basis Flooding Conditions  | 3/C              | (Same as II-3.B.) Section 5.4.1.   |
| II-3.C       | Safety-Related Water Supply (Ultimate Heat Sink (UHS))   | 3/C              | (Same as II-3.B.) Sections 5.4.1 and 9.1.  |
| II-4         | Geology and Seismology   | S                | Sections 2.3 and 2.4.  |
| II-4.A       | Tectonic Province  | S                | Section 2.3.   |
| II-4.B       | Proximity of Capable Tectonic Structures in Plant Vicinity   | S                | Section 2.4.   |



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| <u>Topic</u> | <u>Title</u>   | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|--------------|--|------------------|---|
| II-4.C       | Historical Seismicity Within 200 Miles of Plant                            | S                | Section 2.4.  |
| II-4.D       | Stability of Slopes  | S                | Section 2.4.  |
| II-4.F       | Settlement of Foundations and Buried Equipment                             | S                | Section 2.3.5.  |
| III-1        | Classification of Structures, Components and Systems (Seismic and Quality) | 3/C              | (Additional information supplied on radiography fracture toughness, valves, pumps and storage tanks accepted by staff June 27, 1983.) Sections 5.1.5 and 11.2.1; and Tables 5.2-1, 5.2-2 and 5.2-3.                     |
| III-2        | Wind and Tornado Loadings  |                  |   |
|              | - SIRW and Condensate Storage Tank   | 2/C              | (New EOPs were issued in December 1986.) Sections 5.3.2 and 5.3.3.  |
|              | - Emergency Generators Supply and Exhaust Piping                           | 4/N              | (Loss of both diesel generators and offsite power could present safe shutdown problems, however, the probability of both generators being disabled, precludes any back-fitting requirements.) Sections 5.3.2 and 5.3.3. |
|              | - Spent Fuel Pool Enclosure  | 4/N              | (The ability of the Plant to shut down is not affected by the inability of the steel enclosure to withstand tornado loadings, precluding any backfit requirements.) Sections 5.3.2 and 5.3.3.                           |
| III-3.A      | Effects of High Water Level on Structures                                  | S                | (The NRC concluded that the design approach used for Palisades CP Co Design Class 1 structures was adequate for resisting a design basis flood.) Sections 5.4.1 and 5.9.1.  |

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|-----------------|--|------------------|---|
| III-3.C         | Inservice Inspection of Water Control Structures                               |                  |   |
|                 | - Cooling Water System Structures Inspection                                   | 2/C              | (Inspection began in 1982) Section 9.12.                                      |
|                 | - Flood Protection Structures  | 4/N              | (Inspection part of Preventative Maintenance Program.)                        |
| III-4.A Tornado | Missiles   |                  |   |
|                 | - SIRW and Condensate Storage Tanks  | 2/C              | (New EOPs were issued in December 1986.) Sections 5.3.3 and 5.5.1.            |
|                 | - Emergency Diesel Supply and Exhaust Piping                                   | 4/N              | (Same as III-2.) Sections 5.3.3 and 5.5.1.                                    |
|                 | - Atmospheric Relief Stacks of Steam Relief Valves                             | 4/N              | (Same as III-2.) Sections 5.3.3 and 5.5.1.                                    |
|                 | - Compressed Air System  | 4/N              | (Same as III-2.) Sections 5.3.3, 5.5.1 and 9.5.2.1.                           |
| III-4.B         | Turbine Missiles   | S                | Section 5.5.2.  |
| III-4.C         | Internally Generated Missiles  | S                | Section 5.5.3.  |
| III-4.D         | Site-Proximity Missiles (Including Aircraft)                                   | S                | Section 5.5.4.  |
| III-5.A         | Effects of Pipe Break on Structures, Systems and Components Inside Containment | 2/C              | (No modifications necessary. Reference CP Co letter of 5/31/85.) Section 5.6. |
|                 | - Operability of Leakage Detection System                                      | 2/C              | (Technical Specifications change submitted by CP Co letter of 5/23/85.)       |
| III-5.B         | Pipe Break Outside Containment   | S                | Section 5.6.1.  |

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|---------------|---|------------------|--|
| III-6 Seismic | Design Considerations   |                  |  |
|               | - Small Piping  | 3/C              | Supplemental SER issued July 12, 1991 and CPCo Letter dated April 8, 1992  |
|               | - Electrical Components   | 3/C              | Resolved under SQUG Outlier process (Sections 5.7.1.3 and 5.7.7)   |
| III-7.A       | Inservice Inspection, Including Prestressed Concrete Containments With Either Grouted or Ungouted Tendons |                  |  |
|               | - Tendon Force Acceptance Criteria  | 3/C              | (Acceptance criteria developed for each tendon that varies with time. Reference CP Co 11/7/83 submittal.) Sections 5.8.4.2 and 5.8.2.  |
|               | - Inspect Tendon-End Anchorages   | 3/C              | (CP Co submitted Technical Specifications changes that specify when tendon-end anchorages will be inspected during ILRT. Reference 5/4/87 and 9/16/87 CP Co submittals.) Sections 5.8.4.2 and 5.8.2. |
| III-7.B       | Design Codes, Design Criteria, Load Combinations and Reactor Cavity Design Criteria                       | 3/C              | (Issue resolved. Reference CP Co letters of 6/28/84, 5/3/85 and 8/7/91.) Sections 5.8.3, 5.9.1 and 5.10.2; and Table 5.2-2.  |
| III-7.C       | Delamination of Prestressed Concrete Containment Structures   | 3/C              | (One-time delamination inspection of containment dome completed.) Section 5.8.8.   |
| III-7.D       | Containment Structural Integrity Tests  | S                | Section 5.8.8.4.   |

**SYSTEMATIC EVALUATION PROGRAM (SEP) AND INTEGRATED ASSESSMENT PROGRAM (IAP)**  
**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>  | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>  |
|--------------|---|------------------|--|
| III-8.A      | Loose-Parts Monitoring and Core Barrel Vibration Monitoring                                   | 3/C              | (A program of "Reactor Internals Vibration Monitoring" was instituted by Technical Specification 4.13 to monitor the adequacy of modifications to the core barrel clamping features made in 1974.) This Technical Specifications Program was discontinued in 1985 with NRC issuance of Technical Specifications Amendment No. 91 and SER dated 9/5/85. The SER dated 9/5/85 required an alternate non-Technical Specifications Monitoring Program as recommended by ASME Standard OM-05, 1981. CPCo committed to this program in a letter dated 3/29/85. |
| III-8.C      | Irradiation Damage, Use of Sensitized Stainless Steel and Fatigue Resistance                  | S                | -  |
| III-10.A     | Thermal-Overload Protection for Motors of Motor-Operated Valves                               | S                | Chapter 8.   |
| III-10.B     | Pump Flywheel Integrity   | S                | Section 4.3.5.   |
| IV-1.A       | Operation With Less Than All Loops in Service   | S                | Section 7.2.3.3.   |
| IV-2         | Reactivity Control Systems Including Functional Design and Protection Against Single Failures | S                | Section 7.4.1.   |
| V-5          | Reactor Coolant Pressure Boundary (RCPB) Leakage Detection                                    | 2/C              | (Technical Specifications for operability of leakage detection systems completed December 15, 1983.)<br>Section 4.7.   |
| V-6          | Reactor Vessel Integrity  | S                | Sections 4.3.3, 4.4.2 and 4.5.2.   |
| V-7          | Reactor Coolant Pump Overspeed  | S                | Section 4.3.5.   |

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**PALISADES PLANT - NUREG-0820**

| <u>Topic</u>     | <u>Title</u>   | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|------------------|--|------------------|---|
| V-10.A           | Residual Heat Removal System Heat Exchanger Tube Failures    | S                | Section 6.1.  |
| V-10.B           | Residual Heat Removal System Reliability                     |                  |   |
|                  | - Overpressurization Protection (OPS)                        | 2/C              | (Technical Specifications Amendment submitted on July 29, 1982 which would place OPS in service before shutdown cooling.) Section 7.4.2.  |
|                  | - Safety Grade Systems for Safe Shutdown                     | 2/C              | (New EOPs were issued in December 1986.)  |
| V-11.A           | Requirements for Isolation of High- and Low-Pressure Systems | 2/C              | (Technical Specifications Amendment submitted on July 29, 1982 which requires verification of LPSI check valve closure before criticality after use of system.) Sections 6.1.3 and 7.4.2. |
| V-11.B           | Residual Heat Removal System Interlock Requirements          | S                | Chapters 6 and 7.   |
| VI-1             | Organic Materials and Post-Accident Chemistry                | S                | -   |
| VI-2.D           | Mass and Energy Release for Postulated Pipe Break Inside     | 1/C              | (See PRA study submitted by CP Co letter of 5/23/85; NRC review dated 2/28/86.)   |
| VI-3             | Containment Pressure and Heat Removal Capability             | 1/C              | (Same as VI-2.D. NRC review dated 2/28/86.)   |
| VI-4 Containment | Isolation System   |                  |   |
|                  | - Manual Isolation Valve                                     | 1/C              | (Manual isolation valve on Penetration 44 was replaced with CV-2099 by Facility Change FC-563.)   |
|                  | - Threaded Pipe Connection                                   | 1/C              | (Modification of Penetration 19 threaded pipe connection was corrected by SC-83-013 and SC-83-162.)   |
|                  | - Containment Isolation Systems                              | 1/C              | (Modifications of Penetrations 13, 17, 17a, 21, 21a, 28, 29, 48 and 73 have been completed.)  |

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**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>  | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|--------------|---|------------------|---|
| VI-6         | Containment Leak Testing  | 3/C              | (Technical Specifications Amendment submitted March 3, 1982 for verification of airlock door seal integrity following opening. Approved by Amendment 126 dated June 1, 1989.) |
| VI-7.A.3     | Emergency Core Cooling System Actuation System  | S                | Sections 7.3.2, 7.3.5 and 8.1.1; and Appendix 7A.   |
| VI-7.B       | Engineered Safety Feature Switchover From Injection to Recirculation Mode (Automatic Emergency Core Cooling System Realignment)                                     | S                | Section 6.1.2.2.  |
| VI-7.C       | Emergency Core Cooling System (ECCS) Single-Failure Criterion and Requirements for Locking Out Power to Valves, Including Independence of Interlocks on ECCS Valves | S                | Section 7.3.  |
| VI-7.C.1     | Appendix K - Electrical Instrumentation and Control Re-reviews  | S                | Chapter 7, Sections 8.1.1 and 8.3.5.  |
| VI-7.C.2     | Failure Mode Analysis (Emergency Core Cooling System)   | S                | Section 7.2.3.10.   |
| VI-7.D       | Long-Term Cooling Passive Failures (eg, Flooding of Redundant Components)   | S                | Sections 5.4 and 9.1.3.   |
| VI-7.F       | Accumulator Isolation Valves Power and Control System Design  | S                | Chapters 7 and 8.   |
| VI-10.A      | Testing of Reactor Trip System and Engineered Safety Features, Including Response-Time Testing  | 3/C              | (Requires response-time testing on a periodic basis.)<br>Sections 7.3.2 and 7.3.5.  |
| VII-1.A      | Isolation of Reactor Protection System From Nonsafety Systems, Including Qualification of Isolation Devices   | 1/C              | Section 7.2.9.  |
| VII-1.B      | Trip Uncertainty and Setpoint Analysis Review of Operating Data Base  | S                | -   |
| VII-2        | Engineered Safety Features System Control Logic and Design  | S                | Chapter 6 and Section 7.3.1.  |

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**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>   | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|--------------|--|------------------|---|
| VII-3        | Systems Required for Safe Shutdown   | -                | Sections 7.2.3, 7.2.7, 7.2.9, 7.3.1, 7.4.1, 7.4.2, 7.6.2, 8.1.1, 8.1.2, 8.1.3, 8.4.1, 8.4.2, and 9.6.3.   |
|              | - Removal of Nonessential Loads as an Alternative to 10 CFR 50, Appendix A, GDC 17 | 2/C              | (Procedure to remove nonessential loads from battery if the immediate sources of offsite and onsite power are not available. Completed, see CP Co letter of 9/26/84.) |
|              | - Component Cooling Water Surge Tank Level   | 1/C              | (Installation of another level sensor to the component cooling water surge tank and control room indication completed.)   |
|              | - Boric Acid Heat Tracing  | 4/C              | (The PRA study found that the boric acid system is a low contributor to risk and the impact of this issue on reactivity control is low, no backfit required.)         |
|              | - Pressure Sensor on CCW Pumps   | 4/C              | (Because of redundancy in system failure indication, the PRA study concluded this issue has a small impact on availability, no backfit required.)                     |
|              | - Adequate Seismic Category I Water Supply for AFW                                 | 2/C              | (Same as III-2.)  |
| VII-6        | Frequency Decay  | S                | Section 14.7 and Chapter 8.   |
| VIII-1.A     | Potential Equipment Failures Associated With Degraded Grid Voltage                 | S                | Sections 7.3.2.2 and 7.3.5.   |
| VIII-2       | Onsite Emergency Power Systems (Diesel Generator)                                  | S                | (Separate annunciator modification complete.) Section 8.4.  |

**SYSTEMATIC EVALUATION PROGRAM (SEP) AND INTEGRATED ASSESSMENT PROGRAM (IAP)**  
**PALISADES PLANT - NUREG-0820**

| <u>Topic</u>     | <u>Title</u>  | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|------------------|---|------------------|---|
| VIII-3.A         | Station Battery Capacity Test Requirements              | 2/C              | (CP Co proposed an amendment to the Technical Specifications to conduct battery test pursuant to NRC guidelines, see CP Co letter dated 5/13/85.) Section 8.4.2.                                      |
| VIII-3.B         | DC Power System Bus Voltage Monitoring and Annunciation | S                | (Installation of (1) 125 V dc tie breaker open (both buses), (2) public address system inverter loss of voltage and (3) battery undervoltage (both batteries) is complete.) Sections 8.3.5 and 8.4.2. |
| VIII-4           | Electrical Penetrations of Reactor Containment          | 4/C              | (Evaluation acceptable based on similar SEP plants, modification unnecessary.) Section 8.5.1.   |
| IX-1             | Fuel Storage  | S                | Sections 9.4 and 9.11.  |
| IX-3             | Station Service and Cooling Water Systems               |                  |   |
|                  | - 2.7.1 Cooling of CCW Heat Exchanger                   | 2/C              | (Revision to EOP for FWS alignment acceptable and complete.)  |
|                  | - 2.7.2 Flooding of Intake Safety Systems               | 2/C              | Section 5.4.2.  |
| IX-4             | Boron Addition Systems (PWR)                            | S                | Section 9.10.   |
| IX-5 Ventilation | Systems   |                  |   |
|                  | - AFW Pump Room   | 2/C              | (AFW pumps qualified for 160°F service.) Section 9.8.   |
|                  | - Cable Spreading, Switchgear and Battery Rooms         | 2/C              | (Ventilation fans for additional cooling to inverter cabinets, charger cabinets and auxiliary feedwater junction boxes completed during 1983/84 outage.) Sections 8.7.2, 8.7.3 and 9.8.               |



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**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>  | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|--------------|---|------------------|---|
| IX-6         | Fire Protection   | 3/C              | (11/7/83 NRC letter. FP will be reviewed generically outside the context of SEP.) Sections 7.4.1, 7.4.2, 7.6.2, 7.7.3, 7.7.4, 7.7.8, 8.3.5, 8.5.3, 8.7.2, 8.8, and 9.6.3. |
| XIII-2       | Safeguards/Industrial Security  | S                | -   |
| XV-1         | Decrease in Feedwater Temperature, Increase in Feedwater Flow, Increase in Steam Flow and Inadvertent Opening of a Steam Generator Relief or Safety Valve | S                | Section 14.9, 14.10.  |
| XV-2         | Spectrum of Steam System Piping Failures Inside and Outside Containment (PWR)   | 3/C              | (See PRA study submitted by CP Co letter of 5/23/85, NRC review required. NRC review letter dated 2/28/86.) Section 14.14.  |
|              | - Failure of Main Feedwater Isolation   | 3/C              | (No modifications necessary, pending NRC review. NRC review letter dated 2/28/86.)  |
| XV-3         | Loss of External Load, Turbine Trip, Loss of Condenser Vacuum, Closure of Main Steam Isolation Valve (BWR) and Steam Pressure Regulator Failure (Closed)  | S                | Section 14.12.  |
| XV-4         | Loss of Nonemergency AC Power to the Station Auxiliaries  | S                | Chapter 8.  |
| XV-5         | Loss of Normal Feedwater Flow   | S                | Section 14.13.  |
| XV-6         | Feedwater System Pipe Breaks Inside and Outside Containment (PWR)   | S                | Section 5.6.  |
| XV-7         | Reactor Coolant Pump Rotor Seizure and Reactor Coolant Pump Shaft Break   | S                | Section 14.17.  |

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**PALISADES PLANT - NUREG-0820**

| <u>Topic</u> | <u>Title</u>  | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u>   |
|--------------|---|------------------|---|
| XV-8         | Control Rod Misoperation (System Malfunction or Operator Error)   | S                | Sections 14.2, 14.4, 14.6 and 14.16.  |
| XV-9         | Start-Up of an Inactive Loop or Recirculation Loop at an Incorrect Temperature, and Flow Controller Malfunction Causing an Increase in BWR Core Flow Rate | S                | Section 14.8.   |
| XV-10        | Chemical and Volume Control System Malfunction That Results in a Decrease in Boron Concentration in the Reactor Coolant (PWR)                             | S                | Section 14.3.   |
| XV-12        | Spectrum of Rod Ejection Accidents (PWR)  | 2/C              | (The staff found that radiological consequences of a rod ejection accident are acceptable and do not require any departure from existing analysis.) |
| XV-14        | Inadvertent Operation of Emergency Core Cooling System and Chemical and Volume Control System Malfunction That Increases Reactor Coolant Inventory        | S                | -   |
| XV-15        | Inadvertent Opening of a PWR Pressurizer Safety/Relief Valve or a BWR Safety/Relief Valve   | S                | -   |
| XV-16        | Radiological Consequences of Failure of Small Lines Carrying Primary Coolant Outside Containment  | S                | Section 14.23.  |
| XV-17        | Radiological Consequences of Steam Generator Tube Failure (PWR)   | S                | Section 14.15.  |

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| <u>Topic</u> | <u>Title</u>   | <u>Status(a)</u> | <u>IAP Disposition and Location Where Used in FSAR Update</u> |
|--------------|--|------------------|---|
| XV-19        | Loss-of-Coolant Accidents Resulting From Spectrum of Postulated Piping Breaks Within the Reactor Coolant Pressure Boundary | S                | Section 14.17.  |
| XV-20        | Radiological Consequences of Fuel-Damaging Accidents (Inside and Outside Containment)                                      | S                | Sections 14.11 and 14.19.                                     |
| XVII         | Operational Quality Assurance Program  | S                | -   |

(a)Staff Position Code

Status Code

- S - Reviewed and accepted during SEP
- 1 - Evaluated during integrated assessment, modification required
- 2 - Evaluated during integrated assessment, procedure development or Technical Specifications Change required
- 3 - Evaluated during integrated assessment, refined engineering analysis or continuation of ongoing analysis required
- 4 - Evaluated during integrated assessment; no further work required

- (N) - No action required
- (C) - Action required complete and item resolved
- (b) - Action required in progress

**POST-TMI REQUIREMENTS FOR CONSUMERS POWER COMPANY'S  
PALISADES PLANT - NUREG-0737**

| <u>Item<br/>Number</u> | <u>Title</u>  | <u>Description</u>               | <u>Status(a)</u> | <u>Disposition</u>  |
|------------------------|---|----------------------------------|------------------|---|
| I.A.1.1                | Shift Technical Advisor                                       | 1. On duty                       | 1                | Additional training produced.   |
|                        |   | 2. Technical Specifications      | 1                | Additional training produced.   |
|                        |   | 3. Trained per LL Cat B          | 1                | Additional training produced.   |
|                        |   | 4. Describe long-term program    | 1                | Additional training produced.   |
| I.A.1.2                | Shift Supervisor Responsibilities                             | Delegate nonsafety duties        | 1                | Defined Shift Supervisor's responsibilities.  |
| I.A.1.3                | Shift Manning   | 1. Limit overtime                | 1                | Reviewed and revised procedures for shift manning.  |
|                        |   | 2. Min shift crew                | 1                | To be addressed when final rule is issued.  |
| I.A.2.1                | Immediate Upgrading of RO and SRO Training and Qualifications | 1. SRO experience                | 1                | Training and qualification procedures at Palisades Plant have been modified to meet NRC criteria. |
|                        |   | 2. SROs be ROs in one year       | 1                | Training and qualification procedures at Palisades Plant have been modified to meet NRC criteria. |
|                        |   | 3. Three-month training on shift | 1                | Training and qualification procedures at Palisades Plant have been modified to meet NRC criteria. |
|                        |   | 4. Modify training               | 1                | Training and qualification procedures at Palisades Plant have been modified to meet NRC criteria. |
|                        |   | 5. Facility certification        | 1                | Training and qualification procedures at Palisades Plant have been modified to meet NRC criteria. |
| I.A.2.3                | Administration of Training Programs                           | Instructors complete SRO exam    | 1                | Assure trainers are qualified at SRO qualifications level.  |

(a)Status Codes:

- 1 - Completed
- 2 - In Process

**POST-TMI REQUIREMENTS FOR CONSUMERS POWER COMPANY'S  
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| <u>Item<br/>Number</u> | <u>Title</u>                                   | <u>Description</u>  | <u>Status(a)</u>        | <u>Disposition</u>  |
|------------------------|--|---|-------------------------|---|
| I.A.3.1                | Revise Scope and Criteria for Licensing Exams  | 1. Increase scope<br>2. Increase passing grade<br>3. Simulator exams  | 1<br>1<br>1             | Include simulator examinations with training.<br>Include simulator examinations with training.<br>Include simulator examinations with training. |
| I.C.1                  | Short-Term Accident and Procedures Review      | 1. SB LOCA<br>2. Inadequate Core Cooling<br>a. Reanalyze and propose guidelines<br>b. Revise procedures<br>3. Transients and accidents<br>a. Reanalyze and propose guidelines<br>b. Revise procedures | 1<br>1<br><br><br><br>1 | Complete per EOP upgrade.<br>Complete per EOP upgrade.<br><br><br><br>Complete.   |
| I.C.2                  | Shift and Relief Turnover Procedures checklist | Implement shift turnover  | 1                       | Revised procedure for shift turnover.   |
| I.C.3                  | Shift Supervisor Responsibility and            | Clearly define supervisor operator responsibilities   | 1                       | Defined Shift Supervisor's responsibilities.  |
| I.C.4                  | Control Room Access                            | Establish authority; limit access   | 1                       | Access controlled by Shift Supervisor or No 1 Control Operator.   |
| I.C.5                  | Feedback of Operating Experience               | Licensee to implement procedures programs.  | 1                       | Assess operating experience and incorporate (if needed) into operating procedures, training and retraining                                      |

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**POST-TMI REQUIREMENTS FOR CONSUMERS POWER COMPANY'S  
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| <u>Item<br/>Number</u> | <u>Title</u>                                       | <u>Description</u>                                     | <u>Status(a)</u> | <u>Disposition</u>  |
|------------------------|--|--|------------------|---|
| I.C.6                  | Verify Correct Performance of Operating Activities | Revise performance procedures                          | 1                | Evaluate procedures and revise when appropriate.  |
| I.D.1                  | Control Room Design Reviews                        | 1. Assessment and schedule for correcting deficiencies | 1                | Complete - SER issued 9/14/89. See Note 1.  |
|                        |  | 2. Implementation of corrective actions                | 1                | Continuing.   |
| I.D.2                  | Plant Safety Parameter Display Console             | 1. Description   | 1                | Complete - SER issued 6/29/87.  |
|                        |  | 2. Installed   | 1                | Complete - SER issued 6/29/87.<br>- CPCo Certification letter 7/10/89<br>- NRC Closure letter 4/19/90 |
|                        |  | 3. Fully implemented                                   | 1                | Complete - SER issued 6/29/87.<br>- CPCo Certification letter 7/10/89<br>- NRC Closure letter 4/19/90 |
| II.B.1                 | Reactor Coolant System Vents                       | 1. Design vents  | 1                | Modification of gas venting system and revised procedures accordingly.                                |
|                        |  | 2. Install vents (LL Cat B)                            | 1                | Modification of gas venting system and revised procedures accordingly.                                |
|                        |  | 3. Procedures  | 1                | Modification of gas venting system and revised procedures accordingly.                                |

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**POST-TMI REQUIREMENTS FOR CONSUMERS POWER COMPANY'S  
PALISADES PLANT - NUREG-0737**

| Item Number    | Title                                     | Description  | Status(a) | Disposition  |
|----------------|---|--|-----------|--|
| II.B.2         | Plant Shielding                           | 1. Review designs  | 1         | Modification completed of facility to provide access to vital areas under accident conditions.                       |
|                |   | 2. Plant modifications (LL Cat B)  | 1         | Modification completed of facility to provide access to vital areas under accident conditions.                       |
|                |   | 3. Equipment qualification   | 1         | Modification completed of facility to provide access to vital areas under accident conditions.                       |
| II.B.3 Deleted |   |  |           |  |
| II.B.4         | Training for Mitigating Core Damage       | 1. Develop training program  | 1         | Complete training program.   |
|                |   | 2. Implement program<br>a. Initial<br>b. Complete                                  | 1         | Complete training program.   |
| II.D.1         | Relief and Safety Valve Test Requirements | 1. Submit program  | 1         | Complete.  |
|                |   | 2. RV and SV testing (LL Cat B)<br>a. Complete testing<br>b. Plant specific report | 1         | Complete.  |
|                |   | 3. Block valve testing   | 1         | Block valve requirement analysis complete, new block valves and PORVs installed during 1989 maintenance outage.      |
| II.D.3         | Valve Position Indication                 | 1. Install direct indications of valve position                                    | 1         | Complete.  |
|                |   | 2. Technical Specifications  | 1         | Modification of valve indicators and Technical Specifications changes as required (reference Amendment 67, 10/8/81). |

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| <u>Item<br/>Number</u> | <u>Title</u>                                   | <u>Description</u>  | <u>Status(a)</u>          | <u>Disposition</u>   |
|------------------------|--|---|---------------------------|--|
| II.E.1.1               | Auxiliary Feedwater System Evaluation          | 1. Short term<br>2. Long term   | 1<br>1                    | Auxiliary Feedwater Systems modified as required.<br>Auxiliary Feedwater Systems modified as required.   |
| II.E.1.2               | Auxiliary Feedwater System Initiation and Flow | 1. Initiation<br>a. Control grade<br>b. Safety grade<br>2. Flow indication<br>a. Control grade<br>b. LL A Technical Specifications<br>c. Safety grade   | 1<br><br>1                | Modification of instrumentation to level of safety grade complete.<br>Modification of instrumentation to level of safety grade complete.   |
| II.E.3.1               | Emergency Power for Pressurizer Heaters        | 1. Upgrade power supply<br>2. Technical Specifications  | 1<br>1                    | Modified system to provide emergency power.<br>Modified system to provide emergency power.   |
| II.E.4.1               | Dedicated Hydrogen Penetrations                | 1. Design<br>2. Install   | 1<br>1                    | Not required for Palisades Plant.<br>Not required for Palisades Plant.   |
| II.E.4.2               | Containment Isolation Dependability            | 1-4. Imp diverse isolation<br>5. Containment pressure set point<br>a. Specify pressure<br>b. Modifications<br>6. Containment purge valves<br>7. Radiation signal on purge valves<br>8. Technical Specifications | 1<br>1<br><br>1<br>1<br>1 | Modified containment isolation circuitry.<br>Lower containment pressure set point to level compatible with normal operation.<br><br>Consumers Power Company has committed to use valves only during outages.<br>Isolate purge and vent valves on radiation signal.<br>Isolate purge and vent valves on radiation signal. |

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| <u>Item<br/>Number</u> | <u>Title</u>  | <u>Description</u>                      | <u>Status(a)</u> | <u>Disposition</u>  |
|------------------------|---|---|------------------|---|
| II.F.1                 | Accident Monitoring   | 1. Noble gas monitor                    | 1                | Modifications made and included in Offsite Dose Calculation Manual (ODCM).      |
|                        |   | 2. Iodine/particulate sampling          | 1                | Modifications made and included in Offsite Dose Calculation Manual (ODCM).      |
|                        |   | 3. Containment high-range monitor       | 1                | Modifications made and included in Technical Specifications                     |
|                        |   | 4. Containment pressure                 | 1                | Modifications made and included in Technical Specifications                     |
|                        |   | 5. Containment water level              | 1                | Modifications made and included in Technical Specifications                     |
|                        |   | 6. Containment hydrogen                 | 1                | Existing equipment meets the NRC's criteria.                                    |
| II.F.2                 | Instrumentation for Detection of Inadequate Core Cooling                        | 1. Subcool meter                        | 1                | Instrumentation modified during 1988 refueling outage. Issued as Amendment 129. |
|                        |   | 2. Technical Specifications (LL Cat A)  | 1                |   |
|                        |   | 3. Install level instruments (LL Cat B) | 1                | Instrumentation modified during 1988 refueling outage.                          |
| II.G.1                 | Power Supplies for Pressurizer Relief Valves, Block Valves and Level Indicators | 1. Upgrade to emergency sources         | 1                | No action required.   |
|                        |   | 2. Technical Specifications             | 1                | No action required.   |
| II.K.1                 | IE Bulletins  | 79-05                                   | 1                | See Bulletin for specific disposition, no further action required.              |
|                        |   | 79-06                                   | 1                | See Bulletin for specific disposition, no further action required.              |
|                        |   | 79-08                                   | 1                | See Bulletin for specific disposition, no further action required.              |

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PALISADES PLANT - NUREG-0737**

| <u>Item<br/>Number</u> | <u>Title</u>                          | <u>Description</u>                             | <u>Status(a)</u> | <u>Disposition</u>   |
|------------------------|---------------------------------------|--|------------------|--|
| II.K.2                 | Orders on B&W Plants                  | 13. Thermal mechanical report                  | 1                | Analysis shows that vessel integrity will be maintained for such an event.                                       |
|                        |                                       | 17. Voiding in RCS                             | 1                | Existing equipment meets NRC requirements.   |
|                        |                                       | 19. Bench mark analysis of seq AFW flow        | 1                | Not applicable to Palisades Plant.   |
| II.K.3                 | Final Recommendations, B&O Task Force | 1. Auto PORV isolation                         | 1                | Not applicable to Palisades. Palisades operates with the PORVs isolated.   |
|                        |                                       | a. Design                                      |                  |  |
|                        |                                       | b. Test/install                                |                  |  |
|                        |                                       | 2. Report on PORV failures                     | 1                | Complete.  |
|                        |                                       | 3. Reporting SV and RV failures and challenges | 1                | RVs are isolated - are not challenged. SVs have never been challenged. Complete per CE Reports CEN-213 and -227. |
|                        |                                       | 5. Auto trip of RCPs                           | 1                | Complete Trip 2/leave 2 incorporated in EOPs.  |
|                        |                                       | a. Propose modifications                       |                  |  |
|                        |                                       | b. Modify                                      |                  |  |
|                        |                                       | 17. Emergency Core Cooling System outages      | 1                | No action required.  |
|                        |                                       | 25. Power on pump seals                        | 1                | Item not applicable to Palisades Plant.  |
|                        |                                       | a. Propose modifications                       |                  |  |
|                        |                                       | b. Modifications                               |                  |  |
|                        |                                       | 30. SB LOCA methods                            | 1                | CE-CEFLASH 4AS acceptable.   |
|                        |                                       | a. Schedule outline                            |                  |  |
|                        |                                       | b. Model                                       |                  |  |
|                        |                                       | c. New analyses                                |                  |  |
|                        |                                       | 31. Compliance with CFR 50.46                  | 1                | Not required.  |
|                        |                                       | 44. Evaluate transient with single failure     | 1                | Item not applicable to Palisades Plant.  |

(a)Status Codes:

- 1 - Completed
- 2 - In Process

**POST-TMI REQUIREMENTS FOR CONSUMERS POWER COMPANY'S  
PALISADES PLANT - NUREG-0737**

| <u>Item<br/>Number</u> | <u>Title</u>                            | <u>Description</u>                                    | <u>Status(a)</u> | <u>Disposition</u>  |
|------------------------|---|---|------------------|---|
| III.A.1.1              | Emergency Preparedness,<br>Short Term   | Short-term improvements                               | 1                | Emergency Plan will be changed on an as-needed basis.                             |
| III.A.1.2              | Upgrade Emergency Support<br>Facilities | 1. Interim TSC, OCS and EOF                           | 1                | Emergency support facilities have been constructed/modified to meet NRC criteria. |
|                        |   | 2. Design   | 1                | Emergency support facilities have been constructed/modified to meet NRC criteria. |
|                        |   | 3. Modifications                                      | 1                | Emergency support facilities have been constructed/modified to meet NRC criteria. |
| III.A.2                | Emergency Preparedness                  | 1. Upgrade emergency plans to Appendix E, 10 CFR 50   | 1                | Complete. Emergency Plan has been upgraded to meet Appendix E.                    |
|                        |   | 2. Meteorological data                                | 1                | Complete. Emergency Plan has been upgraded to meet Appendix E.                    |
| III.D.1.1              | Primary Coolant Outside<br>Containment  | 1. Leak reduction                                     | 1                | Leakage reduction program has been implemented.                                   |
|                        |   | 2. Technical Specifications                           | 1                | Leakage reduction program has been implemented.                                   |
| III.D.3.3              | In-Plant Radiation<br>Monitoring        | 1. Provide means to determine presence of radioiodine | 1                | Existing Plant equipment meets NRC requirements.                                  |
|                        |   | 2. Modifications to accurately measure                | 1                | Existing Plant equipment meets NRC requirements.                                  |
| III.D.3.4              | Control Room Habitability               | 1. Review   | 1                | Control room HVAC was modified to satisfy NRC criteria.                           |
|                        |   | 2. Modification                                       | 1                | Control room HVAC was modified to satisfy NRC criteria.                           |

NOTE 1: See Supplement 1 to NUREG-0737 for details.

(a)Status Codes:

- 1 - Completed
- 2 - In Process

**UNRESOLVED SAFETY ISSUES**

| <u>Task No</u> | <u>Title</u>  | <u>FSAR</u> | <u>Reference Chapter(s)</u> |
|----------------|---|-------------|-----------------------------|
| A-1            | Water Hammer  |             | 4 and 9                     |
| A-2            | Asymmetric Blowdown Loads on the Primary Coolant System                     |             | 6                           |
| A-4            | Pressurized Water Reactor Steam Generator Tube Integrity                    |             | 4                           |
| A-9            | Anticipated Transients Without Scram (ATWS)                                 |             | 7                           |
| A-11           | Reactor Vessel Materials Toughness  |             | 4                           |
| A-12           | Fracture Toughness of Steam Generators and Primary Coolant Pump Supports    |             | -(a)                        |
| A-17           | Systems Interactions in Nuclear Power Plants                                |             | -(a)                        |
| A-24           | Environmental Qualification of Safety-Related Electrical Equipment (EEQ)    |             | 8                           |
| A-26           | Reactor Vessel Pressure Transient Protection                                |             | 4                           |
| A-31           | Residual Heat Removal Requirements  |             | 7 and 9                     |
| A-36           | Control of Heavy Loads Near Spent Fuel                                      |             | 9                           |
| A-40           | Seismic Design Criteria Short-Term Program                                  |             | 5                           |
| A-43           | Containment Emergency Sump Reliability                                      |             | 6                           |
| A-44           | Station Blackout  |             | 8                           |
| A-45           | Shutdown Decay Heat Removal Requirements                                    |             | 6 and 9                     |
| A-46           | Seismic Qualification of Equipment in Operating Plants                      |             | 5                           |
| A-47           | Safety Implications of Control System                                       |             | 8                           |
| A-48           | Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment |             | 6                           |
| A-49           | Pressurized Thermal Shock   |             | 3 and 4                     |

(a) Not specifically addressed in FSAR.

**ESTIMATED USE ON MARCH 24, 2031**

| RPV Material | Material Heat # | Cu (%) | Initial USE (ft-lbs) | $\frac{1}{4}$ t Neutron Fluence ( $10^{19}$ n/cm <sup>2</sup> ) | USE (ft-lbs) |
|--------------|-----------------|--------|----------------------|---|--------------|
| 2-112A/C*    | W5214           | 0.213  | 118                  | 1.275   | 64.9         |
| 3-112A/C*    | W5214           | 0.213  | 118                  | 1.275   | 64.9         |
|              | 34B009          | 0.192  | 111                  | 1.275   | 56.6         |
| 9-112*       | 27204           | 0.203  | 84                   | 2.024   | 49.6         |
| D-3803-1*    | C-1279          | 0.24   | 102                  | 2.024   | 65.3         |
| D-3803-2*    | A-0313          | 0.24   | 87                   | 2.024   | 53.1         |
| D-3803-3*    | C-1279          | 0.24   | 91                   | 2.024   | 58.2         |
| D-3804-1*    | C-1308A         | 0.19   | 72                   | 2.024   | 48.2         |
| D-3804-2*    | C-1308B         | 0.19   | 76                   | 2.024   | 50.9         |
| D-3804-3*    | B-5294          | 0.12   | 73                   | 2.024   | 54.8         |
| D-3802-1**   | C-1279          | 0.21   | 75                   | 0.0902  | 62.3         |
| D-3802-2**   | C-1308          | 0.19   | 73                   | 0.0902  | 61.3         |
| D-3802-3**   | C-1281          | 0.25   | 62.2***              | 0.0902  | 50.1         |
| D-3802-3**   | C-1281          | 0.25   | 59****               | 0.0902  | 47.5         |
| 1-112A/B/C** | W5214           | 0.213  | 118                  | 0.0573  | 82.6         |
| 8-112**      | 34B009          | 0.192  | 111                  | 0.0902  | 72.2         |

\* Traditional beltline materials (Reference 106)

\*\* Extended beltline materials (Reference 104)

\*\*\* CVGraph Method

\*\*\*\* 95% Shear Method

**RT<sub>MAX-X</sub> Values for Reactor Vessel at 42.1 Effective Full Power Years**

|  | Lower and Intermediate Shell Region<br>( $T_{wall} \leq 9.5$ inches) <sup>(1)</sup> |                                  | Upper Shell Region<br>( $10.5 \text{ inches} < T_{wall} \leq 11.5 \text{ inches}$ ) <sup>(1)</sup> |                                  |
|--|---|----------------------------------|--|----------------------------------|
|  | Reactor Vessel  | 10 CFR 50.61a Screening Criteria | Reactor Vessel   | 10 CFR 50.61a Screening Criteria |
| Axial Weld - RT <sub>MAX-AW</sub> (°F)   | 237.0   | 269                              | 135.2  | 222                              |
| Plate - RT <sub>MAX-PL</sub> (°F)  | 199.4   | 356                              | 149.8  | 293                              |
| Axial Weld and Plate - RT <sub>MAX-AW</sub> + RT <sub>MAX-PL</sub> (°F)                | 436.4   | 538                              | 285.0  | 445                              |
| Circumferential Weld - RT <sub>MAX-CW</sub> (°F)                                       | 247.6   | 312                              | 149.8  | 269                              |
| Note:<br>(1) T <sub>WALL</sub> is the reactor vessel thickness including the cladding. |   |                                  |  |                                  |

**SUMMARY OF FATIGUE USAGE FACTORS AT NUREG/CR-6260**  
**SAMPLE LOCATIONS APPLICABLE TO PALISADES**

| Location                                  | Material                            | 60 Year<br>CUF | F <sub>en</sub> | Environmental<br>CUF |
|---|-------------------------------------|----------------|-----------------|----------------------|
| RPV Lower Head to<br>Shell Junction       | SA-533 Grade B<br>Class 1           | 0.004          | 2.50            | 0.009                |
| RPV Inlet Nozzle                          | SA-302 Grade B                      | 0.104          | 2.50            | 0.260                |
| RPV Outlet Nozzle                         | SA-508 Class 2                      | 0.181          | 2.50            | 0.454                |
| Charging Nozzle                           | SB-166 Alloy 600<br>Stainless Steel | 0.306<br>0.006 | 1.49<br>15.35   | 0.456<br>0.092       |
| Surge Line Elbow                          | SA-376 Type 316                     | 0.015          | 15.35           | 0.238                |
| Safety Injection Nozzle                   | SA-516 Grade 70                     | 0.036          | 1.76            | 0.064                |
| Shutdown Cooling Line<br>Inlet Transition | SA-516 Grade 70                     | 0.0097         | 1.76            | 0.017                |

Values from Reference 96, Attachment 5.4

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|    | <b>Text of Commitment, Due Date, Source</b>  | <b>Affected Program</b>                       |
|----|--|---|
| 1. | Each year, following the submittal of the Palisades License Renewal Application and at least three months before the scheduled completion of the NRC review, Entergy will submit an amendment to the application pursuant to 10 CFR 54.21 (b). This amendment will identify any changes to the Current Licensing Basis of the facility that materially affect the contents of the License Renewal Application, including the FSAR supplement, that have not already been submitted. (Reference 57)   | NA  |
| 2. | <b>Equivalent Margins Analysis</b> - Entergy will submit an equivalent margins analysis, completed in accordance with 10 CFR 50 Appendix G Section IV.A.1, for NRC approval, at least three years before any reactor vessel beltline material upper shelf energy decreases to less than 50 ft-lb. (Reference 57)   | Reactor Vessel Integrity Surveillance Program |
| 3. | <b>PTS Management</b> - At the appropriate time, prior to exceeding the PTS screening criteria, Palisades will select the optimum alternative to manage PTS in accordance with NRC regulations and make relevant submittals to obtain NRC review and approval. (Reference 57)  | Reactor Vessel Integrity Surveillance Program |
| 4. | <b>Charging Line Fatigue</b> - Entergy will evaluate the effect the increase in variable speed charging pump out-of-service events may have on these lines (Charging Lines Inboard of the Regenerative Heat Exchanger), and will take actions necessary to ensure these lines meet licensing basis design criteria for the extended operating period. Entergy will complete this evaluation and will advise the NRC of the results, and of any necessary corrective actions, before the end of the current licensed operating period. (Reference 57) | Fatigue Monitoring Program                    |
| 5. | <b>Fatigue Monitoring of PZR TEs</b> - Entergy will monitor the cumulative number of pressurizer temperature element nozzle fatigue cycles within the Fatigue Monitoring Program, and maintain a special action level to ensure that appropriate actions are taken if at any time the cycle count for any design basis event since 1993 reaches the number assumed by these analyses. (Reference 57)   | Fatigue Monitoring Program                    |



**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>  | <b>Affected Program</b>      |
|-----|--|------------------------------|
| 6.  | <b>Update Alloy 600 Program</b> - Entergy will revise the Alloy 600 Program to update the PWSCC corrosion rate assessments and inspection program consistent with the latest NRC requirements and industry commitments (e.g., EPRI Report 1010087 "Materials Reliability Program: Primary System Piping System Butt Weld Inspection and Evaluation Guidelines [MRP-139]," (August 2005)). (Reference 57)   | Alloy 600 Inspection Program |
| 7.  | Commitment deleted (Reference 94).   | Deleted.                     |
| 8.  | <b>Incorporate AMP &amp; TLAA into FSAR</b> - In a periodic FSAR update following NRC issuance of the renewed operating license, in accordance with 10 CFR 50.71 (e), the summary descriptions of Aging Management Programs and Time Limited Aging Analyses, provided in Appendix A, will be incorporated into appropriate sections of the FSAR. (Reference 57)  | NA                           |
| 9.  | <b>Expand Quality Program to NSR SSC</b> - The Quality Program implementation procedures will be expanded to apply the elements of corrective action, confirmation process, and administrative controls to both safety related and non-safety related systems, structures, and components that are subject to aging management review for license renewal. (Reference 57)  | Quality                      |
| 10. | <b>Update Bolting Program Standards</b> - Review and revise ASME ISI Master Plan, procedures that implement credited License Renewal Programs, and plant maintenance procedures to reflect and reference the applicable guidance provided in NUREG-1339 and EPRI TR-104213 for safety and non-safety related bolting. These revisions should also include instructions for selection of bolting material and use of lubricants and sealants, in accordance with the guidelines of EPRI NP-5769 and the additional recommendations of NUREG-1339 to prevent or mitigate degradation and failure of safety-related bolting. (Reference 57) | Bolting Integrity Program    |
| 11. | <b>Define Insp Reqts High Strength Bolts</b> - Evaluate the high strength bolting used for component supports for susceptibility to cracking as described in NUREG-1801, Section XI.M.18, "Parameters Monitored/Inspected," and implement appropriate inspection requirements to provide adequate age-management for these bolts (Reference 57).   | Bolting Integrity Program    |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>  | <b>Affected Program</b>                      |
|-----|--|--|
| 12. | <b>Define Boric Acid Insp Walkdown Criteria</b> - Revise applicable plant procedures to include criteria for observing susceptible SSC, within the scope of license renewal, for boric acid leakage and degradation, during system walkdown inspections. (Reference 57)  | Boric Acid Corrosion Program                 |
| 13. | <b>Boric Acid Insp Criteria</b> - Revise applicable plant procedure(s) to include explicit acceptance criteria for boric acid inspections. (Reference 57)  | Boric Acid Corrosion Program                 |
| 14. | <b>Boric Acid Insp of Struct &amp; NonASME</b> - Revise applicable plant procedures to include inspection of structural steel and non-ASME component supports for evidence of boric acid residue and boric acid wastage/corrosion on a periodic frequency. (Reference 57)  | Boric Acid Corrosion Program                 |
| 15. | <b>Implement Buried Services Monitoring Program</b> - A Buried Services Corrosion Monitoring Program will be developed and implemented. Features of the program will include development and implementation of procedures for inspection of selected buried SSCs for corrosion, pitting and MIC. The periodicity of these inspections will be based on opportunities for inspection such as scheduled excavation and maintenance work. (Reference 57)                  | Buried Services Corrosion Monitoring Program |
| 16. | <b>Periodic Clean Inspect FO Storage Tank</b> - Develop and implement procedures for periodic draining and cleaning of diesel fuel oil storage tanks, Emergency Diesel Generator day tanks, and Diesel Fire Pump Day Tanks. These procedures shall include steps to perform a visual inspection of interior tank surfaces for signs of degradation or corrosion, with acceptance criteria, corrective actions, and documentation of inspection results. (Reference 57) | Diesel Fuel Monitoring and Storage Program   |
| 17. | <b>Periodic Drain Water from Fuel Oil Tanks</b> - Develop and implement procedures for periodic draining of water accumulated in the bottom of the fuel oil storage tanks and fuel oil day tanks for the Diesel Generators and Diesel Fire Pumps. (Reference 57)   | Diesel Fuel Monitoring and Storage Program   |
| 18. | <b>Fuel Oil Tank Bottom Thickness Measurements</b> - Develop and implement procedures for periodic ultrasonic measurement of thickness of the bottom of Fuel Oil Storage Tanks, Emergency Diesel Generator Day Tanks, and Diesel Fire Pump Day Tanks. (Reference 57)   | Diesel Fuel Monitoring and Storage Program   |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>   | <b>Affected Program</b>                           |
|-----|---|---|
| 19. | <b>Structural Monitoring Program for Fire Barriers</b> - The Structures Monitoring Program shall be revised to include specific inspection criteria and documentation requirements for verifying that walls, ceilings and floors that serve as Fire Protection Program fire barriers are verified to be free from aging related degradation that would impact the fire barrier's intended function. (Reference 57)  | Structures Monitoring Program                     |
| 20. | <b>Fire Door Inspection</b> - Plant procedures shall be revised to more specifically address aging related degradation and expectations for documentation of fire door condition. (Reference 57)  | Fire Protection Program                           |
| 21. | <b>Fire Door Clearance Inspections</b> - Develop and implement procedures to perform visual inspections for fire door clearances. (Reference 57)  | Fire Protection Program                           |
| 22. | <b>Diesel Fire Pump Fuel Line Inspection</b> - Revise diesel-driven fire pump performance test procedures to more specifically address requirement to inspect and monitor fuel oil supply line for aging related degradation, and to document inspection results.   | Fire Protection Program                           |
| 23. | <b>Inspect Below Grade Fire Piping</b> - Develop and implement procedures for inspection of below grade fire protection system piping. Inspections shall be implemented under the Buried Services Corrosion Monitoring Program. In addition, results of wall thickness inspections of above grade fire protection system piping shall be extrapolated to evaluate the wall thickness condition of below grade fire protection system piping. Procedures shall include acceptance criteria, and criteria for further corrective actions if acceptance criteria are not met. (Reference 94) | Fire Protection Program / Buried Services Program |
| 24. | <b>Fire Hydrant Inspection &amp; Testing</b> - Plant procedures shall be revised to more specifically address identification of aging related degradation and expectations for documentation of fire hydrant condition. Also, these revisions shall include provisions to perform flow testing for fire hydrants within the scope of License Renewal that are credited for fire suppression in the Palisades current licensing basis. (Reference 57)  | Fire Protection Program                           |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>   | <b>Affected Program</b>                                  |
|-----|---|--|
| 25. | <b>Replace or Test Sprinkler Heads</b> - Develop and implement procedures to replace all sprinkler heads prior to the end of the 50 year service life, or for testing of a representative sample of sprinkler heads prior to the end of the 50 year service life and at 10 year intervals thereafter, per requirements of NFPA 25, Section 5.3. (Reference 57)  | Fire Protection Program                                  |
| 26. | <b>Non-EQ Commodities Condition Monitoring</b> - A Non-EQ Electrical Commodities Condition Monitoring Program will be developed and implemented. Features of the program will include development and implementation of procedures to conduct periodic inspection of insulated cables and connectors, test sensitive instrumentation circuits, test medium voltage cables, inspect manhole water levels, and inspect non-segregated phase bus and connections. (Reference 94) | Non-EQ Electrical Commodity Condition Monitoring Program |
| 27. | <b>One Time Inspection Program</b> - A One Time Inspection Program will be developed and implemented. Features of the program are as described in the Enhancement section of LRA Section B2.1.13. (Reference 57)  | One-Time Inspection Program                              |
| 28. | <b>Crane Inspection Requirements</b> - Revise crane and fuel handling machine inspection procedures to specifically inspect for general corrosion on passive components making up the bridge, trolley, girders, etc., and to inspect rails of Bridge Cranes for wear. Revision should also include documentation of results of these inspections, acceptance criteria, and qualification requirements for inspectors and crane supervisors. (Reference 57)                    | Overhead Load Handling Systems Inspection Program        |
| 29. | <b>Reactor Vessel PT/LTOP Curves</b> - The Reactor Vessel Integrity Surveillance Program will ensure that <b>pressure-temperature and LTOP curves are updated to reflect the additional neutron fluence accumulated during</b> the extended operating period. (Reference 57)  | Reactor Vessel Integrity Surveillance Program            |
| 30. | <b>RV Surveillance Capsules</b> - Document and establish requirement to save and store all pulled and tested reactor vessel surveillance capsules for future reconstitution use. (Reference 57)   | Reactor Vessel Integrity Surveillance Program            |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>   | <b>Affected Program</b>                       |
|-----|---|---|
| 31. | <b>Surv Capsule Withdrawal Schedule</b> - Evaluate and revise as necessary, the surveillance capsule withdrawal and testing schedule of FSAR Table 4-20 such that at least one capsule remains in the reactor vessel and is tested during the period of extended operation to monitor the effects of long-term exposure to neutron irradiation. (Reference 57)  | Reactor Vessel Integrity Surveillance Program |
| 32. | <b>Reactor Vessel Integrity Program</b> - Develop a program level procedure to implement and control Technical Specification and FSAR activities associated with the Reactor Vessel Integrity Surveillance Program, including activities associated with surveillance capsules, pressure-temperature limit curves, LTOP setpoints, neutron embrittlement calculation methodology, neutron fluence calculations and control, and documentation requirements. Title of procedure should be, "Reactor Vessel Integrity Surveillance Program." (Reference 57) | Reactor Vessel Integrity Surveillance Program |
| 33. | <b>Reactor Vessel Internals Program Submittal</b> - Entergy will participate in industry initiatives that will generate additional data on aging mechanisms relevant to reactor vessel internals (RVI), including void swelling, and develop appropriate inspection techniques to permit detection and characterization of features of interest. Recommendations for augmented inspections and techniques resulting from this effort will be incorporated into the Reactor Vessel Internals Program as applicable. (Reference 82)                         | Reactor Vessel Internals Inspection Program   |
| 34. | Withdrawn   |   |
| 35. | <b>Incorporate Members in Structural Monitoring Program</b> - Incorporate into the Structural Monitoring Program all structural members listed in Tables 3.5.2-1 through 3.5.2-10 that will use the Structural Monitoring Program as an AMR. (Reference 57)   | Structures Monitoring Program                 |
| 36. | <b>Enhance System Walkdown Procedures</b> - Enhance system walkdown procedures to more specifically address the types of components to be inspected, and to specifically describe the relevant degradation mechanisms and effects of interest, and for use of the Corrective Action Program to document aging related degradation, identified during the inspections, that may affect the ability of the SSC to perform its intended function. (Reference 57)   | System Monitoring Program                     |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>  | <b>Affected Program</b>                      |
|-----|--|--|
| 37. | <b>Fatigue Monitoring Program</b> - A Fatigue Monitoring Program will be developed and implemented. Features of the program will include monitoring and tracking selected cyclic loading transients (cycle counting) and their effects on critical reactor pressure boundary components and other selected components. (Reference 57)  | Fatigue Monitoring Program                   |
| 38. | <b>Incorporate Commitments into FSAR</b> - The final text and schedule of licensee commitments that are confirmed by NRC in the final SER for the Palisades Renewed Operating License will be incorporated into appropriate locations of the FSAR in the first regular FSAR update under 10 CFR 50.71 (e) following NRC issuance of the renewed operating license. (Reference 83)  | NA   |
| 39. | <b>Buried Piping Opportunistic Inspection</b> - Visual inspections of a sample of buried carbon, low-alloy, and stainless steel components will be performed within ten years prior to entering, and within ten years after entering, the period of extended operation. Prior to the tenth year of each period, Entergy will perform an evaluation of available data to determine if sufficient opportunistic inspections have been performed within that period to assess the condition of the components. If insufficient data exists, focused inspection(s) will be performed as needed. (Reference 84) | Buried Services Corrosion Monitoring Program |
| 40. | <b>HVAC Flex Joint PM Enhancement</b> - Entergy will enhance the preventive maintenance program to periodically inspect, and replace as necessary, the expansion joints/flexible connections in the portions of the Heating, Ventilation and Air Conditioning System that are in-scope for license renewal. (Reference 94)   | NA   |
| 41. | <b>Industry Standard Use for Tank Inspection</b> - Entergy will identify specific methods of inspection for individual components as part of the System Monitoring Program implementation procedure development. Industry documents such as EPRI 1009743, EPRI GS-7086, and API 575 will be used as source documents to define tank testing and inspection requirements. (Reference 85)  | System Monitoring Program                    |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>  | <b>Affected Program</b>   |
|-----|--|---|
| 42. | <b>FAC Acceptance Criterion NSR Pipe Wall</b> - Entergy will revise the governing procedure for the Flow Accelerated Corrosion Program to include the value of 87.5% of nominal wall thickness for non safety related piping as a trigger point to initiate engineering analysis to confirm that remaining wall thickness is acceptable to support the intended function or to determine corrective action, as applicable. (Reference 82)  | Flow Accelerated Corrosion Program                                      |
| 43. | <b>Neutron Blackness Test of SFP Racks</b> - Entergy will perform a neutron absorption ("blackness") test of selected cells in the NUS spent fuel racks to validate that there is no significant degradation of the neutron absorption capability. If degradation is identified, an evaluation of the condition will be performed under the Entergy Corrective Action Program. If applicable, this evaluation will determine the need for additional testing. (References 86 and 95)   | NA  |
| 44. | <b>Internal Inspections of Opportunity</b> - Palisades procedures will be enhanced to inspect and document the internal condition of applicable components, in-scope for license renewal, when maintenance provides an opportunity. Applicable components are those that have an internal environment of water, are constructed of materials that are potentially susceptible to internal aging degradation in a wetted environment, but are not subject to another Aging Management Program (e.g., Water Chemistry, Open Cycle Cooling) that would manage the internal environment such that aging degradation of the internal surfaces would not be expected. (Reference 87) | Inspections of Opportunity for Internal Surfaces of Selected Components |

**LONG-TERM COMMITMENTS FOR LICENSE RENEWAL OF PALISADES NUCLEAR PLANT**

|     | <b>Text of Commitment, Due Date, Source</b>   | <b>Affected Program</b>   |
|-----|---|---------------------------|
| 45. | <b>Corrosion Under Insulation</b> - To verify that Corrosion Under Insulation (CUI) is not causing excessive corrosion of insulated piping and components, inspections of opportunity will be performed to assess the external surface condition when insulation is removed for maintenance or surveillance. The piping and components of interest are those within the scope of the System Monitoring Program, constructed of carbon or low alloy steel, with low normal operating temperatures in an indoor or outdoor environment such that the piping could be wetted under its insulation (e.g., from condensation or rain water) for extended periods without being detected. The System Monitoring Program will be enhanced to require a periodic review of documented under-insulation inspection results to verify that there were a sufficient number of inspection opportunities to provide a representative indication of system condition, and to assess the need for further action. If there were insufficient opportunities for inspection, insulation will be removed from additional sample locations to assess system condition under insulation. (Reference 88) | System Monitoring Program |



**LISTING OF NEWLY IDENTIFIED SYSTEMS, STRUCTURES, AND COMPONENTS**  
**PER 10 CFR 54.37(b)**

| System   | Component Type          | Intended Function(s)                     | Material        | Environment                    | Aging Effect Requiring Management                       | Aging Management Program           |
|--|-------------------------|--|-----------------|--------------------------------|---|------------------------------------|
| ESS - Engineering Safeguards System <sup>1</sup> | Heat Exchanger / Cooler | Fluid Pressure Boundary<br>Heat Transfer | Stainless Steel | Treated Water (internal)       | Loss of Material<br>Heat Transfer Degradation - Fouling | Closed Cycle Cooling Water Program |
| ESS - Engineering Safeguards System <sup>1</sup> | Heat Exchanger / Cooler | Fluid Pressure Boundary<br>Heat Transfer | Stainless Steel | Oil (external)                 | Loss of Material<br>Heat Transfer Degradation - Fouling | Oil Sampling and Analysis Program  |
| FWS - Feedwater System <sup>1</sup>              | Heat Exchanger / Cooler | Fluid Pressure Boundary<br>Heat Transfer | Stainless Steel | Treated Water (internal)       | Loss of Material<br>Heat Transfer Degradation - Fouling | Water Chemistry Program            |
| FWS - Feedwater System <sup>1</sup>              | Heat Exchanger / Cooler | Fluid Pressure Boundary<br>Heat Transfer | Stainless Steel | Oil (external)                 | Loss of Material<br>Heat Transfer Degradation - Fouling | Oil Sampling and Analysis Program  |
| FOS - Fuel Oil System <sup>2</sup>               | Accumulator             | Fluid Pressure Boundary                  | Carbon Steel    | Atmosphere/ Weather (external) | Loss of Material  | System Monitoring Program          |

<sup>1</sup>10 CFR 50.37(b) Determination Log No. 54.37-PLP-2011-004.<sup>2</sup>10 CFR 50.37(b) Determination Log No. 54.37-PLP-2015-001.