

- The commercial nuclear power industry, working under the auspices of the Electric Power Research Institute, has undertaken programs designed to obtain more surveillance information at high levels of radiation exposure.
- The NRC staff is working with the American Society of Testing and Materials Subcommittee E10.02 (Behavior and Use of Nuclear Structural Materials) to develop more accurate embrittlement prediction models.
- The NRC has adopted regulatory practices to use measured data, not predictions, when the measured data significantly exceed the predictions.

For the Palisades Nuclear Plant it should be noted that none of this information from Japan indicates cause for an immediate safety concern. The level of radiation exposure associated with the fourth surveillance capsule at Genkai Unit 1 is three times higher than the Palisades vessel will experience on the date its license expires (in 2031). Additionally, the radiation to which the Palisades reactor will be exposed by 2031 is well within the range where the NRC's prediction model performs. The model performs well. The surveillance data for the Palisades reactor shows good agreement with projected trends to levels of irradiation exposure far beyond those that will be experienced in the licensed operating lifetime of the vessel.

ii. Additionally you asked for the following information:

- Please provide us with the exact dates and with reports for each of the actual samples that have been taken from the Palisades Reactor (1971-2013).*
- Please provide us with the dates that are planned for future samples to be taken.*

The table below summarizes the Palisades surveillance program, and provides the information requested in parts (a) and (b) of the question.

Summary of surveillance capsules in the Palisades nuclear power plant.

| Capsule Type | Capsule ID | Title | Adams # for Report | Year of Capsule Pull |
|--------------|------------|--|--------------------|----------------------|
| Unirradiated | | Final Report On Palisades Pressure Vessel Irradiation Capsule Program: Unirradiated Mechanical Properties | | |
| Irradiated | A-240 | Final Report On Palisades Nuclear Plant Reactor Pressure Vessel Surveillance Program: Capsule A-240 | 7907120344 | 1978 |
| Irradiated | W-290 | Analysis Of Capsules T-330 and W-290, Consumers Power Company, Palisades Reactor Vessel Radiation Surveillance Program | 8411200379 | 1983 |

| Capsule Type | Capsule ID | Title | Adams # for Report | Year of Capsule Pull |
|---------------------------|------------|--|--------------------|--|
| Thermal | T-330 | Analysis Of Capsules T-330 and W-290, Consumers Power Company, Palisades Reactor Vessel Radiation Surveillance Program | 8411200379 | 1983 |
| Irradiated | W-110 | Analysis Of Capsule W-110 From The Consumers Power Company Palisades Reactor Vessel Radiation Surveillance Program | 9406270173 | 1993 |
| Irradiated | W-100 | Analysis Of Capsule W-100 From The Consumers Power Company Palisades Reactor Vessel Radiation Surveillance Program | ML040910069 | 2003 |
| Irradiated (Supplemental) | SA-60-1 | Test Results of Capsule SA-60-1 Consumers Energy Palisades Nuclear Plant Reactor Vessel Material Surveillance Program | | End of Cycle 13 |
| Irradiated (Supplemental) | SA-240-1 | Test Results of Capsule SA-240-1 Consumers Energy Palisades Nuclear Plant Reactor Vessel Material Surveillance Program | | End of Cycle 14 |
| Irradiated | W-80 | | Installed | 2019 (planned) |
| Irradiated | W-280 | | Installed | Testing not planned, to be held in reserve |
| Irradiated | W-260 | | Installed | |
| Thermal | T-150 | | Installed | |

Definition of Capsule Types

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|----------------------------|--|
| Unirradiated: | Not a capsule, but a report that summarized the properties of the pressure vessel steels in the as-built condition, before radiation occurs. |
| Irradiated: | Used to measure the effects of radiation. Installed when the reactor was first started. |
| Thermal: | Used to measure the effects of thermal aging. Installed when the reactor was first started. |
| Irradiated (Supplemental): | Used to measure the effects of radiation. Installed after the reactor was first started. |

c. Please provide us with a plot of the prediction model that shows actual data points taken during Palisades operating history.

The plot requested is provided below. The plot, which was used as part of the end-of-cycle public meeting held on April 2, 2013, (see ADAMS ML13093A191) shows the variation of the embrittlement reference temperature (RT_{PTS}) with years of