Energy Probe Interrogatory #27

Interrogatory

Reference:
Exhibit D2, Tab 2, Schedule 7, Attachment 3, pages 10 and 11

Preamble: "As shown above, the Upper Feeder work series slow ramp-up was impacted by One Time Events, performance issues, supply and logistical issues that have been addressed and should not be repeated."

Please describe the One Time Events, performance issues, supply, and logistical issues and explain how they impacted the slow ramp-up.

Response

Issues that caused a slow ramp-up of the upper feeder work series on Unit 2 are described below. These issues have been addressed through application of Lessons Learned and are not expected to impact the Remaining Units' refurbishments. See Ex. D2-2-3, Attachment 6 for additional information on the Lessons Learned regarding feeder installation.

1) One Time Events

- The qualification and subsequent fabrication of Inconel 690 components used in the feeder pipes took longer than planned on Unit 2. The qualification process does not need to be repeated on the Remaining Units. Feeder fabrication and delivery was advanced and the majority of feeders are already delivered for Unit 3 (see Ex. L-D2-02-Staff 134, part a)).

- New seismic requirements for cantilevers took longer than planned. For the Remaining Units' refurbishment outages, seismic qualification of the cantilevers will be based on Unit 2 and thereby avoiding the delays experienced on Unit 2.

2) Construction/Performance Issues

- Actual field conditions could not be exactly mimicked in the mock-up. Examples include the air flow in the reactor vault and Primary Heat Transport ("PHT") header temperatures, which both impacted the weld failure rate, and which led to lower productivity than planned in the earlier portion of the feeder work series. Upgrades have been implemented to mock-up training facilities to more accurately mimic "in

plant" conditions. Mock-up rehearsal time was also expanded to ensure proficiency beyond qualification.

- Tooling quality issues encountered in the field required retrofitting. This resulted in lower productivity than planned in the earlier portion of the feeder work. Enhanced tooling has since been acquired to improve productivity.

- A higher than planned number of welds failures occurred in the earlier portions of the feeder work. Fit-up checks before welding, changes to various welding parameters, assignment of additional welding engineers and additional technicians to verify tooling condition and set-up prior to each weld, were all implemented to address weld failure challenges.

- Inspections of the feeders uncovered fabrication issues that necessitated the modification of welding machines to prevent introduction of foreign material into the feeders. Since the discovery of these issues, all feeders have been subjected to additional review and approval by a designated OPG engineering team prior to leaving the fabrication facility.

3) Trades Supply Issues

- As a result of a longer than planned upper feeder installation, leading directly into lower feeder installation, higher than anticipated trades absenteeism affected productivity. In response, local and international trades union business agents were engaged to address issues and changes to the crew size and shift patterns were made. Expectations were reiterated and additional monitoring measures implemented to address the issue.

4) Logistical Issues

- The high degree of accuracy required of the feeder installation work, exacerbated by the technical and resource challenges described above, revealed the need for additional experienced contractor project managers to manage the complex detailed logistics, organization, resource planning, and resource coordination between OPG and the contractor. Additional construction management, quality control resources and scaffold subject matter experts were also brought in to resolve the above noted logistical challenges.