Hatch 24-Month Fuel Cycle Extension

Case Study

Client (Plant)	Period of Performance	Brief Description of Project
Hatch 1/2	**2000-2001**	**24 Month Fuel Cycle Extension Project**

Problem/Issue	Action Taken
License is limited to 18 Month Fuel Cycle and has to perform all major safety related equipment tests during outages at periods of 18 months +/- 4.5 months (up to 22.5 months)	EXCEL developed Action Plan for the development, licensing and implementation of the 24 Month Fuel Cycle Extension (GL91-04)

Solution

EXCEL performed the following:

1. Project Scoping Study
   - a. Screen Licensing and Owner Controlled Requirements Documents for Surveillance Frequencies to be Extended
     - i. Licensing Docs
       1. Technical Specifications
       2. Commitments Database
     - ii. Owner Controlled
       1. Technical Requirements Manual
       2. Offsite Dose Calculation Manual
       3. UFSAR
     - iii. Screen for:
       1. 18 Month Frequencies
       2. 18 Month Multiples, such as 36 Month or 54 Month
       3. Staggered Frequencies which Correlate to 18 Month Multiples
   - b. Create a Database with all Surveillances to have Extended Surveillance Intervals
   - c. Identify all Surveillance Procedures used to satisfy the Identified and Captured Surveillance Requirements, and include the procedures in the database.
   - d. Identify the equipment and instrumentation that are used to satisfy the LCOs for which those surveillances apply. Include this equipment in the database.
   - e. Provide the Drift Calculation Scoping
     - i. Identify manufacturers and model numbers of the instrumentation, and enter this information into the database.
     - ii. Screen instrumentation to remove those items which are calibration checked on a more frequent basis, and those items which can be justified for no rigorous drift determination.
     - iii. Group the instrumentation by manufacturer and model number, and provide preliminary drift groupings.
2. Data Collection for at least the Last 7-10 Years
   - a. Provide a list of start and stop dates for all refueling and unplanned outages for the past 10 years
   - b. Collect Data for Failure Analysis
     - i. Prior Surveillance procedure performances
     - ii. Supporting Condition Reports, Action Tracking items that address failures
   - c. Collect Data for Drift Analysis
     - i. Prior Calibration Surveillance procedure performances
     - ii. Supporting Condition Reports, Action Tracking, Work Order items that address instrument failures, repairs, or replacements

3. Data Entry and Performance of Surveillance Failure Analysis
   a. Create a Database to document the Surveillance Failure Analysis
   b. Enter each Surveillance performance into the Failure Analysis Database
   c. Provide entries for whether or not failures were observed
   d. Using the procedure performances and supporting Condition Reports, Work Orders, or Action Item resolutions, categorize each failure observed.
   e. For failures of safety functions, analyze for time dependency.
   f. Group those considered to be potentially time dependent, and analyze to justify extension.
   g. Document justifications and list any surveillances which are not able to be justified for extension and the reasoning why.
   h. Produce final failure analysis report / database that justifies the extension each surveillance requirement to be addressed from a failure analysis perspective.
4. Data Entry for Drift Calculations
   a. Enter all As Found and As Left calibration data for the instrumentation within the drift scope for the last 10 years. Enter notes regarding component replacement or repair that could impact the drift analysis.
   b. Provide a full verification for correctness for all data entered.
   c. Provide drift data to drift calculation preparers.
5. Perform Drift Calculations
   a. Produce drift analysis methodology and get utility approval.
   b. Perform the statistical analyses for drift for each component type, and split the calculations, as necessary, where data will not properly combine.
6. Incorporate Drift Results into Instrument Uncertainty/Setpoint Calculations (performed by utility, although option was provided for EXCEL to perform).
7. Plant Programs Review
   a. Coordinate with Plant Programs leadership to help screen for surveillance requirements which need change.
8. Commitments Review
   a. Review regulatory commitments to ensure that all extraneous commitments that mention frequencies for requirements have been properly addressed.
9. UFSAR Review
   a. Address any changes to UFSAR frequencies to ensure that those changes are addressed.
10. LAR Supporting Documentation
   a. Write Documentation of Changes justifications for each Technical Specification Surveillance Requirement to be addressed.
   b. Provide Technical Specification markups as necessary.
   c. Provide Drift Analysis Methodology within the submittal.
   d. Provide tabulation of drift analysis results in the submittal.
11. Requests for Additional Information – Assist Client in Answering Questions, as Necessary
12. Implementation (post-LAR):
   a. Perform failure analysis for surveillance procedures performed supporting non-Technical Specification surveillances.
   b. Provide Document of Changes justifications for each surveillance to be addressed in the 50.59 evaluation.
   c. Provide surveillance requirement markups as required for 50.59.
   d. Develop improved instrument trending program procedure for use at the plant.
   e. Load initial calibration data into the instrument trending (software) program. Prepare the software and data for use whenever future surveillance data is recorded.

Benefits to the Client
The results were the client was able to extend the need for a refueling shutdown to reload and to perform significant safety related equipment testing from a maximum of approximately 20 months to approximately 30 months – almost a 1 year extension. This resulted in significant operational flexibility and significant costs savings.
Lessons that might apply to other clients
All clients who have not performed 24 Month Fuel Cycle Extensions can attain the costs savings and flexibility and this concept can be applied to quarterly, semiannual and annual surveillances.
Feedback from Client
The client advised that the project was exceedingly successful in providing operational flexibility and costs savings.