

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)**

**MEETING PURPOSE: Weekly 09/07/12 MHI Meeting**

The purpose of the meeting is to provide weekly status update between MHI and SCE.

**SUMMARY:**

- MHI presented mock-up test schedule.
- Discussed team building with date selection.
- Discussed approved/signed-off on 09-04-12 decision trees and flow charts.
- MHI provided KOBE Repair Activities Update .
- MHI distributed SONGS U2 & U3 Steam Generator Tube Wear Mechanism document.
- MHI distributed ATHOS analysis result summary of SONGS-OSG.

**ACTION ITEM STATUS:**

- Existing action item list was reviewed and new action items were added.

Attachments: Attendees, Handouts

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT – Meeting Attendance Sheet  
09/07/12**

REDACTED

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT Meeting Agenda**



**SGR\_Team**  
**MHI Weekly Status Meeting**  
**09/07/2012 @1300**  
**G55-SGR**

| <b>SAN ONOFRE NUCLEAR GENERATING STATION</b>                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose of Meeting &amp; Expected Outcome(s):</b> <ul style="list-style-type: none"> <li>To inform stakeholders of SGR_Team Project status</li> <li>Identify current issues and actions being taken</li> <li>Identify support required</li> </ul>                                             |
| <b>Requirements for Every Meeting:</b><br>SGR_Team/MHI weekly meetings are working meetings and all attendees should be prepared and actively participate.                                                                                                                                       |
| <b>AGENDA</b>                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>Introduce New Members</li> <li>Schedule Development</li> <li>Team Building with Date Selection</li> <li>Approval Status of Decision Trees and Flow Charts</li> <li>Discussion of Repair Options</li> <li>Action Items</li> <li>Open Discussion</li> </ul> |

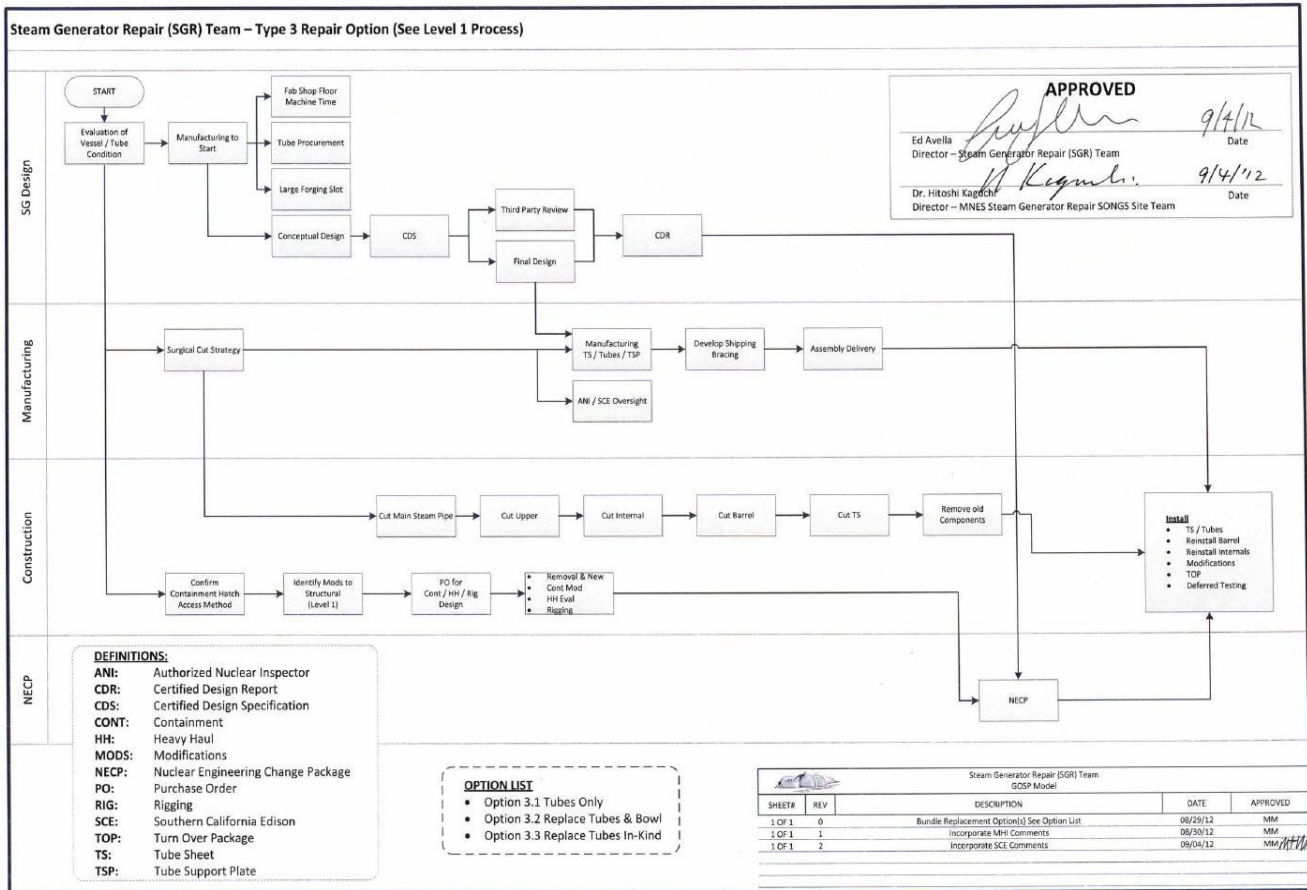
**New Action Items**

| Action Item | Task text | Planned finish | Completed On | DescEmpl.Resp. |
|-------------|-----------|----------------|--------------|----------------|
|             |           |                |              |                |
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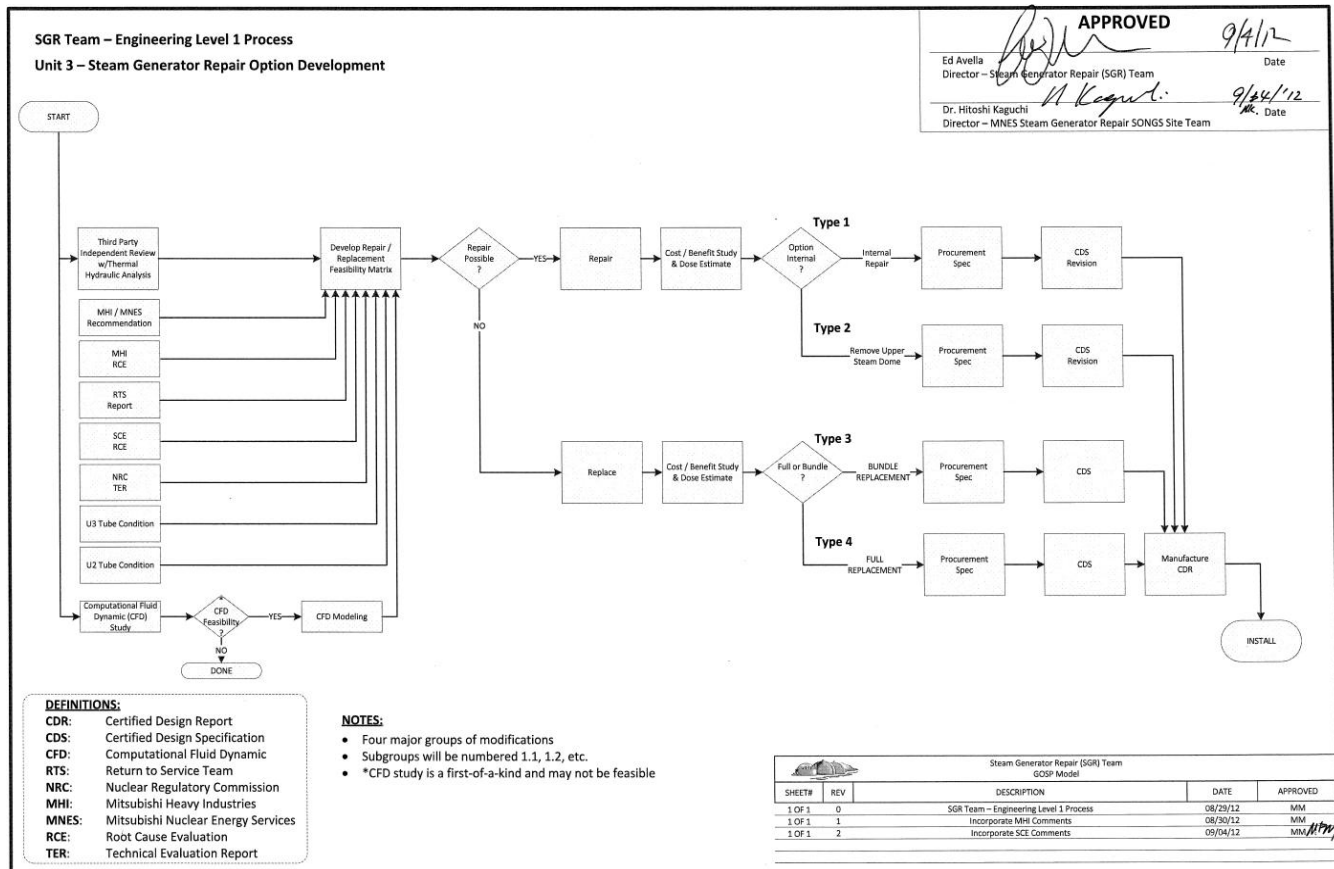
As employees of SONGS, we are committed to demonstrating the right behaviors required of a Nuclear Professional and embracing our Values of:

**Integrity ~ Excellence ~ Respect ~ Continuous Improvement ~ Teamwork**

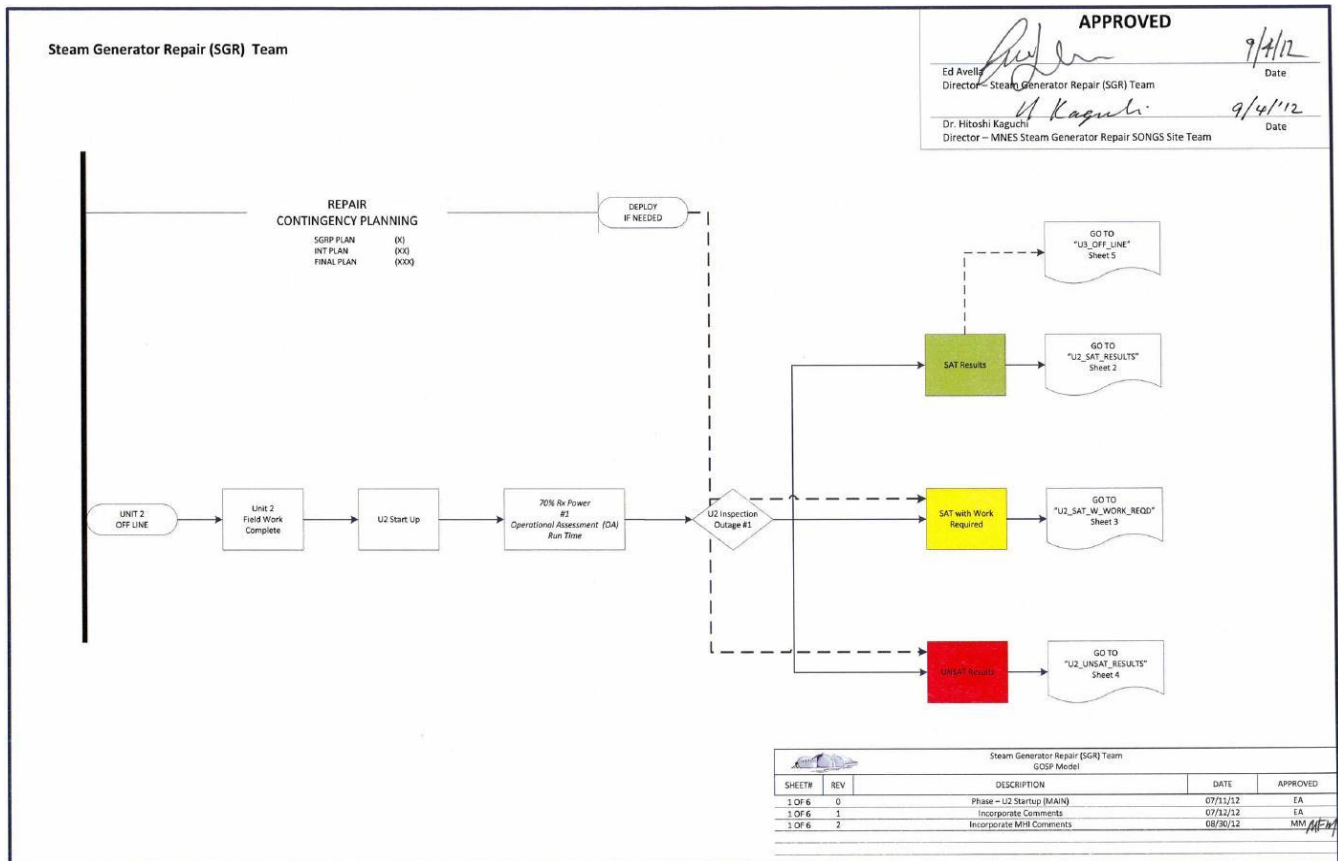
**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT 1 – Bundle Replacement Option**



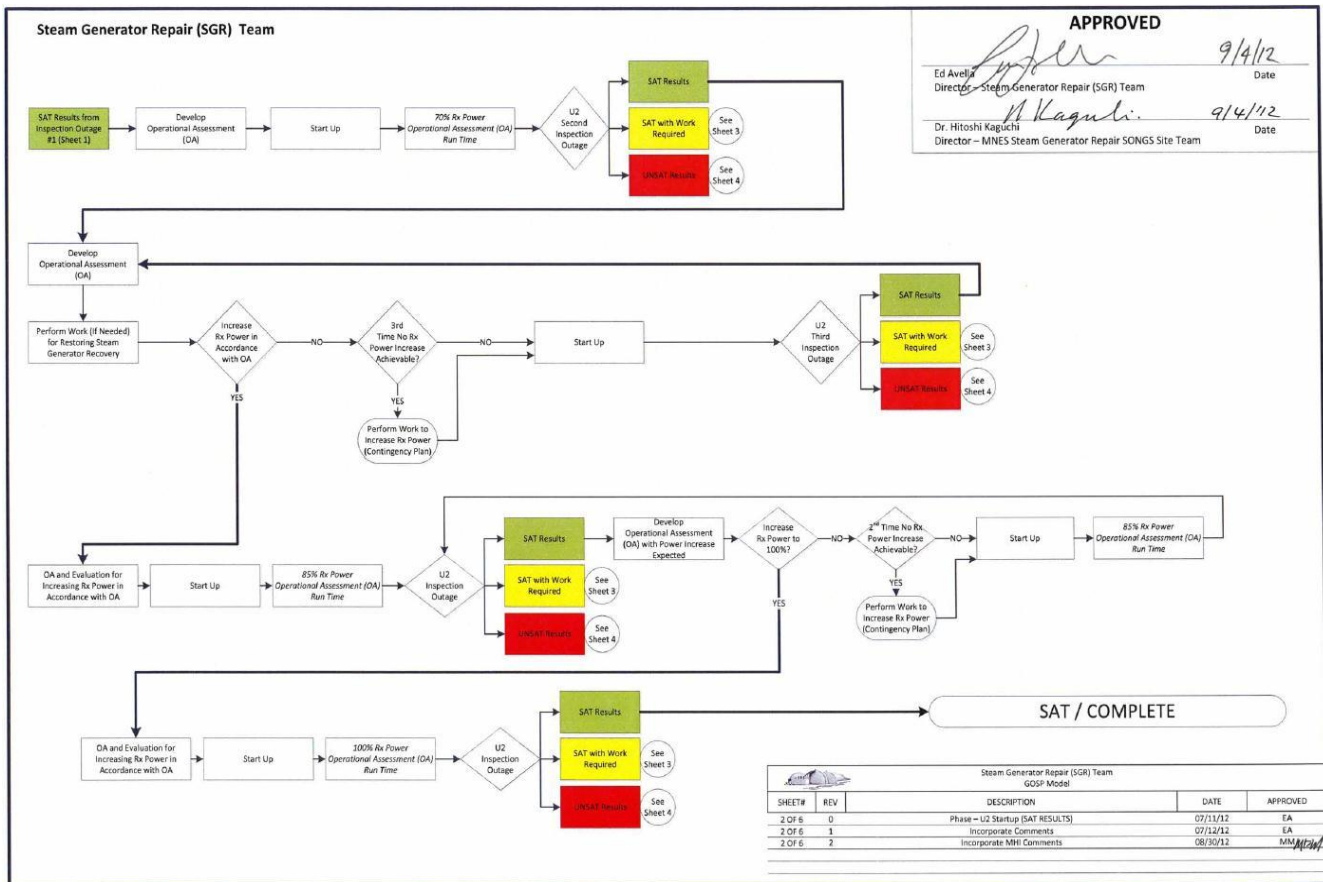
**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT 2 – SGR Engineering Level 1 Process**



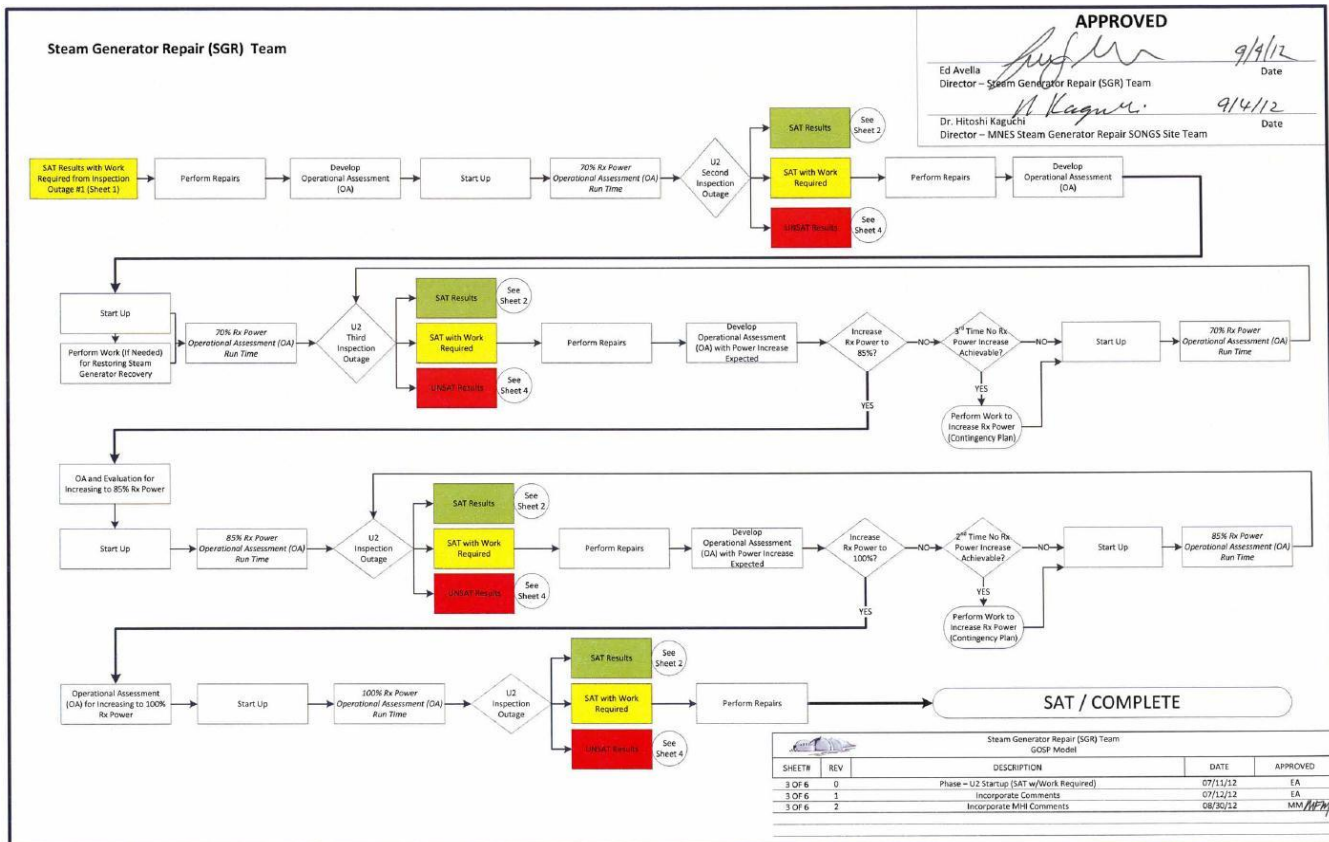
**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)**  
**STEAM GENERATOR REPAIR TEAM (SGR)**  
**ATTACHMENT 3 – Memorialize Decision Map (1 of 6)**



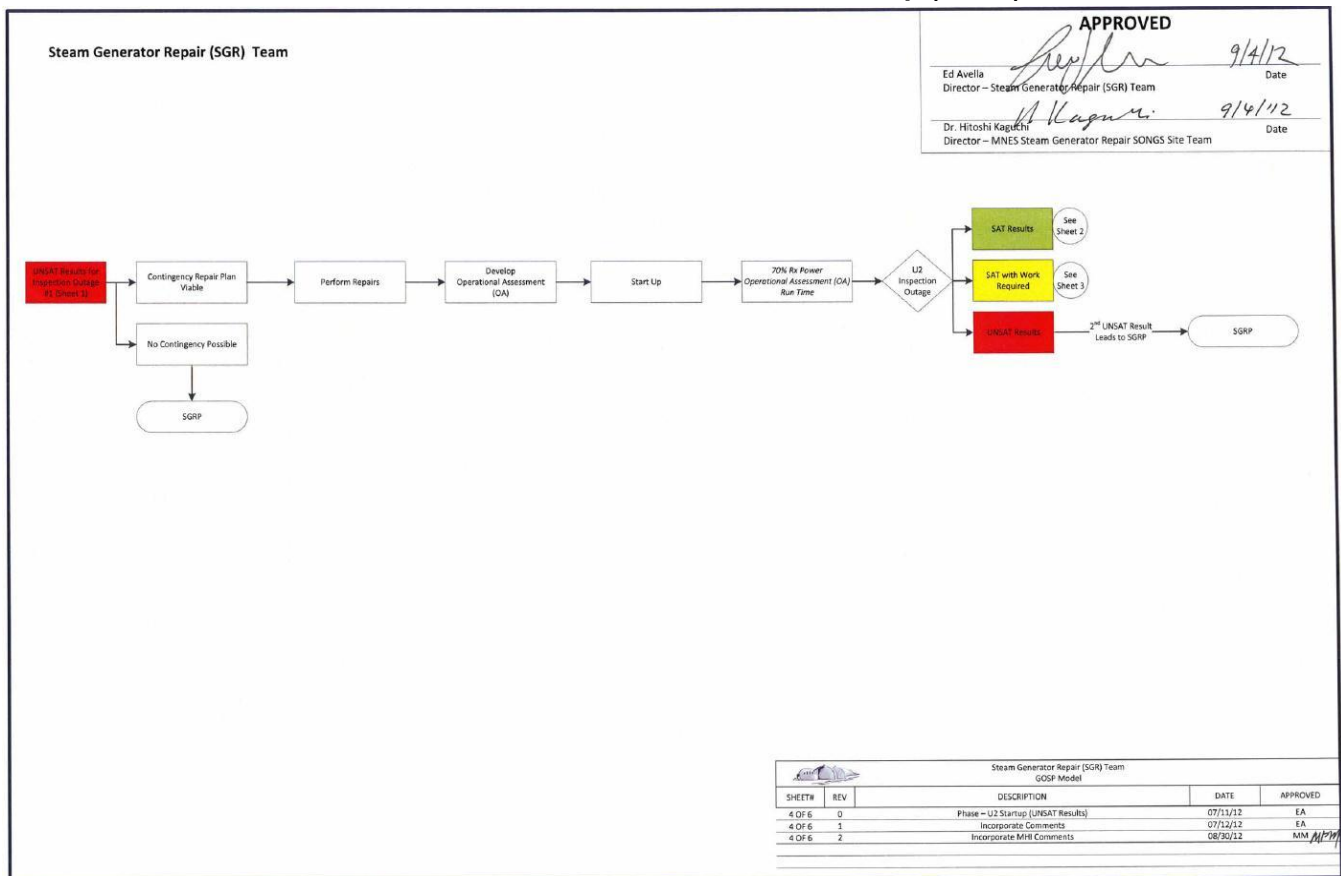
**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT 3 – Memorialize Decision Map (2 of 6)**



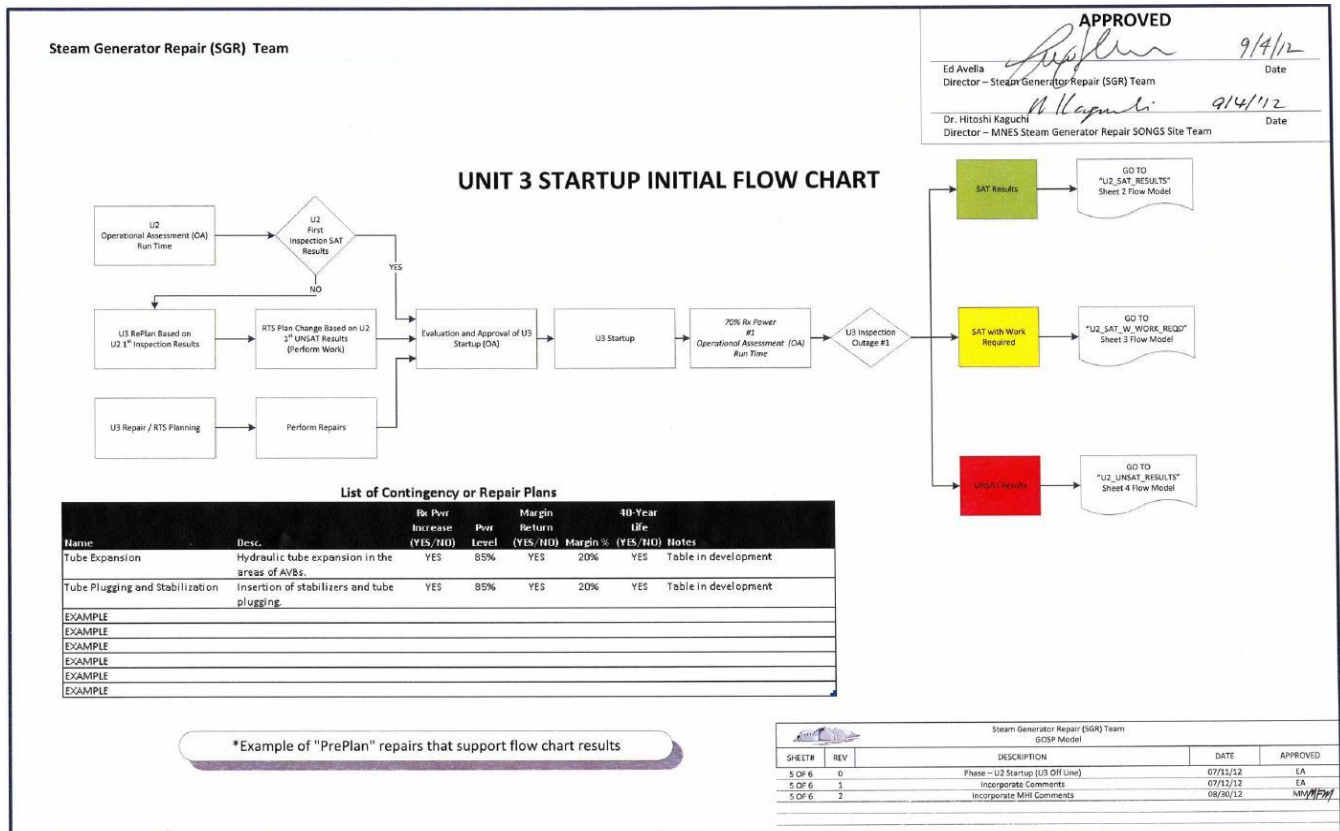
**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)**  
**STEAM GENERATOR REPAIR TEAM (SGR)**  
**ATTACHMENT 3 – Memorialize Decision Map (3 of 6)**



**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT 3 – Memorialize Decision Map (4 of 6)**



**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT 3 – Memorialize Decision Map (5 of 6)**



# **SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)** **STEAM GENERATOR REPAIR TEAM (SGR)** **ATTACHMENT 3 – Memorialize Decision Map (6 of 6)**

| Steam Generator Repair (SGR) Team                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <div style="display: flex; justify-content: space-between; align-items: center;"> <div> <b>APPROVED</b><br/> <br/>           Ed Avella<br/>           Director – Steam Generator Repair (SGR) Team         </div> <div style="text-align: right;">           Date<br/>           9/4/12         </div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> <div> <br/>           Dr. Hitoshi Kaguchi<br/>           Director – MNES Steam Generator Repair SONGS Site Team         </div> <div style="text-align: right;">           Date<br/>           9/4/12         </div> </div>                                                 |                                                 |                 |  |  |        |     |             |      |        |   |                        |             |        |   |                      |             |        |   |                          |                 |
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| <p><b>100% Reactor Power, Operational Assessment (OA), Run Time</b> - The unit is in Mode 1 and operating at 100% reactor power for duration set by the Operational Assessment.</p> <p><b>70% Reactor Power, #1 Operational Assessment (OA), Run Time</b> - The unit is in Mode 1 and operating at 70% reactor power for duration set by the Operational Assessment.</p> <p><b>70% Rx Power, Operational Assessment (OA), Run Time</b> - The unit is in Mode 1 and operating at 70% reactor power for duration set by the Operational Assessment.</p> <p><b>85% Reactor Power, Operational Assessment (OA), Run Time</b> - The unit is in Mode 1 and operating at 85% reactor power for duration set by the Operational Assessment.</p> <p><b>Contingency Repair Plan Viable</b> - A repair/modification has been analyzed and qualified for implementation. The repair/modification will return the unit to 100% power operation for the expected component life.</p> <p><b>Deploy if Needed</b> - Implementation of a repair strategy. Contracts, logistics and support in place to minimize downtime. Trigger established based on steam generator inspection results.</p> <p><b>Develop Operational Assessment (OA)</b> - Develop the operational assessment based on the results of the inspections and testing conducted during the first inspection outage.</p> <p><b>Increase Reactor Power to 100%</b> - Decision point based on Operational Assessment following SAT inspection at 85% power.</p> <p><b>Increase Reactor Power to 85%</b> - Decision point based on Operational Assessment following three (3) SAT inspections.</p> <p><b>No Contingency Possible</b> - A repair/modification has not been developed to achieve 100% power operation for the expected life of the components. This includes repair/modification to provide interim 100% power operation or less for a period less than the expected life of the component. This decision may require a business case to demonstrate actual returns.</p> <p><b>Perform Repairs</b> - Anticipated installation of tube plugs and stabilizers based on the inspection results. No modifications are proposed in this scenario.</p> <p><b>Perform Work / Evaluation for Increasing to 85% Reactor Power</b> - Implement the recommendations of the Operational Assessment to support 85% reactor power operation.</p> <p><b>Perform Work / Legal for Increasing to 100% Reactor Power</b> - Implement the recommendations of the Operational Assessment to support 100% reactor power operation.</p> <p><b>Repair Contingency Planning</b> - Development of repair strategies for potential degradation mechanism experienced during plant operation. Evaluation of the repair strategies for constructability. Generation of contracts that would be necessary for implementation of the repair strategies.</p> <p><b>SAT / COMPLETE</b> - No evidence of tube to tube wear from Fluid Elastic Instability (FEI). Normal wear as predicted by the Operational Assessment for the duration of operation. The Operational Assessment concludes the health of the steam generator is acceptable for 100% power operation for the expected life of the components.</p> <p><b>SAT Results</b> - No evidence of tube to tube wear from Fluid Elastic Instability (FEI). Normal wear as predicted by the Operational Assessment for the duration of operation. No tube plugging, stabilization or modifications required for continued operation.</p> <p><b>SAT Results with Work Required</b> - No evidence of tube to tube wear from Fluid Elastic Instability (FEI). Normal wear as predicted by the Operational Assessment for the duration of operation. Anticipated / planned tube plugging or stabilization of some tubes required. No modifications required for continued operation.</p> <p><b>SGRP</b> - Replacement of the Steam Generator(s)</p> <p><b>Start Up</b> - All unit startup prerequisites have been met. Regulatory approval for startup, if required, has been obtained. The unit is ready to begin power ascension.</p> <p><b>Unit 2 Field Work Complete</b> - All field work is complete and all systems, structures and components returned to Operations. Unit is ready to resume power operation.</p> <p><b>Unit 2 Inspection Outage</b> - Unit 2 in Mode 5 or 6 with the ability to perform work activities in the steam generators. Inspections and testing of the steam generators as required by the Operational Assessment to be conducted.</p> <p><b>Unit 2 Inspection Outage #1</b> - Unit 2 in Mode 5 or 6 with the ability to perform work activities in the steam generators. Inspections and testing of the steam generators as required by the Operational Assessment to be conducted.</p> <p><b>Unit 2 Off Line</b> - Unit 2 in Mode 5 or 6 with the ability to perform work activities in the steam generators.</p> <p><b>Unit 2 Start Up</b> - Initial unit startup after refueling outage. All unit startup prerequisites have been met. Regulatory approval for startup has been obtained. The unit is ready to begin power ascension.</p> <p><b>Unit 3 Inspection Outage #1</b> - Unit 3 in Mode 5 or 6 with the ability to perform work activities in the steam generators. Inspections and testing of the steam generators as required by the Operational Assessment to be conducted.</p> <p><b>Unit 3 Start Up</b> - Initial unit startup after forced outage. All unit startup prerequisites have been met. Regulatory approval for startup has been obtained. The unit is ready to begin power ascension.</p> <p><b>UNSAT Results</b> - Evidence of tube to tube wear from Fluid Elastic Instability (FEI) or wear greater than predicted by the Operational Assessment for the duration of operation. Unanticipated / unplanned tube plugging or stabilization of tubes required. Modifications required for continued operation.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                 |                 |  |  |        |     |             |      |        |   |                        |             |        |   |                      |             |        |   |                          |                 |
| <div style="border: 1px dashed black; padding: 5px;"> <p><b>NOTE:</b><br/>           % Power is best estimate. Final Determination of Run Time / % Power will be determined in the Operational Assessment.</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4" style="text-align: center; font-size: small;">Steam Generator Repair (SGR) Team<br/>GOSP Model</th> </tr> <tr> <th style="width: 10%;">SHEET#</th> <th style="width: 5%;">REV</th> <th style="width: 60%;">DESCRIPTION</th> <th style="width: 25%;">DATE</th> </tr> </thead> <tbody> <tr> <td>6 OF 6</td> <td>0</td> <td>Flow Chart Definitions</td> <td>07/11/12 EA</td> </tr> <tr> <td>6 OF 6</td> <td>1</td> <td>Incorporate Comments</td> <td>07/12/12 EA</td> </tr> <tr> <td>6 OF 6</td> <td>2</td> <td>Incorporate MHI Comments</td> <td>09/04/12 MM/Hdy</td> </tr> </tbody> </table> | Steam Generator Repair (SGR) Team<br>GOSP Model |                 |  |  | SHEET# | REV | DESCRIPTION | DATE | 6 OF 6 | 0 | Flow Chart Definitions | 07/11/12 EA | 6 OF 6 | 1 | Incorporate Comments | 07/12/12 EA | 6 OF 6 | 2 | Incorporate MHI Comments | 09/04/12 MM/Hdy |
| Steam Generator Repair (SGR) Team<br>GOSP Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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                                                                                                                                                                                                                                                                                                                                                                                                     | DESCRIPTION                                     | DATE            |  |  |        |     |             |      |        |   |                        |             |        |   |                      |             |        |   |                          |                 |
| 6 OF 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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| 6 OF 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                                                                                                                                                                                                                                                                                                                                     | Incorporate Comments                            | 07/12/12 EA     |  |  |        |     |             |      |        |   |                        |             |        |   |                      |             |        |   |                          |                 |
| 6 OF 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                                                                                                                                                                                                                                                                                                                                     | Incorporate MHI Comments                        | 09/04/12 MM/Hdy |  |  |        |     |             |      |        |   |                        |             |        |   |                      |             |        |   |                          |                 |

# **SAN ONOFRE NUCLEAR GENERATING STATION (SONGS) STEAM GENERATOR REPAIR TEAM (SGR) ATTACHMENT – SGR / MHI Action Items**

## **SONGS - SGR Action Items**

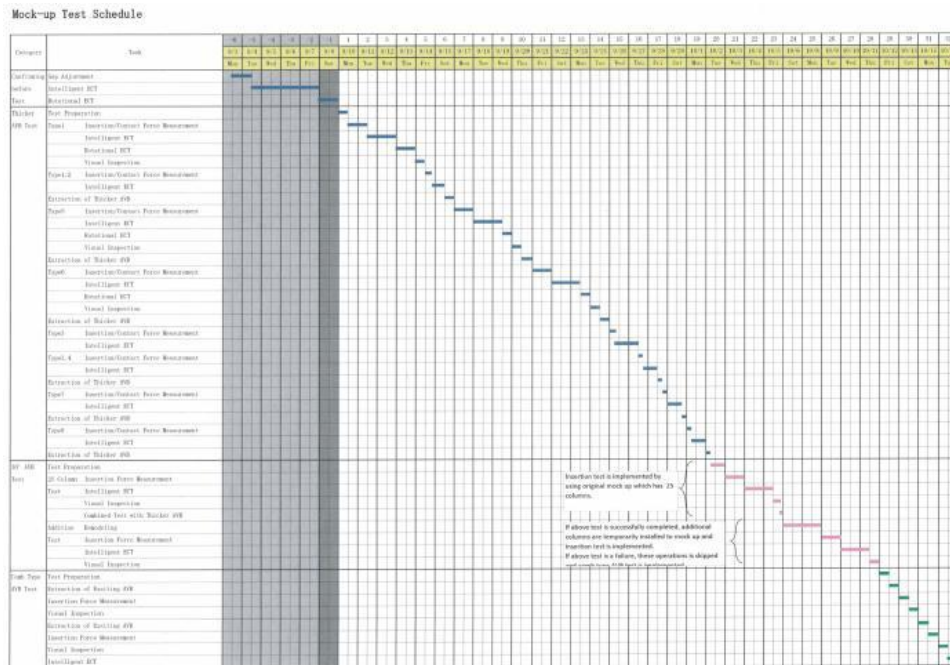
| Open Action Items (Sorted by Due Date) |            |                      |                                                                                                                                                                                |             |                      |          |                |              |                                                                                                                                                                                                                     |
|----------------------------------------|------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------|----------|----------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No.                                    | Date Ass'd | Plant / Unit / Equip | Action:                                                                                                                                                                        | Originator: | Action Meeting From: | Company: | Orig. Due Date | Current Date | Comments                                                                                                                                                                                                            |
| <b>Anderson, M</b>                     |            |                      |                                                                                                                                                                                |             |                      |          |                |              |                                                                                                                                                                                                                     |
| 87                                     | 7/25/2012  | SONGS C SGR          | Determine SCE QA contact for MHI                                                                                                                                               |             | MHI Progress         | SCE      | 9/15/2012      | 9/15/2012    |                                                                                                                                                                                                                     |
| <b>Avella, E</b>                       |            |                      |                                                                                                                                                                                |             |                      |          |                |              |                                                                                                                                                                                                                     |
| 34                                     | 7/20/2012  | SONGS C SGR          | Is MNES / MHI qualified through SCE Quality Program.                                                                                                                           |             | MHI Progress         | SCE      | 9/1/2012       | 9/14/2012    | 07/25/12: MHI is approved. MNES needs to be approved per J.Hutter.<br>08/01/12: Verify above with SCE QA department.<br>09/05/12: Ed to meeting with NOD on Friday 9/7 and will discuss QA; extend due date to 9/14 |
| 188                                    | 9/7/2012   | SONGS C SGR          | SGR_O_M_MHI_060712000057 - Invitation of SCE to NRC Visit at Kobe<br>MHI requests SCE attendance for the NRC visit in Kobe. They request a response.                           |             | MHI Progress         | SCE      | 9/14/2012      | 9/14/2012    |                                                                                                                                                                                                                     |
| <b>Hutter, J</b>                       |            |                      |                                                                                                                                                                                |             |                      |          |                |              |                                                                                                                                                                                                                     |
| 147                                    | 8/29/2012  | SONGS C SGR          | Schedule trip for SGR_Team Leaders to visit Kobe to visit the facility and gain familiarity after NRC visit.                                                                   |             | MHI Progress         | MHI      | 9/5/2012       | 9/5/2012     | 09/05/12: Dates will be provided on 9/7                                                                                                                                                                             |
| 124                                    | 8/15/2012  | SONGS C SGR          | MHI to model the OSG using Athos to determine their performance.<br>(AECL Chalk River)                                                                                         |             | MHI Progress         | MHI      | 8/24/2012      | 9/7/2012     | 09/05/12: Extended to 9/7                                                                                                                                                                                           |
| 145                                    | 8/29/2012  | SONGS C SGR          | SGR_Team requests invitation to Kobe when NRC is present / attending.                                                                                                          |             | MHI Progress         | MHI      | 9/5/2012       | 9/7/2012     | 09/05/12: Extended to 9/7                                                                                                                                                                                           |
| 151                                    | 8/29/2012  | SONGS C SGR          | Provide Level 3 schedule input from Kobe to SGR_Team scheduling.                                                                                                               |             | MHI Progress         | MHI      | 9/7/2012       | 9/7/2012     |                                                                                                                                                                                                                     |
| 146                                    | 8/29/2012  | SONGS C SGR          | Submit letter to SGR_Team with mock-up specification, plan, and testing details as to what will be presented to the NRC during their Kobe visit.                               |             | MHI Progress         | MHI      | 9/5/2012       | 9/8/2012     | 09/05/12: Extended to 9/8                                                                                                                                                                                           |
| 83                                     | 8/1/2012   | SONGS C SGR          | Provide Roles and Responsibility document for individuals listed on organization chart.                                                                                        |             | MHI Progress         | MHI      | 8/15/2012      | 9/12/2012    | 08/20/12: Extended due date to 9/11 as requested.<br>09/05/12: Extended due date to 9/12                                                                                                                            |
| 141                                    | 8/29/2012  | SONGS C SGR          | MHI to provide RA&Q (Repair Analysis & Qualification) Test Plan for review & comment.                                                                                          |             | MHI Progress         | MHI      | 9/5/2012       | 9/12/2012    | 09/05/12: Extended to 9/12                                                                                                                                                                                          |
| 143                                    | 8/29/2012  | SONGS C SGR          | MHI to supply date that they will move-in to G55-SGR.                                                                                                                          |             | MHI Progress         | MHI      | 9/12/2012      | 9/15/2012    | 09/05/12: Extended to 9/15                                                                                                                                                                                          |
| 142                                    | 8/29/2012  | SONGS C SGR          | MHI to provide post-U2 dates for possible offsite team building exercise.                                                                                                      |             | MHI Progress         | MHI      | 9/19/2012      | 9/19/2012    |                                                                                                                                                                                                                     |
| 137                                    | 8/21/2012  | SONGS C SGR          | -Establish alternates plans for the S/G repair and the qualification testing.<br>-Provide list (by name) of other options being considered for repair of the Steam Generators. |             | MHI Progress         | MHI      | 9/7/2012       | 9/20/2012    | 09/05/12: Extended to 9/20                                                                                                                                                                                          |
| 154                                    | 8/29/2012  | SONGS C SGR          | Develop level 3 schedule for 30-degree A/B repair option.                                                                                                                      |             | MHI Progress         | MHI      | 9/12/2012      | 9/26/2012    | 09/05/12: Extended to 9/26                                                                                                                                                                                          |
| <b>Manso, J</b>                        |            |                      |                                                                                                                                                                                |             |                      |          |                |              |                                                                                                                                                                                                                     |
| 28                                     | 7/20/2012  | SONGS C SGR          | RA&Q (Repair Analysis & Qualification) Test Plan to be sent to SONGS for review & comment.                                                                                     |             | MHI Progress         | SCE      | 8/24/2012      | 9/12/2012    | 08/20/12: Extended to 9/12                                                                                                                                                                                          |
| 153                                    | 8/29/2012  | SONGS C SGR          | Hold discussion with NOD and MHI to provide details of what an adequate QA program looks like for SCE.                                                                         |             | MHI Progress         | SCE      | 9/7/2012       | 9/21/2012    |                                                                                                                                                                                                                     |

Friday, September 07, 2012

**DUE < 7 DAYS OVERDUE**

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**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT –MHI Mock-up Test Schedule**



**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT – SONGS MHI KOBE Repair Activities**

**SONGS MHI KOBE repair activities update Sep.4'12**

|                                      |                      |                                                                                                                                                                                                                                                                                     |
|--------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mock up                              | Result<br>-Last week | <ul style="list-style-type: none"> <li>- Completion of tube structure manufacturing</li> <li>- Completion of test stage manufacturing</li> <li>- Preparation of detailed instructions for test</li> </ul>                                                                           |
|                                      | Plan<br>-This week   | <ul style="list-style-type: none"> <li>- Sep.3 Receiving Thicker AVB</li> <li>- Sep.3-4 Assembling tube structure and test stage</li> <li>- Sep.5-8 ECT for initial condition</li> </ul>                                                                                            |
| Meeting                              | Result               | <ul style="list-style-type: none"> <li>- Aug.27 Discussion about Additional AVB Analysis and the use of Chalk River Test Facility (Designer &amp; Researcher)</li> <li>- Aug.27-Aug.30 Discussion about Thermal Hydraulic improvement recommendations</li> </ul>                    |
|                                      | Plan                 | <ul style="list-style-type: none"> <li>- Sep.3 Discuss about the preparation of Level 3 Schedule (Designer &amp; After Service Engineers)</li> <li>- Sep.5 Discussion about detailed instruction for mock up test (Designer, QC Engineers &amp; After Service Engineers)</li> </ul> |
| Document & report submittal schedule |                      | <ul style="list-style-type: none"> <li>- Sep.5 Planning of analysis for additional AVB repair</li> <li>- Sep.7 Level 3 schedule for Case 2</li> </ul>                                                                                                                               |

**Weekly report**

-Mock up test schedule: Starting date of test was postponed from Sep.8 (Sat.) to Sep.10 (Mon.) due to prolonged ECT schedule but this delay will be recovered back to the original schedule.

-Level 3 schedule: MHI is preparing draft level 3 schedule for Case 2, which consist of additional thicker AVB combined with 30 degree AVB with lifting of the upper separator. Tasks are abstracted and duration is estimated.

-Analysis: MHI is preparing the verification method and schedule. However, the schedule for computer analysis is fully occupied due to the operating assessment (OA) tasks. So, MHI put in more effort to come up with an analysis schedule.

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT**

**MHI SONGS U2 & U3 Steam Generator Tube Wear Mechanism**

**Attached next 28 pages represent MHI's SONGS U2 & U3 Steam Generator Tube Wear Mechanism.**

**SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)  
STEAM GENERATOR REPAIR TEAM (SGR)  
ATTACHMENT – MHI ATHOS Analysis Result of SONGS-OSG**

**Attached next 10 pages represent MHI's ATHOS Analysis Result of SONGS-OSG.**