

Action Items List to resolve overall I&C Issues

Revision 10, 6/21/2011
 Revision 11, 6/29/2011
 Revision 14, 7/19/2011
 Revision 15, 7/26/2011
 Revision 16, 8/9/2011
 Revision 17, 8/15/2011
 Revision 18, 8/29/2011
 Revision 19, 9/6/2011

Related Documents

- (1) DCD Chapter 7 (Mark-up of DCD Chapter 7 rev.3)
- (2) DCD Tier 1 Section 2.5 (Mark-up of DCD Tier 1 Section 2.5 rev.3)
- (3) Safety I&C System Description and Design Process (MUAP-07004)
- (4) Safety System Digital Platform – MELTAC (MUAP-07005)
- (5) Software Program Manual (MUAP-07017)
- (6) MELTAC Platform Basic Software Program Manual (JEXU-1012-1132)
- (7) Functional Assignment Analysis for Safety Logic System (MUAP-09020)
- (8) Response Time of Safety I&C System (MUAP-09021)
- (9) Instrument Setpoint Methodology (MUAP-09022)
- (10) MELTAC Platform ISG-04 Conformance Analysis ~~MELTAC Platform Basic Software Safety Report~~ (JEXU-1015-1009)
- (11) US-APWR Defense-in-Depth and Diversity Coping Analysis (MUAP-07014)

Note)
 Black : Finished action items
 Blue : On going action items
 Red : Added or revised action items at this revision

No	Action Items	Submittal Date
1	Closed	-
2	Closed	-
3	Closed	-
4	Closed	-
5	Closed	-
6	Closed	-
7	Closed	-
8	Closed	-
9	Closed	-
10	Closed	-
11	Closed	-

No	Action Items	Submittal Date
12	<p>RAIs responses for the following RAIs <u>Question No.</u> 07.01-31/32/33/34/35/36/37/38/39</p> <p>Provide revised RAI responses (third draft) to the NRC re-evaluation results (RAI responses are still unacceptable) for the following RAIs. <u>Question No.</u> 07.01-37/38/39</p> <p>Provide revised RAI response to the NRC additional requests (subcontractor and vender control) for the following RAI. <u>Question No.</u> 07.01-35</p>	<p>Draft Submitted at May 13th Formally Submitted at May 31st 1st Draft Re-Submitted at July 15th 2nd Draft Re-Submitted at Aug. 24th 3rd Draft Re-Submit by Sept. 9th Formally Submit by Sept. 20th</p> <p>Revised responses for RAI 07.01-37/38/39 to reflect comments (unacceptable) for draft responses from the NRC which were submitted at August 4th and August 31st. Note.1) The NRC provided status (still unacceptable) for the 2nd draft. Note.2) MHI will provide 3rd draft with some citification questions.</p> <p>Draft Submitted at August 5th Formally Submitted at August 12th</p> <p>Revised response for RAI 07.01-35 to reflect all comments from the NRC at the July 20 meeting.</p>
13	<p>RAIs responses for the following RAIs <u>Question No.</u> 07.08-17/18/19/20/21/22</p>	<p>Draft Submitted at May 12th Formally Submitted at July 8th Formally Submit by Sept. 16th</p> <p>Draft responses for the RAI 07.08-17 through 21 are evaluating by the NRC (Ch. 15 reviewers). Response for the RAI 07.08-22 will be submitted after discussion with the NRC (Ch. 15 reviewers). The above evaluation and discussion cannot be finished after the discussion with the NRC on Chapter 15 analyses which will be finished by the teleconference with the NRC on Sept. 7th.</p>

No	Action Items	Submittal Date
14 23	Closed	-
24	<p>The D3 Coping Analysis will be revised based on the following comments which were provided at the May 11th and July 21st meetings.</p> <ul style="list-style-type: none"> • Should not say e External events should also be are not considered. • Instead it, should e Explain that external events are not significant risk contributors based on the MHI's presentation at the May 11th meeting. • Other external events, such as seismic, should be considered. • DAS configuration should be upgraded to fully cope with the external events and to address the DAS reliability/availability. <p>RAIs responses for the following new RAIs to relate the above External Event and the 2/2 configuration of the DAS.</p> <p>RAIs responses for the following new RAIs to reflect the additional question from the NRC on the power supply design of the DAS at the August 25th.</p> <p>RAIs responses for the following new RAIs to reflect the additional request from the NRC to provide the actual figure (Figure 4.2-6) of the DAS configuration showing the DAS logic at the September 1st teleconference.</p> <p><u>Question No.</u> 07.08-23/24 (RAI 775-5836)</p> <p>Provide responses to following additional questions from the NRC at June 30th.</p> <p>4-a/b: The RAI response is not consistent with the last MUAP-07014 revision.</p> <p>4-c: Description on manual block of the DAS at a normal plant shutdown.</p> <p>4-d: Clear description on correctness of the 120 seconds DAS delay.</p> <p>Provide responses to following additional questions from the NRC at July 7th.</p> <p>4-a: MHI should provide a justification of time delays for SI/EFW DAS signals.</p> <p>4-b: Clarification on why "Channel Uncertainty" of SG level was changed.</p> <p>4-c: MHI should clarify the statement on the manual block function of DAS.</p>	<p><u>Draft Submitted at July 15th</u> <u>Draft Re-Submitted at August 12th</u> <u>Draft Re-Submit by Sept. 2nd</u> <u>Draft Re-Submitted at Sept. 2nd</u> <u>Formally Submit by Sept. 13th</u></p> <p>Response to RAI 07.08-23/24 to reflect all comments from the NRC including the DAS configuration at the July 21 meeting, the DAS power supply design at the August 25th teleconference and the DAS logic at the September 1st teleconference.</p> <p><u>Draft Submitted at June 30th</u> <u>Formally Submitted at August 1st</u></p> <p>Revised Document: (11) Responses to left column seven additional questions. Note.1) MHI revised Document (11) to reflect the additional responses to the left column seven additional questions and draft responses for the RAI 07.08-23. Note.2) MHI is discussing with the NRC (Chapter 15 reviewers) for the response to the RAI 07.08-17 thorough 22, therefore responses for the RAIs were not reflected.</p> <p><u>Formally Submit by Sept. 16th</u> Revised Document: (11) Note) Reflected all responses to the RAI 07.08-17 thorough 24 to reflect comments from the NRC (refer to Action Item 13).</p>

No	Action Items	Submittal Date
25	Submit the revised MELTAC Technical Report (MUAP-07005) to include all necessary description and design changes for the MELTAC upgrading based on the discussion with the NRC at the May 11 th meeting.	<u>Draft Submitted at June 15th</u> <u>Formally Submitted at August 1st</u> Revised Document: (4)
26	Closed	-
27	Closed	-
28	The next teleconference will be held on Sept. 1st and Sept. 8 th .	-
29	Closed	-
30	The NRC inspection of MELTAC, including MRP and Basic SPM, etc., will be performed in September/October time frame the 5 th week of December, 2011. Periodically conference call will be planned to discuss on the inspection. MHI (MELCO) will provide planed English documents list for the inspection.	-
31	The NRC audit for technical topics for the digital I&C design, including draft ERG and secure development environment of MELTAC, etc. will be performed in the 12 th week of December, 2011 at MHI/MELCO Kobe. MHI will arrange a tour to NPP which used the safety-related MELTAC system at the same week. The additional audit will perform at MNES Arlington after the NRC above audit in Kobe (may be beginning of 2012).	-
32	Closed	-
33	Closed	-
34	Closed	-
35	MHI will propose additional ITAAC to confirm following response time issues; <ul style="list-style-type: none"> • Results of controller loading calculation(s) • Actual controller loading • Verifies response time test results are within the acceptance criteria The NRC provided the following comments at the teleconference on July 7 th . <ul style="list-style-type: none"> • Deleted the second sentence (“On-line diagnostics do not interrupt plant d\control”) of the ITAAC Table 2.5.1-6 Item 31 must be restored. 	<u>Draft Submitted at June 17th</u> <u>Draft Re-Submitted at July 15th</u> ITAAC to confirm this issue. Note) MHI will reflected feedbacks and comments from the NRC at the teleconference on June 30 th and July 7 th . <u>Formally Submitted at August 1st</u> ITAAC to confirm this issue.
36 40	Closed	-

No	Action Items	Submittal Date
41	<p>Provide responses to the following additional questions from the NRC.</p> <ul style="list-style-type: none"> • Clarify the number of multidivisional safety VDUs and make appropriate changes of the Safety I&C Technical Report. • Provide reason for the deletion of ITAAC Item #2 of Table 2.5.6-1. • Should Figure 2.5.6-1 of DCD Tier 1 Markup be revised (1) change division to train and (2) to include the proposed multidivisional safety VDUs? • Section 7.7.1.13 of DCD Rev. 4 Markup (page 7.7-19) states “The reasons why the unit bust interface is selected are described in Subsection 7.9.1.2” regarding non-safety automatic control signals interface from PCMS to PSMS via the unit bus. Subsection 7.9.1.1.2 should be referred instead. • Keep consistency of words, such as Trip Switchgear, RTB and CRDM, etc. across all related documents including the Response Time of Safety I&C System Technical Report (MUAP-09021). • Multidivisional Safety VDUs must be evaluated and more clear descriptions on 100% testing capabilities of the PIF module must be added in JEXU-1015-1009 (MELTAC Platform ISG-04 Conformance Analysis). • 8 questions on scope and method of the self-diagnostic features, the manual periodic tests and the continuous on-line tests, etc. • Keep consistency the description of the location of the safety VDU processors between DCD and MELTAC TR. 	<p><u>Draft Submitted at July 15th</u> <u>Formally Submitted at August 1st</u> Note) MHI would like to discuss with the NRC based on draft responses at the meeting on July 20th & 21st.</p>
42	<p>RAI response for the following new RAI (non-safety automatic control signals from the PCMS to the PSMS). <u>Question No.</u> 07.09-24 (RAI 778-5866)</p>	<p><u>Draft Submitted at July 15th</u> <u>Formally Submitted at August 1st</u> Note) MHI would like to discuss with the NRC based on draft responses at the meeting on July 20th & 21st.</p>
43	<p>Provide revised RAI responses to the NRC follow-up questions for the following RAIs (HFE related issues on the D3 Coping Analysis Report). <u>Question No.</u> 07.08-11/12 (RAI 6770 5325)</p>	<p><u>Draft Submitted at August 5th</u> <u>Formally Submitted at August 12th</u> Responses for RAI 07.08-11/12. The draft responses were reflected to Document (11) which were submitted by August 1st. If the NRC provides comments on the draft responses, the comments will be reflected to the next version of Document (11) which will be submitted by September 16th.</p>

No	Action Items	Submittal Date
44	<p>Provide responses to the following additional questions from the NRC.</p> <ul style="list-style-type: none"> • Testing of safety system software should be conducted by hardware and software with classification and quality equivalent of those of safety system. • Software tools used to develop, test and assist in the V&V of Safety Related Software should be validated and qualified. • Effectiveness of these software tests vs. others already implemented in the software and the standard surveillances would have to be presented. <p>Provide responses to the following additional requests from the NRC at the September 1st teleconference.</p> <ul style="list-style-type: none"> • Clarify the effectiveness of the Memory Integrity Check vs. the software checks, already being done by the diagnostics in the safety system software, needs to be compared. • Clarify the amount of overlap of the software faults found and the reliability of the MIC and if it can determine expected changes vs. unexpected changes or errors. • Clarify the MELENS software to perform the Memory Integrity Check will be under amendment QA control of Appendix D of the US-AWPR SPM. 	<p>Draft Submitted at August 12th <u>Formally Submit by Sept. 13th</u> Responses for the left column questions from the NRC including the new requests provided at the Sept. 1st teleconference. Note) MHI is waiting to receive the formal RAI from the NRC for this issue (in-process of being issued). Note) The response to the related RAI 698-5490, Question 07.01-26 will be revised and will formally re-submit at the same date.</p>
45	<p>Provide clear explanation to the following additional questions from the NRC.</p> <ul style="list-style-type: none"> • Is there a justification why the DHP on the DAS doesn't use/need all of the parameters which are credited in Chapter 15 Safety Analyses? • Why doesn't the DAS use other signals, such as low SG pressure, low RCS flow, high neutron flux, high SG water level, etc., as signals for DAS automatic actuation? 	<p>Draft Submitted at August 12th <u>Formally Submit by Sept. 13th</u> Responses for the left column questions from the NRC. Note) MHI is waiting to receive the NRC's response for this issue.</p>
46	<p>Provide responses to the following additional questions on JEXU-1015-1009, rev. 4 from the NRC which were provided at the teleconference on August 11th.</p> <ul style="list-style-type: none"> • MHI requested to remove the statement and the section identified where the Maintenance Network is permanently connected and disconnected. • MHI is requested to identify "special programming tools" in this document and in the SPM, MUAP-07017. Also, the guidelines of BTP-7-14 should be addressed for these items in the SPM as well. 	<p>Draft Submit by August 31st <u>Draft Submitted at August 31st</u> <u>Formally Submit by Sept. 13th</u></p>

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47	<p>Provide responses to the following additional question from the NRC at the teleconference on August 25th.</p> <ul style="list-style-type: none"> MHI response to RAI 571-4365, Question 9.2.2-48 deletes one of the important to safety Chapter 7 interlocks (7.6.1.5) required by SRP 7.6 to ensure the independence of each safety mechanical train of the CCW system thereby providing CCW coolant to ESF systems required for mitigating conditions of the event. 	<p><u>Draft Submit by Sept. 2nd</u> <u>Draft Submitted at Sept. 2nd</u> <u>Formally Submit by Sept. 13th</u></p>
48	<p>Provide revised RAI response to reflect additional comment (the COL item for the cyber security issue is not necessary and should be removed from the DCD Chapter 7) from the NRC at the teleconference on August 25th for the following RAI. <u>Question No.</u> <u>07.09-23 (RAI 710-5493)</u></p>	<p><u>Draft Submit by Sept. 2nd</u> <u>Draft Submitted at Sept. 2nd</u> <u>Formally Submit by Sept. 13th</u></p>
49	<p>Provide responses to the following HFE related new questions from the NRC.</p> <ul style="list-style-type: none"> Are there manual actions associated with the feedwater line breaks? Clarify whether DAS manual actions associated with the controls are credited or just available. If containment isolation and/or operation of the safety depressurization valve actions are credited, please include these manual actions in the analysis descriptions in Section 5. Confirm MUAP-07014 statement that, "any operator actions credited in the D3 coping analysis are justified on HFE evaluation. Is reference to MUAP-07006 appropriate? Why is there such a big difference (4.91 hrs vs. 24 hrs) in the time required for operator action between these two documents? 	<p><u>Draft Submit by Sept. 9th</u> <u>Formally Submit by Sept. 20th</u></p>
50	<p>Provide response to the following Setpoint Methodology related new question from the NRC.</p> <ul style="list-style-type: none"> In the DCD r.3, concerning Tables 7.2-3/4 "Reactor Trip Variables, Ranges, Accuracies, Response Time, and Setpoints (Nominal)." Did MHI propose those as nominal trip setpoints based on their setpoint methodology? 	<p><u>Draft Submit by Sept. 9th</u> <u>Formally Submit by Sept. 20th</u></p>