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## RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

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10/7/2016

### SAFETY SYSTEM DIGITAL PLATFORM - MELTAC (MITSUBISHI ELECTRIC TOTAL ADVANCED CONTROLLER) - TOPICAL REPORT

Mitsubishi Electric Corporation

TAC NO.: MF4228  
RAI NO.: #1  
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#### QUESTION NO.: 2 for JEXU-1041-1018, "Summary of Compliance to the IEEE Std. 603 and IEEE Std. 7-4.3.2"

Also on Page 10, Table 3, IEEE 603, 5.14, Human Factors. This requirement includes how certain safety system design goals should be met in accordance with IEEE Std 1023. This includes maintenance of the displays (Safety VDUs) which provides assembly/ disassembly, tools required and interchangeability of parts as well as features to prevent incorrect assembly. The staff requests information including an explanation of why such an evaluation would not be required on a generic basis (versus application specific) for the Safety VDUs.

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#### ANSWER:

The "Assessment" entry for Section 5.14 of "Table 1 IEEE Std. 603 (1991) Compliance Matrix" will be replaced with the following:

Human factors engineering is applied to the MELTAC platform to ensure the human systems interfaces for generic platform maintenance activities meet the safety system design goals. The HFE process is guided by IEEE 1023, with a graded approach that considers that the MELTAC human systems interfaces for maintenance activities are less significant than those of plant operations. Therefore, the MELTAC HFE focus is in two areas:

- Using the MELTAC engineering tool to (1) identify failed components detected by the MELTAC self-diagnostic functions, and (2) conduct periodic surveillance tests that are assigned to maintenance personnel, such as channel calibration and memory integrity check (MIC). MELCO HFE personnel review the MELTAC engineering tool screen designs to ensure they are suitable for these tasks and are not contributors to human performance errors.
- Spare parts replacement of failed MELTAC components, including the safety VDU panel. Spare part replacement does not need any special

tools or any special methods. Instructions for parts replacement, such as the caution to de-energize specific components prior to replacement and configuration settings, are identified in the MELTAC platform technical manual. All replaceable parts are clearly labeled. Replaceable parts also include physical installation guides. These guides prevent parts installation in wrong direction. MELCO HFE personnel review the generic platform design and maintenance documentation to ensure the MELTAC platform has the appropriate measures to prevent incorrect spare parts replacement.

The functions allocated, in whole or in part, to plant operators and the human systems interface design for plant operators, are dependent on a specific plant design. Therefore, the HFE considerations for these functions are not addressed generically for the MELTAC platform.

**Impact on Technical Report**

JEXU-1041-1018 "Summary of Compliance to the IEEE Std. 603 and IEEE Std. 7-4.3.2" will be revised as identified above (see Attachment-1).

Table 3 IEEE Std. 603 (1991) Compliance Matrix

Section	Title	Assessment	References <Document Number Sections>
5.13	Multi-Unit Stations	This is an application specific requirement that is dependent on a plant design. Therefore this requirement is not addressed for the MELTAC platform.	None
5.14	Human Factors Considerations	<p><del>This is an application specific requirement that is dependent on a plant design. Therefore this requirement is not addressed for the MELTAC platform.</del></p> <p>Human factors engineering is applied to the MELTAC platform to ensure the human systems interfaces for generic platform maintenance activities meet the safety system design goals. The HFE process is guided by IEEE 1023, with a graded approach that considers that the MELTAC human systems interfaces for maintenance activities are less significant than those of plant operations. Therefore, the MELTAC HFE focus is in two areas:</p> <ul style="list-style-type: none"> <li>• Using the MELTAC Engineering Tool to (1) identify failed components detected by the MELTAC self-diagnostic functions, and (2) conduct periodic surveillance tests that are assigned to maintenance personnel, such as channel calibration and memory integrity check (MIC). MELCO HFE personnel review the MELTAC Engineering Tool screen designs to ensure they are suitable for these tasks and are not contributors to human performance errors.</li> </ul>	<p>None</p> <p><a href="#">JEXU-1041-1008</a> <a href="#">4.1.4, 4.1.7</a></p>

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Table 3 IEEE Std. 603 (1991) Compliance Matrix

Section	Title	Assessment	References <Document Number Sections>
		<ul style="list-style-type: none"> <li><u>Spare parts replacement of failed MELTAC components, including the safety VDU panel. Spare part replacement doesn't need any special tools or any special methods. Instructions for parts replacement, such as the caution to de-energize specific components prior to replacement and configuration settings, are identified in the MELTAC platform technical manual. All replaceable parts are clearly labeled. Replaceable parts also include physical installation guides. These guides prevent parts installation in the wrong direction. MELCO HFE personnel review the generic platform design and maintenance documentation to ensure the MELTAC platform has the appropriate measures to prevent incorrect spare parts replacement.</u></li> </ul> <p><u>The functions allocated, in whole or in part, to plant operators and the human systems interface design for plant operators, are dependent on a specific plant design. Therefore, the HFE consideration for these functions is not addressed generically for the MELTAC platform.</u></p>	
5.15	Reliability	<p>This is an application specific item that is dependent on the plant design. The MELTAC platform includes features to minimize the possibility of a single failure affecting the operation of the equipment.</p> <p>The MELTAC platform contains Self-diagnosis features to identify failures.</p> <p>Failure Mode and Effects Analysis (FMEA) and the reliability data for each MELTAC platform module is provided for input to the application level systems analysis.</p>	<p><u>JEXU-1041-1008</u> 4.1.5, 4.2.3, 7.0 <u>JEXU-1041-1030</u> <u>JEXU-1041-1027</u></p>

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