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February 28, 2014

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attention: Mr. Joseph Holonich

MEPPI Ref: UFN-00013

Subject: Forthcoming Partially Closed Meeting With Mitsubishi Electric Corporation (MELCO)

The purpose of this letter is to provide presentation material for discussion between the U.S. Nuclear Regulatory Commission (NRC) and Mitsubishi Electric Corporation (MELCO) during the public meeting on March 6, 2014.

Please contact Ken Krayvo, Senior Engineer, Mitsubishi Electric Power Products, Inc. with any questions concerning this submittal.

Sincerely,

Gilbert W. Remley

Nuclear Systems Department Manager
Mitsubishi Electric Power Products, Inc.

Enclosures:
001 MELCO NRR Phase0 Mtl.pdf (includes this letter)
002 PROPRIETARY MELCO NRR Phase0 Mtl.pdf

CC: Hiroki Okamoto, Mitsubishi Electric Corporation, Inc.

Contact Information:

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telephone: (724)778-3127

ENCLOSURE 1

MITSUBISHI ELECTRIC CORPORATION

AFFIDAVIT

I, Hiroki Okamoto, state as follows:

1. I am the Nuclear Plant Planning Group Manager, Nuclear Power Department, of Mitsubishi Electric Corporation ("MELCO"), and have been delegated the function of reviewing MELCO's digital control platform documentation to determine whether it contains information that should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4) as trade secrets and commercial or financial information which is privileged or confidential.
2. In accordance with my responsibilities, I have reviewed the enclosed document entitled "Digital Platform MELTAC Licensing Submittal" dated February 21st 2014, and have determined that portions of the document contain proprietary information that should be withheld from public disclosure. Those pages containing proprietary information are identified with the label "Proprietary" on the top of the page and the proprietary information has been bracketed with an open and closed bracket as shown here "[]". The first page of the document indicates that all information identified as "Proprietary" should be withheld from public disclosure pursuant to 10 C.F.R. § 2.390 (a)(4).
3. The information identified as proprietary in the enclosed document has in the past been, and will continue to be, held in confidence by MELCO and its disclosure outside the company is limited to regulatory bodies, customers and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and is always subject to suitable measures to protect it from unauthorized use or disclosure.
4. The basis for holding the referenced information confidential is that it describes the hardware and software information for the digital platform "MELTAC", developed by MELCO and not used in the exact form by any of MELCO's competitors. This information was developed at significant cost to MELCO, and the detailed design of the MELTAC software and hardware required several years of research and development.
5. The referenced information is being furnished to the Nuclear Regulatory Commission ("NRC") in confidence and solely for the purpose of providing information to the NRC staff.
6. The referenced information is not available in public sources and could not be gathered readily from other publicly available information. Other than through the provisions in paragraph 3 above, MELCO knows of no way the information could be lawfully acquired by organizations or individuals outside of MELCO.

7. Public disclosure of the referenced information would assist competitors of MELCO in their design of nuclear power plants without incurring the costs or risks associated with the design and testing of the subject systems. Therefore, disclosure of the information contained in the referenced document would have the following negative impacts on the competitive position of MELCO in the nuclear plant market:
 - A. Loss of competitive advantage due to the avoidance of costs associated with the development and testing of MELTAC. Providing public access to such information permits competitors to duplicate or mimic the MELTAC design without incurring the associated costs.
 - B. Loss of competitive advantage created through delivery of the benefits of enhanced plant safety and reduced operation and maintenance costs for nuclear power plants associated with MELTAC digital platform. Providing public access to such information permits competitors to duplicate or mimic the unique functional advantages that the MELTAC digital platform delivers to Mitsubishi Electric's nuclear utility customers without incurring the associated product engineering costs.

I declare under penalty of perjury that the foregoing affidavit and the matters stated therein are true and correct to the best of my knowledge, information and belief.

Executed on this 21st day of February, 2014.



Hiroki Okamoto
Nuclear Plant Planning Group Manager, Nuclear Power Department
Engineering Systems Center
Mitsubishi Electric Corporation

Digital Platform *MELTAC* Licensing Submittal

March 6, 2014
JEXK-0109-1058

mitsubishi electric corporation

Meeting Objective

□ To get feedback on Mitsubishi's plan for a licensing submittal, to obtain NRC approval of Mitsubishi products for digital upgrades in currently operating US nuclear plants.

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About “Mitsubishi” — Origin

1870 ▶

Tsukumo Shokai, which was the origin of Mitsubishi, was established.

1886 ▶

Mitsubishi Sha was established. It promoted its business diversification and grew as a modern corporation.

1917 ▶

Spinning-off of the business departments started. Mitsubishi Goshi Kaisha became a holding company.

1921 ▶

Mitsubishi Electric Corporation was established.

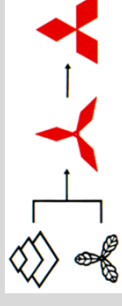
1946

Mitsubishi Headquarters was dissolved.

Each Mitsubishi company started as a new independent entity.



The founder, Yataro Iwasaki



Origin of the
Three-Diamond Mark

Photo courtesy of The Mitsubishi Archives

Mitsubishi Electric Corporation is an independent company like other Mitsubishi companies, and is separately owned, managed, and operated. With the exception of other companies in the Mitsubishi Electric Group, it bears no legal affiliation with other companies that have the word “Mitsubishi” in their names.

- Mitsubishi companies share a founding management philosophy:
 - Corporate Responsibility to Society
 - Integrity and Fairness
 - Global Understanding through Business
- 40 member companies of the Mitsubishi Public Affairs Committee support a variety of philanthropic activities together



The Three Principles

Mitsubishi Electric Corporation

Electric & Electronics

The Bank of Tokyo-Mitsubishi UFJ, Ltd.

Banking

Mitsubishi Estate Co., Ltd.

Construction, Real Estate, Hotels

Mitsubishi Heavy Industries, Ltd.

Ships, Aircraft, Steel Structures,
Power Generation

Nikon Corporation

Cameras, Optical Equipment

Asahi Glass Co., Ltd.

Chemicals, Ceramics & Glass

Mitsubishi Motors Corporation

Automobiles

Tokyo Marine & Nichido Fire Insurance Co., Ltd.

Insurance

Mitsubishi Research Institute, Inc.

Consulting & Research

Mitsubishi Corporation

Trading

Kirin Holdings Co., Ltd.

Food

JX Holdings, Inc.

Resources & Energy,
Nonferrous Metals

The companies shown above represent some of the 40 member companies of the Mitsubishi Public Affairs Committee.

Mitsubishi Electric Corporation

Head Office: Tokyo Building, 2-7-3 Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan

President & CEO: Kenichiro Yamanishi

Established: January 15, 1921

Consolidated Net Sales: ¥3,567,184 million (US\$37,949 million)

Paid-in Capital: ¥175,820 million (US\$1,870 million)

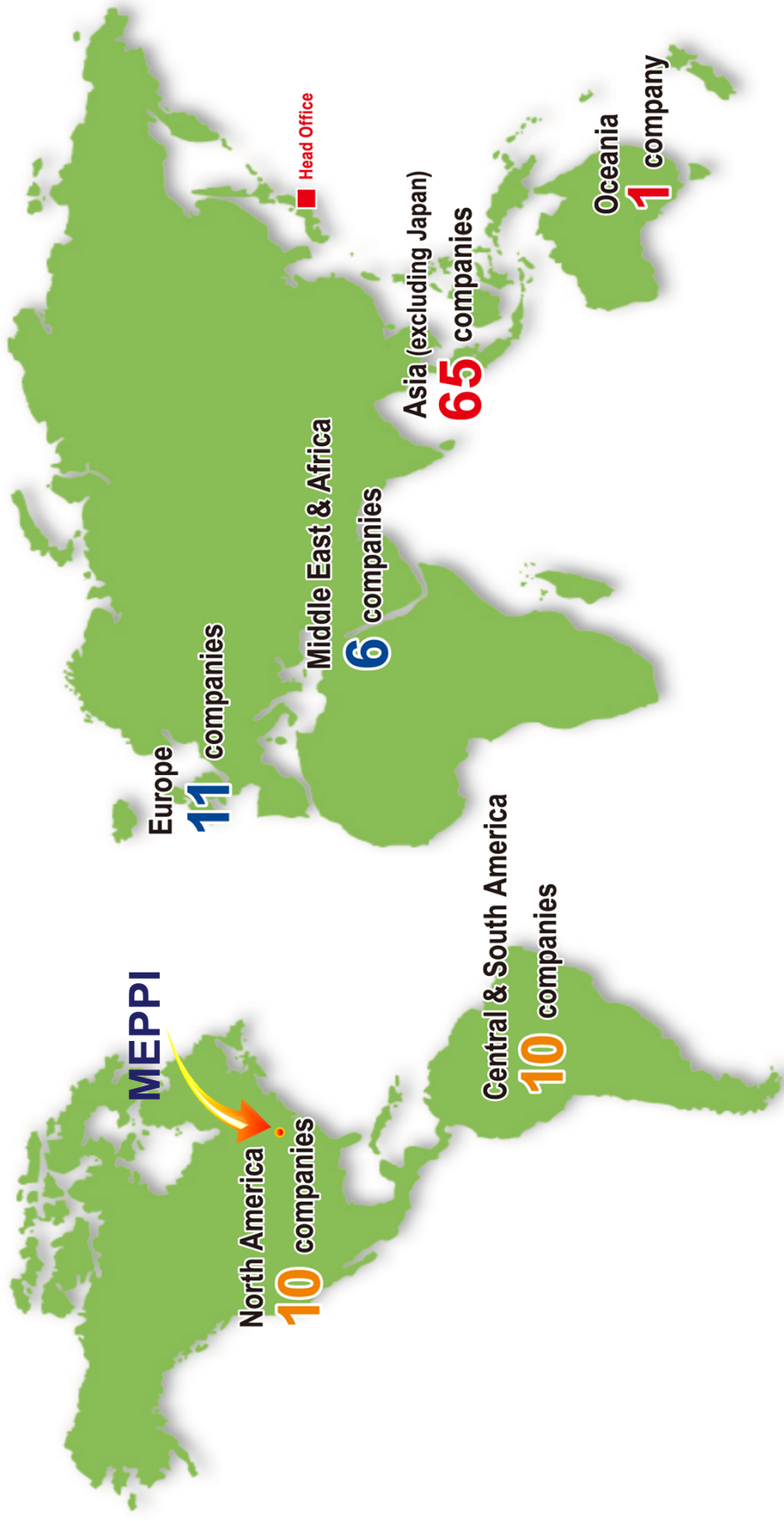
Shares Issued: 2,147,201,551 shares

Consolidated Total Assets: ¥3,410,410 million (US\$36,281 million)

Employees: 120,958

(As of March 31, 2013. US dollar amounts are converted from yen at the rate of ¥94=US \$1)

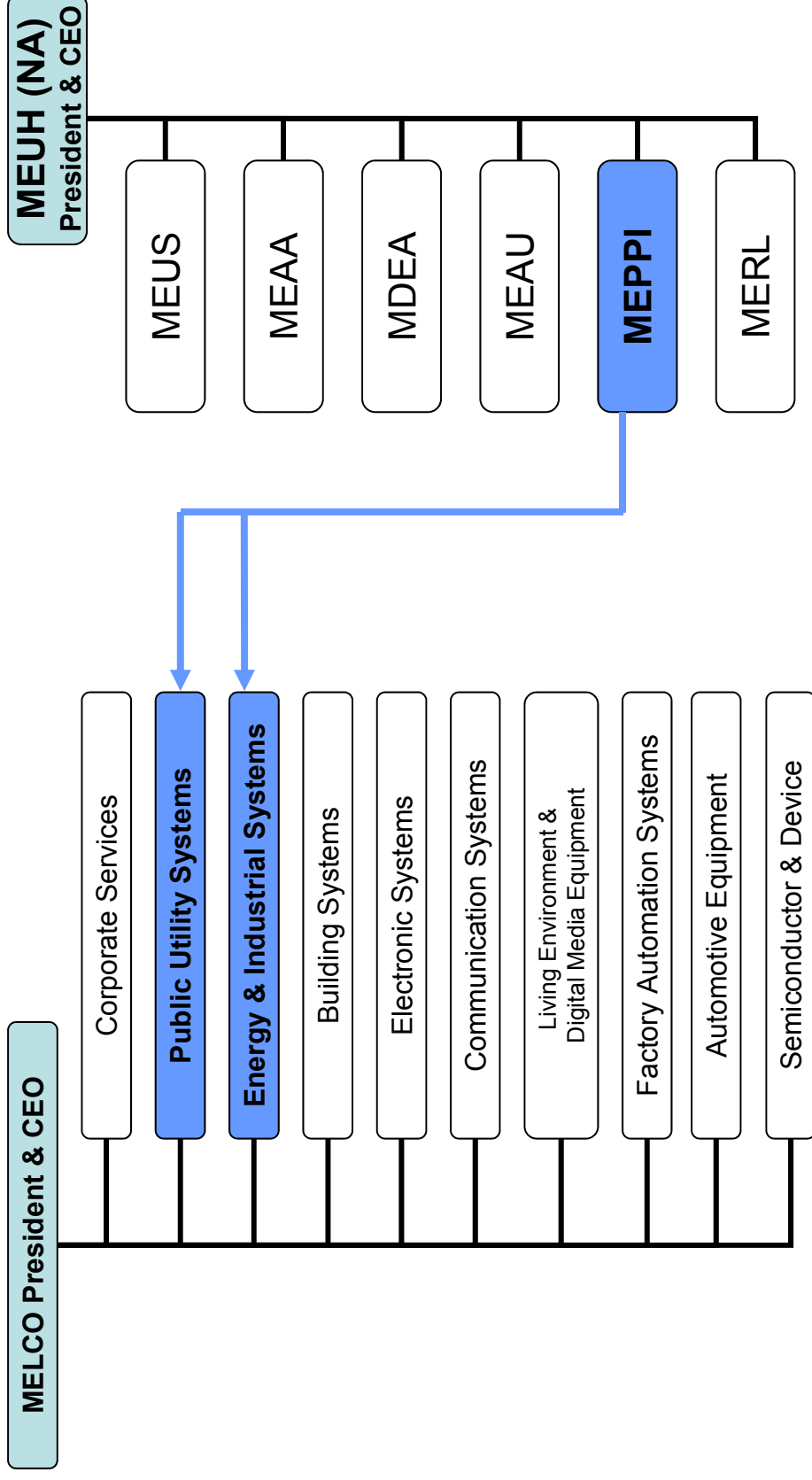
Growing international network of R&D, production, sales, associated companies, and other operations throughout the world



(as of Oct., 2013)

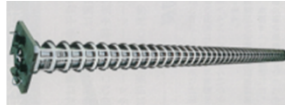
Nuclear Organization

Mitsubishi Electric's North American Operations



MELCO is over 120,000 people worldwide

Products for Nuclear Power Plant



Digital Rod
Position System



Integrated Digital
Main Control Room



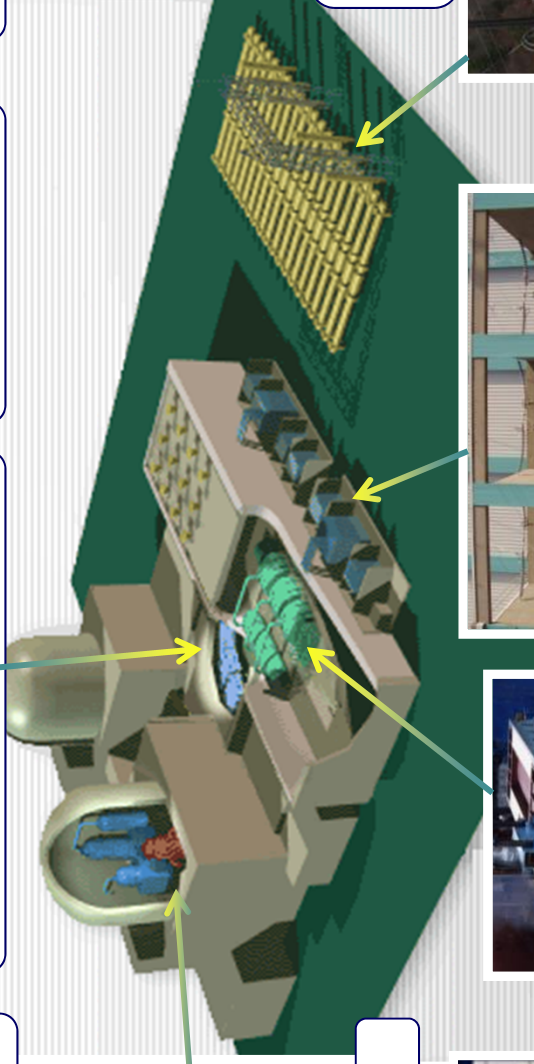
Control Rod Drive
Control System



Digital Control / Protection
Systems



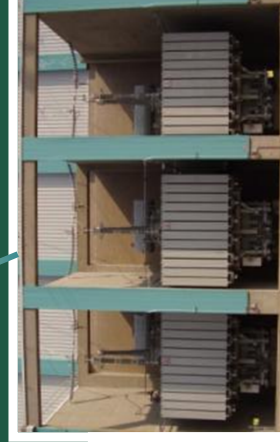
RCP motor



Switchgear



Generators



Transformers



Gas Insulated Substations

Nuclear
Instrumentation /
Radiation Monitoring



Digital Control Room Test Facility



for a greener tomorrow



- ❑ Located at MEPPI, Warrendale, PA (just outside Pittsburgh)
- ❑ Built for Verification & Validation of the Mitsubishi Basic (generic) HSI System (HSIS) which was the foundation of the US-Basic HSI System, which is NRC approved.
- ❑ 2008 – , 13 operating crews comprised of almost 30 currently licensed US NPP operators
- ❑ NRC approved
- ❑ Approximately 650 visitors to date
- ❑ Current plant model is a standard four loop two train PWR

Experience in Japan

- ❑ 5 new plants with non-safety digital I&C, early 1990s
- ❑ Specific system upgrades also completed, 1995-present
 - Safety related systems (RPS, ESFAS): at 11 plants
 - Non-safety systems (NSSS): at 8 plants
- ❑ New plant with all digital I&C including MCR, 2009
- ❑ One step plant-wide digital I&C upgrade completed at 2 plants (all safety and non-safety systems, including MCR), 2009
- ❑ Operational experience of the MELTAC platform
 - Over 450 MELTAC controllers operational
 - Over 30 million hours with no functional failure

Global Experience

ASIA

- Safety-related and important-to-safety I&C were delivered to 12 units
 - will be delivered to 2 units in 2015
 - 2 units went into operation in 2013
- Large capacity generators
 - (1600MVA at 60Hz) were delivered to 2 units
 - (1407MVA at 50Hz) were delivered to 2 units

EU

- Rod Control System (CRDM-CS)
- Rod Position Indication System (RPI)
were delivered in 2004.

Digital I&C Platform -MELTAC-

- The Mitsubishi Electric Total Advanced Controller (MELTAC) is a digital instrumentation and control platform.
 - ❑ Developed for safety and non-safety system related nuclear application.
 - ❑ Original version accumulated several years of field experience in nuclear power plants.
 - ❑ The latest model (MELTAC-Nplus) was applied to Japanese nuclear power plant non-safety systems in 2001 and safety systems in 2009.

Applied System

- ❑ Reactor Protection System
- ❑ Engineered Safety Features Actuation System
- ❑ Radiation Monitoring System
- ❑ Incore Instrumentation System
- ❑ Nuclear Instrumentation System
- ❑ Control Rod Drive Mechanism Control System
- ❑ Rod Position Indication System
- ❑ Turbine Protection and Control Systems
- ❑ Reactor Control System
- ❑ Annunciator System

Controller Configuration

- The MELTAC platform can be configured as shown below:

❑ Single Controller Configuration

- The Controller includes one Subsystem.

❑ Redundant Parallel Controller Configuration

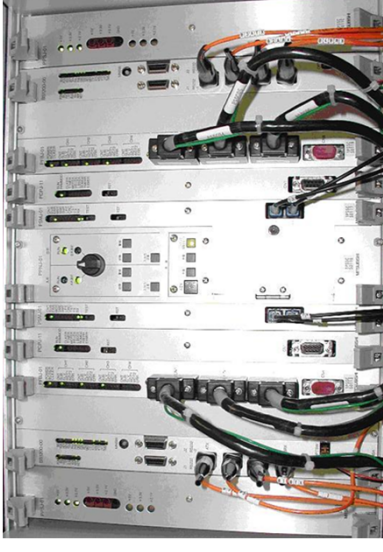
- The Controller includes two Subsystems.
Each Subsystem operates in Control Mode.

❑ Redundant Standby Controller Configuration

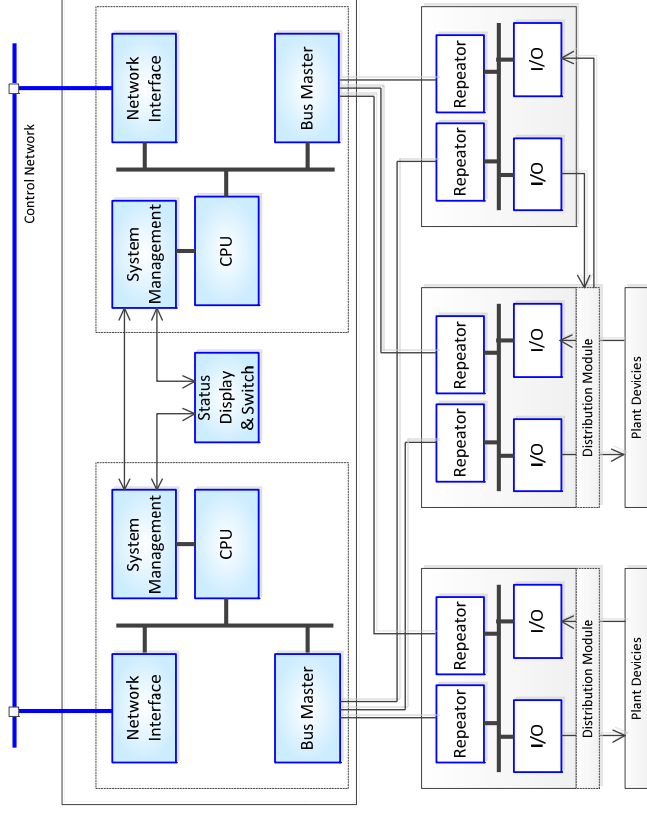
- The Controller includes two Subsystems. If Subsystem operating in Control Mode fails, the Subsystem operating in Standby Mode will automatically switch to Control Mode, with no bump in the control outputs.

❑ Input / Output module

- Each configuration can include redundant I/O. Remote mounting of I/O is possible to facilitate installation.



CPU chassis (Redundant Standby Controller)



Controller Configuration (Redundant Standby Controllers)

Unique MELTAC Components

- **Safety visual display unit (VDU) with nuclear safety grade software**
 - Enables compact operator console and safety console
- **Control Network with nuclear safety grade software**
 - Fiber-optic, bidirectional, multi-node, redundant, 100msec cyclical update of all data for all nodes
 - Enables reliable cost effective intra and inter division communication
- **Component interface module (e.g.: pumps, valves, breakers)**
 - Conventional integrated circuits for priority logic that combine primary and diverse signals
 - Solid-state outputs
 - Eliminates interposing electro-mechanical relays for plant components
- **Extensive self-testing, with diverse Memory Integrity Check**
 - Limits technical specification periodic surveillance to only I/O interfaces

- **Nuclear Specific Design**

- **Only nuclear specific software functions**

- Doesn't have versatile Operating System (OS).
 - No extraneous or unused software functions to safety I&C systems.

- **Predictable and testable software operations**

- Deterministic single-task processing loop operates the same way every time.

- **Secure Development and Operational Environment (SDOE)**

- Addressed through proprietary software developed under secure environment and design control process.

- **Capability of interface with typical plant devices**

- MELTAC has various types of Input/Output (I/O) modules.

- **Environmentally qualified equipment, including seismic and EMI**

- **Commitment to quality**

- **Fully owned and lifecycle managed product**

- Total design control and in-house production.
 - No reliance on third-party suppliers (except for piece parts).

- **Continuous product development**

- Controllers based on PowerPC , FPGA and flash memory technologies.
 - One gigabit data networks for real-time data.
 - LCD and touch screen technology for control displays.

- **Large installed customer base**

- Used for over 450 system controllers.
 - Combined total operation time of over 30,000,000 hours.
 - Many additional digital upgrades and new build projects planned.

- **Quality commitment**

- No plant system has ever suffered shutdown due to software or hardware related problems.
 - Full-system integrated factory test conducted prior to shipment.
 - 10 CFR 50 Appendix B compliant quality assurance program.

Qualifications

- The MELTAC platform for safety system is produced under and qualified to all applicable nuclear safety regulations and standards such as:
 - ❑ IEEE 7-4.3.2 Criteria for Programmable Digital Computer
 - ❑ IEEE 323 Qualifying Class 1E Equipment
 - ❑ IEEE 344 Seismic Qualification of Class 1E Equipment and Circuits
 - ❑ R.G. 1.152 Criteria for Programmable Digital Computers in Safety Systems of Nuclear Power Plants
 - ❑ R.G. 1.180 Guidelines for Evaluation Electromagnetic and Radio Frequency



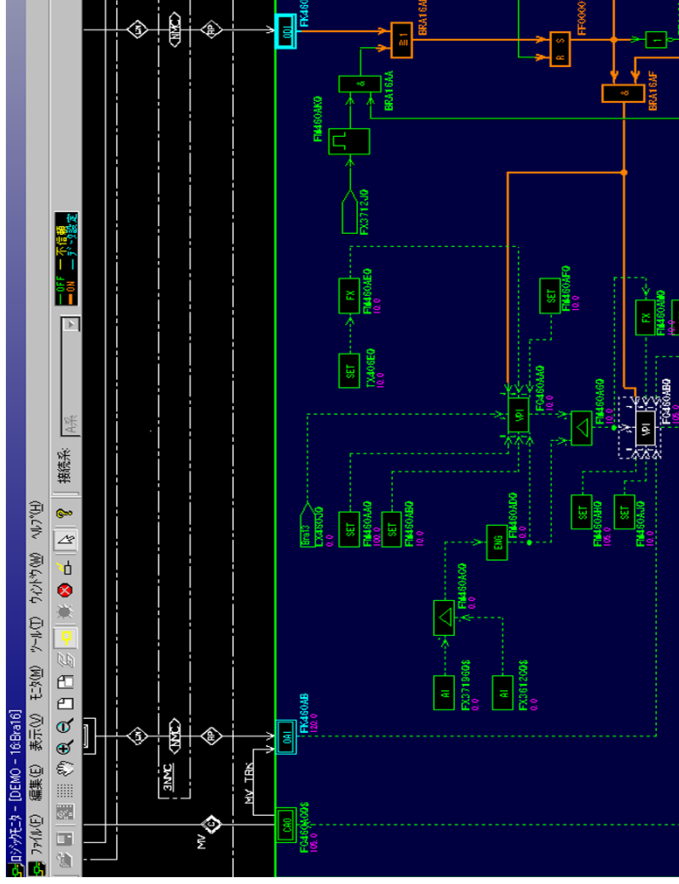
Electromagnetic Compatibility Testing (EMC) Testing

Software Specification

- **Deterministic software execution**
 - ❑ The application software execution path and time cycle is the same under all normal and accident condition and is completely unaffected by process input changes.
- **Constant cycle monitoring**
 - ❑ Cycle time operation monitored using independent hardware timer.
 - ❑ If execution cycle exceeds the period, controller is placed to the failure mode.
 - ❑ Application software operation is not affected by the data flow.
 - ❑ Data from I/O, data links, and control network isolated by two port memory on each module.

Software Specification

- **High level language for application software**
 - ❑ Problem Oriented Language (POL). Graphical programming using common function blocks for protection and control systems.
 - ❑ Simplified application programming process is less prone to error.
- **Application software is programmed using the Engineering tool**

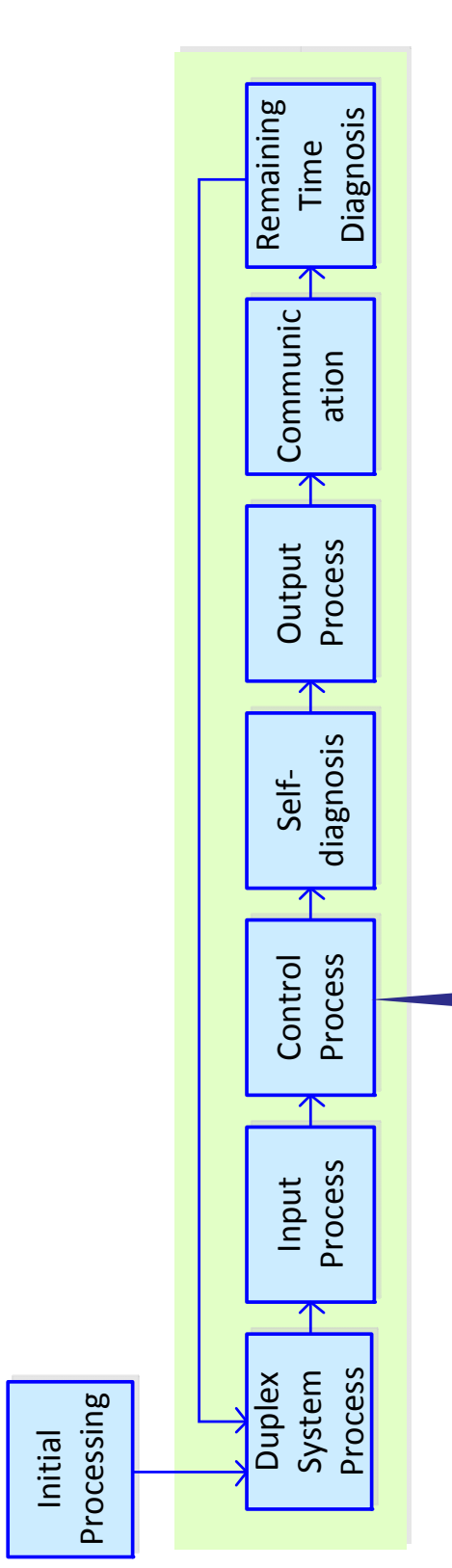


Example of Problem Oriented Language (POL)

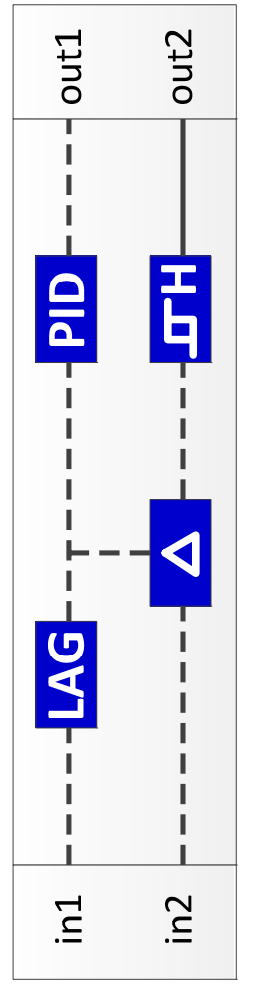
Software Specification

• Single Task, No Interruption

Basic software



Application software



- ☐ All functions execute cyclically with single task processing
- ☐ Inputs from input modules and data communication modules, are updated cyclically
- ☐ Self-diagnostics run with no affect on the pre-defined fixed deterministic time cycle
- ☐ There are no interrupts, except by self-diagnostics

- **Current Situation**

- ❑ All US-APWR I&C descriptions are based on MELTAC and MR Computers
- ❑ Today – MELTAC specification review by NRO is complete with one open RAI
 - To improve the ITAAC for non-safety to safety design-basis communication faults testing

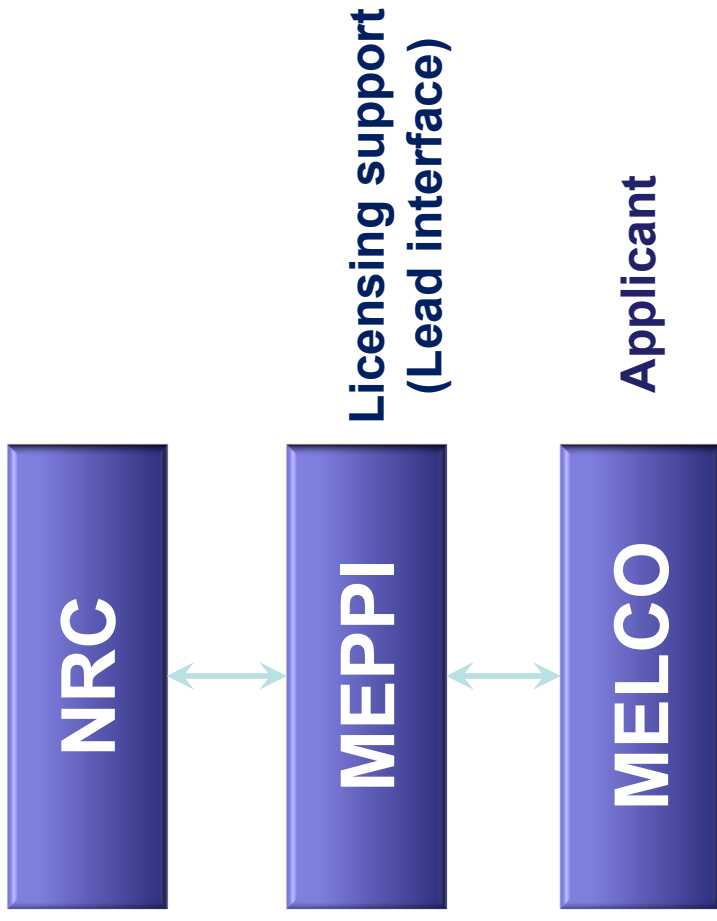
- **Scope of the MELTAC Technical Report**

- ❑ Detailed technical descriptions of all modules
 - Including redundant CPU and I/O configurations, all digital data communications
- ❑ Equipment qualification tests and results descriptions
- ❑ Response time calculation method and example
- ❑ Basis for eliminating most periodic manual tests
- ❑ 10CFR50 Appendix B Quality Assurance Program (QAP) commitment
- ❑ Software and hardware life cycle descriptions
 - Demonstrates compliance to BTP 7-14
 - References to Software Program Manual (SPM)
- ❑ History of module reliability and self-diagnostics
- ❑ ISG-04 communication independence compliance overview

QA Program

- **MELTAC Nplus S is maintained under MELCO's 10CFR50 Appendix B QAP**
 - Audited by NRO EI&C Branch [2011/12/12-16]
 - ☐ Focused on MELTAC life cycle processes
 - ☐ Audit Report (ML 12291A673)
- **MELCO's QAP**
 - Audited by MHI [2009/12/1-4, 2010/5/24-28]
 - Inspected by NRO Construction Mechanical Vendor Branch [2011/12/5-9]
 - ☐ Focused on quality activities including CGD, and software development activities associated with MELTAC
 - ☐ Inspection Report (ML 12013A353)
- **US projects will be implemented under MEPPi's 10CFR50 Appendix B QAP**
 - MEPPi's QAP was audited by MELCO [2013/12/2-6]
- **Mitsubishi welcomes additional audit / inspection by NRR**

Licensing Activity Hierarchy



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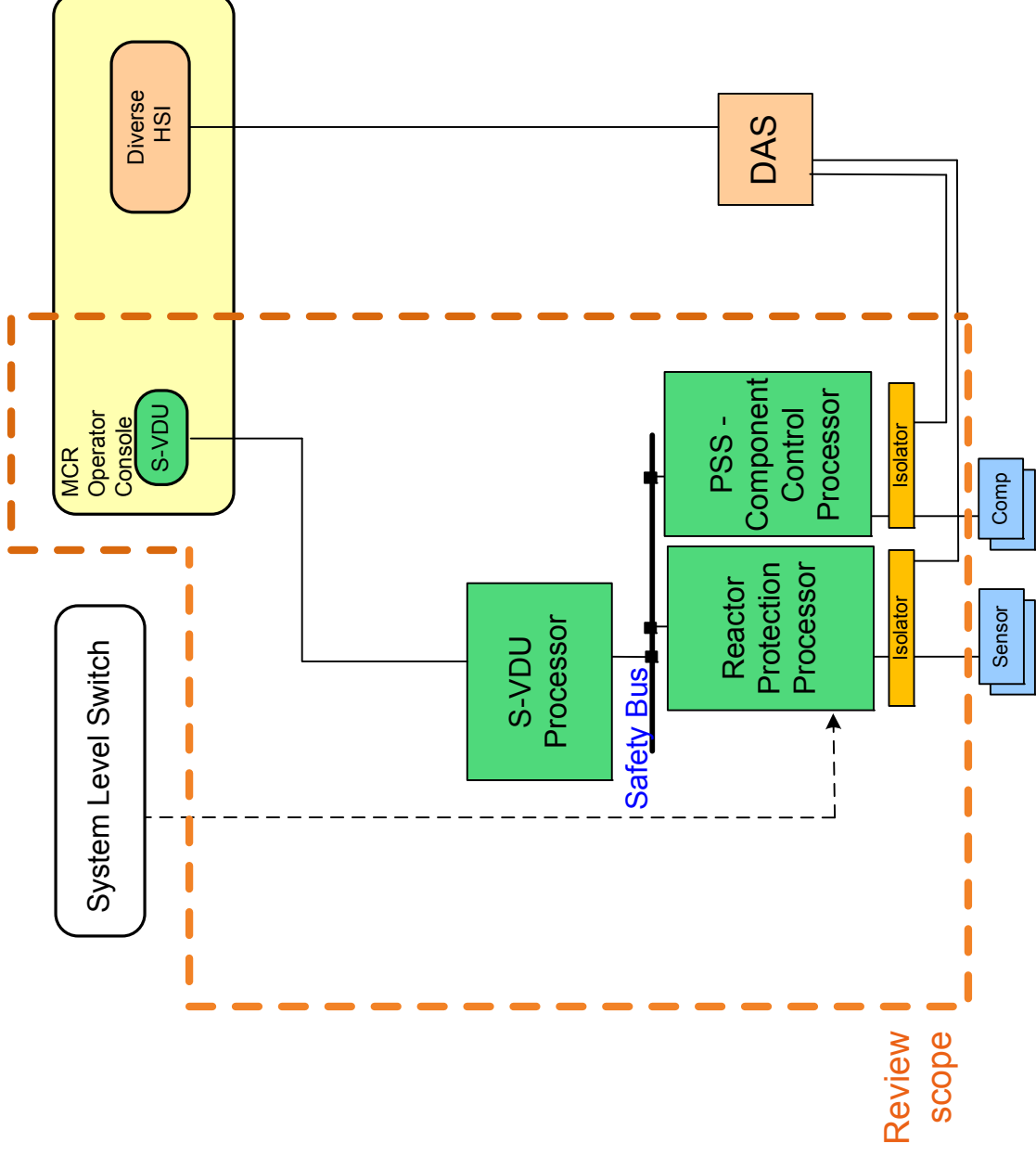
□ **Part 2 Details of Mitsubishi’s Licensing Program -Closed session-**

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Licensing Strategy Concept



Overview of safety application



Licensing Submittal

- **Licensing Submittal Documents**

- ☐ MELTAC digital platform topical report

- Platform FMEA

- Platform reliability analysis

- Platform response time analysis

- ☐ System (RT and ESFAS) FMEA

- ☐ System reliability analysis

- ☐ System response time analysis

- ☐ Set-point methodology

- ☐ ISG-04 conformance analysis

- ☐ Software Life Cycle Documents (Software Program Manual)

□ MELTAC Digital Platform Topical Report

Mother document for Mitsubishi's Digital Products Licensing Program

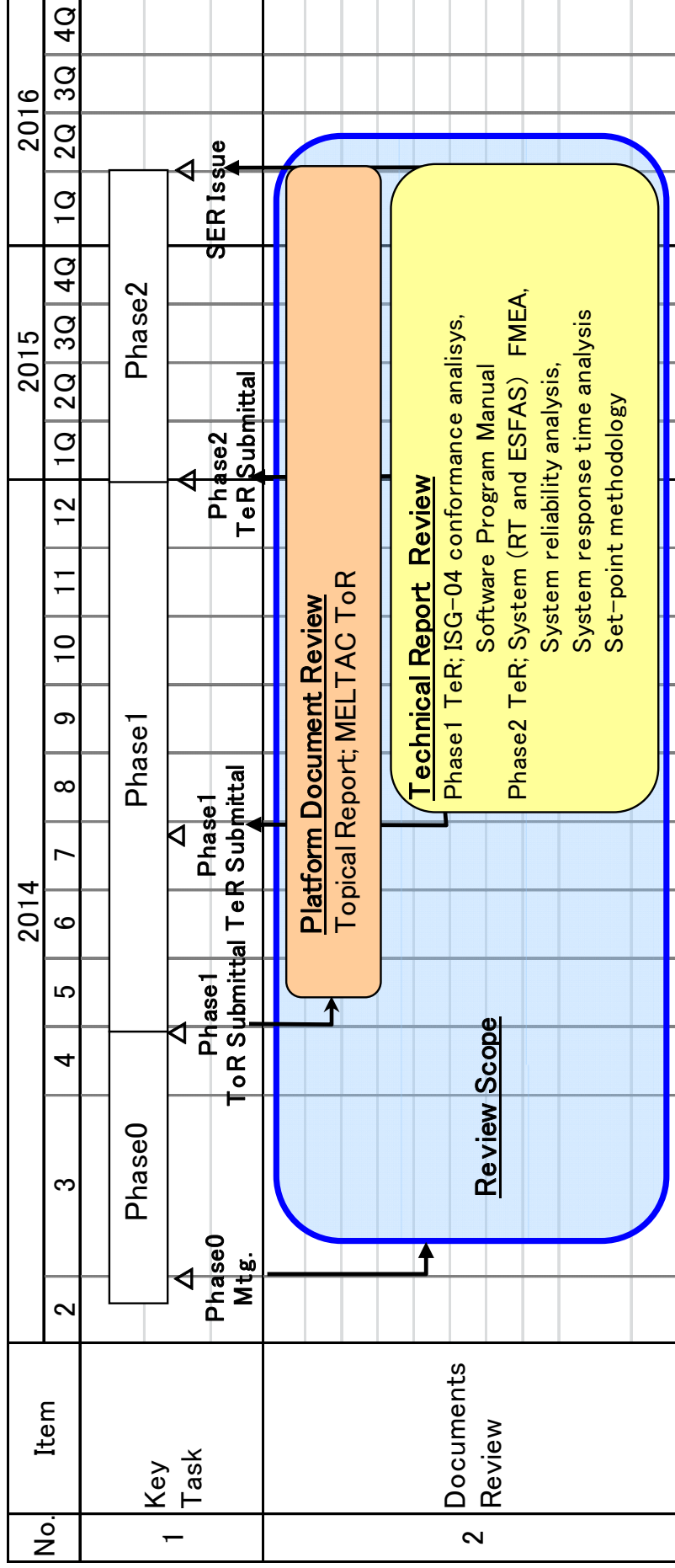
- Describes MELTAC platform in detail
- Software and hardware descriptions, including communication interfaces, for each I&C system
- Safety system description and regulatory compliance description

Submittal Documents

□ **MELTAC Digital Platform Topical Report refers to the following separate documents, e.g.:**

- System (RT and ESFAS) FMEA
- System reliability analysis
- System response time analysis
- Set-point methodology
- ISG-04 conformance analysis
- Software Life Cycle Documents (Software Program Manual)

Licensing review schedule



Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
1.1 Hardware Architecture Descriptions	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
			NP	JEXU-1041-1008-NP	Apr 2014
1.2 Quality Assurance Plan for Digital Hardware	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
			NP	JEXU-1041-1008-NP	Apr 2014
1.3 Software Architecture Descriptions(SAD)	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
			NP	JEXU-1041-1008-NP	Apr 2014
1.4 Software Management Plan (SMP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.5 Software Development Plan (SDP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.6 Software QA Plan (SQAP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.7 Software Integration Plan (SintP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.8 Software Safety Plan (SSP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.9 Software V&V Plan (SVVP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014

* P: Proprietary, NP: Non-proprietary

Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
1.10 Software Configuration Management Plan (SCMP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
1.11 Software Test Plan (STP)	Software Program Manual	Platform	NP	JEXU-1041-1016-NP	Jul 2014
1.12 Software Requirements Specification (SRS)	Safety System Digital Platform MELTAC - Nplus S System Specification	Platform	P	JEXU-1041-1016-P	Jul 2014
	Functional diagram (Plant Specific Document)	System	-	JEXU-1041-1016-NP	Jul 2014
1.13 Software Design Specification	Safety System Digital Platform MELTAC - Nplus S System Specification	Platform	P	-	Available for audit
	Logic diagram, Block diagram (Plant Specific Document)	System	-	-	-
1.14 Equipment Qualification Testing Plans (Including EMI, Temperature, Humidity, and Seismic)	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
	Test plan	Platform	NP	JEXU-1041-1008-NP	Apr 2014
1.15 D3 Analysis	D3 coping analysis (Plant Specific Document)	Platform	P	-	Available for audit
		System	-	-	-

* P: Proprietary, NP: Non-proprietary

Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
1.16 Design Analysis Reports	ISG-04 conformance analysis	Platform	P	JEXU-1041-1015-P	Jul 2014
1.17 System Description (To block diagram level)	Safety system description (Plant Specific Document)	System	NP	JEXU-1041-1015-NP	Jul 2014
	Logic diagram, Block diagram (Plant Specific Document)	System	-	-	-
1.18 Design Report on Computer integrity, Test and Calibration, and Fault Detection	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
	Safety system description (Plant Specific Document)	System	NP	JEXU-1041-1008-NP	Apr 2014
			-	-	-
1.19 System Response Time Analysis Report	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
	System response time analysis	System	NP	JEXU-1041-1008-NP	Apr 2014
			P	JEXU-1041-1023-P	Dec 2014
			NP	JEXU-1041-1023-NP	Dec 2014
1.20 Theory of Operation Description	Safety system description (Plant Specific Document)	System	-	-	-

* P: Proprietary, NP: Non-proprietary

Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
1.21 Setpoint Methodology	Set-point methodology	Platform	P	JEXU-1041-1026-P	Dec 2014
			NP	JEXU-1041-1026-NP	Dec 2014
1.22 Vendor Software Plan	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.23 Software Tool Verification Program	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.24 Software Project Risk Management Program	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.25 Commercial Grade Dedication Plan	N/A	Platform	-	-	-
1.26 Vulnerability Assessment	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
1.27 Secure Development and Operational Environment Controls	ISG-04 conformance analysis	Platform	P	JEXU-1041-1015-P	Jul 2014
			NP	JEXU-1041-1015-NP	Jul 2014
			P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014

Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
2.1 Safety Analysis	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
2.2 V&V Reports	Software safety analysis (Plant Specific Document)	System	-	-	-
	MELTAC-Nplus S V&V reports	Platform	P	-	Available for audit
	Application software V&V reports (Plant Specific Document)	System	-	-	-
2.3 As-Manufactured, System Configuration Documentation	System configuration documents for platform	Platform	P	-	Available for audit
	System configuration documents for plant specific (Plant Specific Document)	System	-	-	-
2.4 Test Design Specification	MELTAC-Nplus S test specification	Platform	P	-	Available for audit
	Test specification for plant specific (Plant Specific Document)	System	-	-	-
2.5 Summary Test Reports (Including FAT)	MELTAC-Nplus S test specification	Platform	P	-	Available for audit
	MELTAC-Nplus S test results	Platform	P	-	Available for audit
	Summary Test Reports for plant specific (Plant Specific Document)	System	-	-	-

* P: Proprietary, NP: Non-proprietary

Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
2.6 Summary of Test Results (Including FAT)	MELTAC-Nplus S test results	Platform	P	-	Available for audit
	Summary of Test Results for plant specific (Plant Specific Document)	System	-	-	-
2.7 Requirement Traceability Matrix	MELTAC-Nplus S RTM	Platform	P	-	Available for audit
	RTM for plant specific (Plant Specific Document)	System	-	-	-
2.8 FMEA	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
			NP	JEXU-1041-1008-NP	Apr 2014
2.9 System Build Documents	Module FMEA	Platform	P	-	Available for audit
	System FMEA	System	P	JEXU-1041-1024-P	Dec 2014
	System Build Documents (Plant Specific Document)	System	NP	JEXU-1041-1024-NP	Dec 2014
			-	-	-
2.10	-	-	-	-	-
2.11 Qualification Test Methodologies	MELTAC-Nplus S test specification	Platform	P	-	Available for audit
	Test specification for plant specific (Plant Specific Document)	System	-	-	-

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Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
2.12 Summary of Digital EMI, Temp., Humidity, and Seismic Testing Results	MELTAC-Nplus S test results	Platform	P	-	Available for audit
	Summary of Test Results for plant specific (Plant Specific Document)	System	-	-	-
2.13 As-Manufactured Logic Diagrams	Safety system description (Plant Specific Document)	System	-	-	-
	Logic diagram, Block diagram (Plant Specific Document)	System	-	-	-
2.14 System Response Time Confirmation Report	Summary of Test Results for plant specific (Plant Specific Document)	System	-	-	-
2.15 Reliability Analysis	Safety System Digital Platform - MELTAC - Topical Report	Platform	P	JEXU-1041-1008-P	Apr 2014
			NP	JEXU-1041-1008-NP	Apr 2014
2.16 Setpoint Calculations	System reliability analysis	System	P	JEXU-1041-1022-P	Dec 2014
			NP	JEXU-1041-1022-NP	Dec 2014
2.17 Software Tool Analysis Report	Set-point analysis (Plant Specific Document)	Platform	-	-	-
	Software Program Manual		P	JEXU-1041-1016-P	Jul 2014
Commercial Grade Dedication Report(s)	N/A	Platform	NP	JEXU-1041-1016-NP	Jul 2014
			-	-	-

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Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
3.1 Software Integration Report	MELTAC-Nplus S V&V reports	Platform	P	-	Available for audit
	Application software V&V reports (Plant Specific Document)	System	-	-	-
3.2 Individual V&V Problem Reports up to FAT	Application software V&V reports (Plant Specific Document)	System	-	-	-
3.3 Configuration Management Reports	MELTAC-Nplus Configuration Management Reports	Platform	P	-	Available for audit
	Configuration Management Reports for plant specific(Plant Specific Document)	System	-	-	-
3.4 Test Procedure Specification	MELTAC-Nplus S test specification	Platform	P	-	Available for audit
	Test specification for plant specific (Plant Specific Document)	System	-	-	-
3.5 Completed Test Procedures and Reports	MELTAC-Nplus S test specification	Platform	P	-	Available for audit
	MELTAC-Nplus S test results	Platform	P	-	Available for audit
	Test specification for plant specific (Plant Specific Document)	System	-	-	-
	Test results for plant specific (Plant Specific Document)	System	-	-	-

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Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
3.6 Test Incident Reports	MELTAC-Nplus S test results	Platform	P	-	Available for audit
	Test results for plant specific (Plant Specific Document)	System	-	-	-
3.7 Code Listings	MELTAC-Nplus S code listings	Platform	P	-	Available for audit
	Software diagram: POL logic (Plant Specific Document)	System	-	-	-
3.8 Software Project Risk Management Report	Risk Matrix for MELTAC-Nplus S	Platform	P	-	Available for audit
	Risk Matrix for plant specific (Plant Specific Document)	System	-	-	-
3.9 Circuit Schematics	Circuit Schematics	Platform	P	-	Available for audit
	Circuit Schematics for plant specific (Plant Specific Document)	System	-	-	-
3.10 Detailed System and Hardware Drawings	Circuit Schematics	Platform	P	-	Available for audit
	Circuit Schematics for plant specific (Plant Specific Document)	System	-	-	-

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Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
4.1 Software Installation Plan (SinstP)	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
4.2 Software Maintenance Plan	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
4.3 Software Training Plan	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
4.4 Software Operations Plan	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
4.5 Site Test Documentation	Test specification for plant specific (Plant Specific Document)	System	-	-	-
	Test results for plant specific (Plant Specific Document)	System	-	-	-
4.6 Operations Manual	Manuals for plant specific (Plant Specific Document)	System	-	-	-
4.7 Software Maintenance Manuals	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
			NP	JEXU-1041-1016-NP	Jul 2014
	Manuals for plant specific (Plant Specific Document)	System	-	-	-

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Overview of Documents

ISG-06 Enclosure B Tier3	Document Title	Platform/ I&C system	P/NP*	Document Number	Planned date to submit to NRC
4.8 Software Training Manuals	Software Program Manual	Platform	P	JEXU-1041-1016-P	Jul 2014
	Manuals for plant specific (Plant Specific Document)	System	NP	JEXU-1041-1016-NP	Jul 2014
4.9 Installation Configuration Tables	Manuals for plant specific (Plant Specific Document)	System	-	-	-
	Installation Configuration Tables for plant specific (Plant Specific Document)	System	-	-	-

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MELTAC Topical Report Contents

Section	Title	Remarks
1.0	PURPOSE	
2.0	SCOPE	
3.0	APPLICABLE CODE, STANDARDS AND REGULATORY GUIDANCE	
4.0	MELTAC PLATFORM DESCRIPTION	
4.1	Controller	
4.2	Safety VDU Panel and Processor	
4.3	Communication System	
4.4	Response Time	
4.5	Control of Access	
4.6	Elimination or Relaxation of Surveillance	
5.0	ENVIRONMENTAL, SEISMIC, ELECTROMAGNETIC AND ISOLATION QUALIFICATION	
5.1	Environmental Test	
5.2	Seismic Test	
5.3	Electromagnetic Compatibility and Radio Frequency Interference	
5.4	Electrostatic Discharge Test	
5.5	Isolation Test	
6.0	LIFE CYCLE	
6.1	Life Cycle Process	
6.2	MELTAC Re-evaluation Program (MRP)	
6.3	MELTAC Engineering Tool Life Cycle	
6.2	MELTAC Re-evaluation Program (MRP)	
6.3	MELTAC Engineering Tool Life Cycle	
7.0	EQUIPMENT RELIABILITY	
7.1	History	
7.2	Mean Time between Failures (MTBF) Analysis	
7.3	Controller Reliability Analysis	
7.4	Failure Mode and Effect Analysis (FMEA)	
7.5	Periodic Replacement Equipment (Parts) to Keep Reliability	



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APPENDIX

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Software Program Manual

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