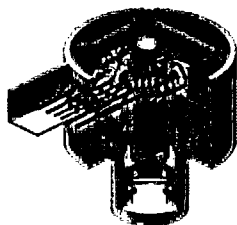


ESBWR Technical Specifications  
Section 3.3



June 28, 2006

imagination at work

Technical Specifications 3.3

MEETING GOALS

- Provide Comparison of ESBWR Instrumentation TS to ABWR TS
- Discuss ESBWR Instrumentation LCOs, Limiting Safety System Settings
- Discuss ESBWR Instrumentation Action Statements
- Surveillances and Bases
- Discuss Potential Resolution of COL Information Items
- Plans for Future Meetings

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Technical Specification Comparison

- ABWR to ESBWR "Roadmap"
- Comparison of ABWR and ESBWR Definitions Related to Instrumentation
- Simplified Block Diagram Comparisons

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## ESBWR Instrumentation TS

### Instrumentation/Actuation LCOs

- LCOs
- Limiting Safety System Settings
- Action Statements
- Surveillances
- Bases



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## ESBWR Instrumentation TS

### Other Instrumentation LCOs

- Post-Accident Monitoring (PAM) Instrumentation
- Remote Shutdown System
- Reactor Coolant System (RCS) Leakage Detection Instrumentation -- Draft RAI 16.2-7



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## Summary

- Provide Comparison of ESBWR Instrumentation TS to ABWR TS
- Discuss ESBWR Instrumentation LCOs, Limiting Safety System Settings
- Discuss ESBWR Instrumentation Action Statements
- Surveillances and Bases
- Discuss Potential Resolution of COL Information Items
- Plans for Future Meetings



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June 26, 2009

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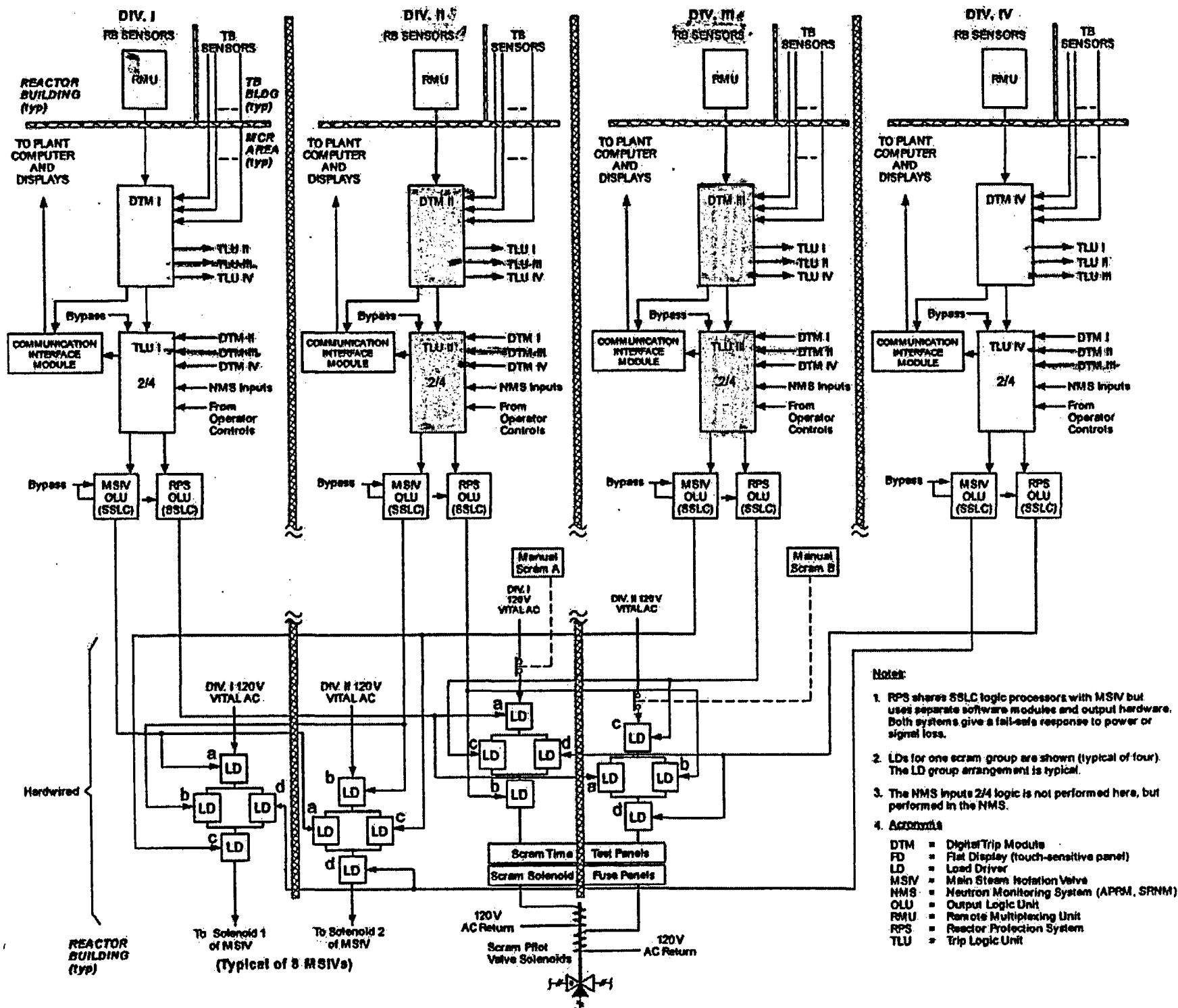
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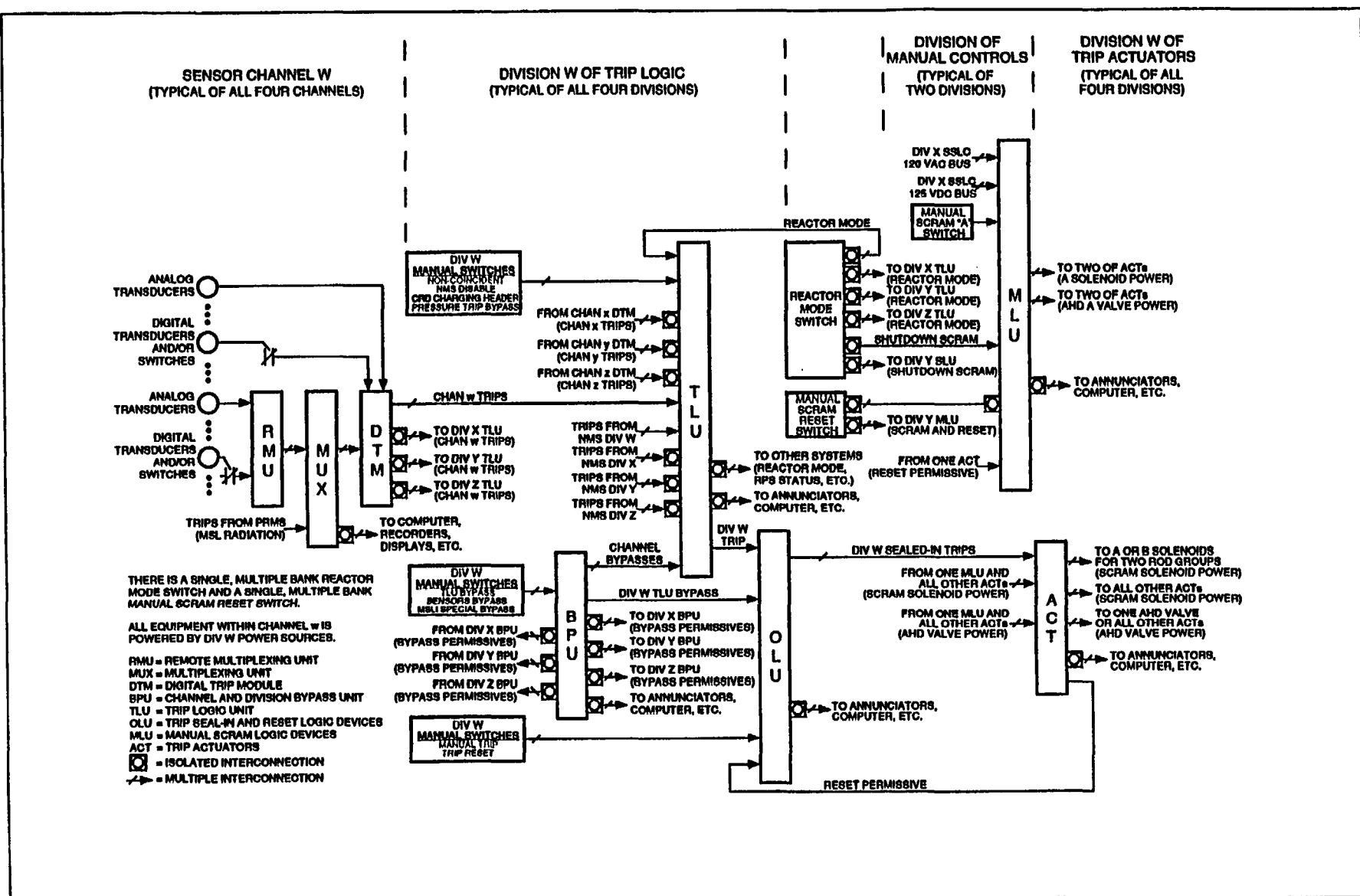
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**Figure 7.2-2 Reactor Protection System Equipment Arrangement  
(From Sensors Through Trip Actuators)**

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

**Comparison of ABWR DCD Instrumentation TS to ESBWR DCD Instrumentation TS**

<b>ABWR DCD Instrumentation TS</b>		<b>Corresponding ESBWR DCD TS, Rev. 1</b>	
3.3.1.1	Safety System Logic and Control (SSLC) Sensor Instrumentation	3.3.1.1	Reactor Protection System (RPS) Instrumentation Channels
		3.3.1.4	Neutron Monitoring System (NMS) Reactor Protection System (RPS) Instrumentation
		3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation
		3.3.5.3	Isolation Condenser System (ICS) Instrumentation
		3.3.6.1	Main Steam Isolation Valve (MSIV) Instrumentation
		3.3.6.3	Isolation Instrumentation
3.3.1.2	Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) Actuation	3.3.1.2	Reactor Protection System (RPS) Trip Actuation
		3.3.1.3	Reactor Protection System (RPS) Manual Trip Actuation
		3.3.1.5	Neutron Monitoring System (NMS) Reactor Protection System (RPS) Trip Actuation
		3.3.5.4	Isolation Condenser System (ICS) Actuation
		3.3.6.2	Main Steam Isolation Valve (MSIV) Actuation
		3.3.6.4	Isolation Actuation
3.3.1.3	Standby Liquid Control (SLC) and Feedwater Runback (FWRB) Actuation		<i>No ESBWR TS provided. See response to RAI 16.0-1.</i>
3.3.1.4	ESF Actuation Instrumentation	3.3.5.2	Emergency Core Cooling System (ECCS) Actuation
3.3.2.1	Startup Range Monitor (SRNM) Instrumentation	3.3.1.6	Startup Range Neutron Monitor (SRNM) Instrumentation

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

ABWR DCD Instrumentation TS		Corresponding ESBWR DCD TS, Rev. 1	
3.3.3.1	Essential Multiplexing System (EMS)	3.3.1.1, 3.3.1.2, 3.3.1.3, 3.3.1.4, 3.3.1.5, 3.3.1.6, 3.3.5.1, 3.3.5.2, 3.3.5.3, 3.3.5.4, 3.3.6.1, 3.3.6.2, 3.3.6.3, 3.3.6.4, 3.3.7.1, 3.3.7.2	<i>Remote Multiplexer Units (RMUs) and transmission network considered as part of instrumentation/actuation channel. No separate ESBWR TS.</i>
3.3.4.1	Anticipated Transient Without Scram (ATWS) and End-of-Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation		<i>ESBWR Design does not include recirculation pumps. No corresponding TS.</i>
3.3.4.2	Feedwater and Main Turbine Trip Instrumentation		<i>No ESBWR TS provided. See response to RAI 16.0-1.</i>
3.3.5.1	Control Rod Block Instrumentation	3.3.2.1	Control Rod Block Instrumentation
3.3.6.1	Post Accident Monitoring (PAM) Instrumentation	3.3.3.1	Post-Accident Monitoring (PAM) Instrumentation
3.3.6.2	Remote Shutdown System	3.3.3.2	Remote Shutdown System
3.3.7.1	Control Room Habitability Area (CRHA) Emergency Filtration (EF) System Instrumentation	3.3.7.1	Emergency Breathing Air System (EBAS) Instrumentation
		3.3.7.2	Emergency Breathing Air System (EBAS) Actuation
3.3.8.1	Electric Power Monitoring		<i>ESBWR design does not include this function. No corresponding TS.</i>
3.3.8.2	Reactor Coolant Temperature Monitoring-Shutdown		<i>No corresponding TS.</i>
3.4.5	RCS Leakage Detection Instrumentation	3.3.4.1	Reactor Coolant System (RCS) Leakage Detection Instrumentation

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

**Comparison of Definitions**

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel such that it responds within the necessary range and accuracy to specified values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.</p>	<p>A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.</p>	<p>A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.</p>	<p>Deltas due to TSTF-205 Changes. ABWR and ESBWR are essentially the same.</p>
<p>A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.</p>	<p>A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.</p>	<p>A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.</p>	<p>ABWR and ESBWR are essentially the same.</p>

**UNVERIFIED PRELIMINARY INFORMATION**  
**Simplified Comparisons**

<b>ABWR DCD TS</b>	<b>ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)</b>	<b>AP1000</b>	<b>Comments</b>
<p>A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarm, interlock, display, and trip functions, and channel failure trips. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.</p>	<p>A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.</p>	<p>[CHANNEL OPERATIONAL TEST (COT)]  A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps.</p>	<p>Deltas due to TSTF-205 Changes. ABWR and ESBWR are essentially the same.</p>



**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>A COMPREHENSIVE FUNCTIONAL TEST (CoFT) is a set of tests that exercises each RPS, ESF, and MSIV closure Function by simulating accident events that exercise the inputs and outputs of the SSLC, NMS, PRRM, RPS/MSIV actuation logic and ESF actuation logic. A CoFT also simulates power failures, measures CPU and network performance, runs microprocessor-specific and application-specific diagnostics. Test inputs include out-of-range conditions to verify OPERABILITY of the SSLC electronics, alarms and displays.</p>	<p>A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.</p>	<p>[TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)] A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.</p> <p>And</p> <p>An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and the verification of the required logic output. The ACTUATION LOGIC TEST shall be conducted such that it provides component overlap with the ACTUATION DEVICE TEST.</p> <p>And</p> <p>An ACTUATION DEVICE TEST is a test of the actuated equipment. This test may consist of verification of actual operation but shall, at a minimum, consist of a continuity check of the associated actuated devices. The ACTUATION DEVICE TEST shall be conducted such that it provides component overlap with the ACTUATION LOGIC TEST.</p>	<ol style="list-style-type: none"> <li>1. The ABWR requirement that "A CoFT also simulates power failures, measures CPU and network performance, runs microprocessor-specific and application-specific diagnostics" should not be part of demonstrating OPERABILITY of the specified safety functions and should not be included in the CoFT. The combination of other SRs for the ESBWR adequately test all specified safety functions of the safety-related instrumentation.</li> <li>2. Required "alarms and displays" are adequately tested by the CFT.</li> <li>3. ESBWR LSFT also tests components of the Instrumentation Channel.</li> </ol>

**UNVERIFIED PRELIMINARY INFORMATION**  
**Simplified Comparisons**

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>[DIVISION FUNCTIONAL TEST -] The injection of simulated or actual signals into a division as close to the sensors as practicable to verify OPERABILITY of SENSOR CHANNELS and LOGIC CHANNELS in that division. The DIVISION FUNCTIONAL TEST may be performed by means of a series of sequential or overlapping steps. The test shall comprise all the equipment from the DTM inputs to LOGIC CHANNEL outputs. This test shall also verify that the inputs to the DTMs are the same as the information presented at the control room indicators.</p> <p style="text-align: right;">not on (1)</p>	<p>A <del>CHANNEL FUNCTIONAL TEST</del> shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY of all devices in the channel required for channel OPERABILITY. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps.</p> <p>And</p> <p>A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all <u>logic components</u> required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.</p>	<p>[CHANNEL OPERATIONAL TEST (COT)] A COT shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify the OPERABILITY of all devices in the channel required for channel OPERABILITY. The COT shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for channel OPERABILITY such that the setpoints are within the necessary range and accuracy. The COT may be performed by means of any series of sequential, overlapping, or total channel steps.</p> <p>[REACTOR TRIP CHANNEL OPERATIONAL TEST (RTCOT)] A RTCOT shall be the injection of a simulated or actual signal into the RT (Reactor Trip) CHANNEL as close to the sensor as practicable to verify OPERABILITY of the required interlock and/or trip functions. The REACTOR TRIP CHANNEL OPERATIONAL TEST may be performed by means of a series of sequential, overlapping, or total channel steps so that the entire channel is tested from the signal conditioner through the trip logic.</p>	<p>Control room indications do not perform any specified safety functions for RPS, ESF, Isolation, etc, instrumentation and therefore are not be required to be functioning for the associated instrumentation to be considered OPERABLE.</p>

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>A LOGIC CHANNEL is defined as a set of interconnecting hardware and software components that process the inputs to produce an identifiable RPS trip signal or ESF actuation signal within a division. For the RPS, this includes the trip signal's associated TLU 2-out-of-4 voters, TLU bistable functions, operator controls, interlocks, data transmission, alarms, displays, division-of-sensors bypass, [and] transmission lines out to the OLU inputs. Each ESF function will have two ESF LOGIC CHANNELS to include one of the ESF actuation signal's associated SLU 2-out-of-4 voters, SLU bistable functions, operator controls, interlocks, data transmission, alarms, displays, division-of-sensors bypass, EMS, and transmission lines out to the input of the 2-out-of-2 voters. The ESF actuation signal includes the system actuation signal and all its associated device actuation signals generated in the SLU out to the 2-out-of-2 voter.</p>	<p>[No comparable definition. Addressed in Bases] <i>Define what to be tested specifically. Defined in ABWR</i></p>	<p>[No comparable definition. Addressed in Bases]</p>	<p>Some old custom TS and older STS had these types of definitions which were relocated to Bases, UFSAR, etc., during conversions to ISTS.</p>

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip functions, solid state logic elements, etc.) of a logic path, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.</p>	<p>A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.</p>	<p>[TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)] A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.</p> <p>And</p> <p>An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and the verification of the required logic output. The ACTUATION LOGIC TEST shall be conducted such that it provides component overlap with the ACTUATION DEVICE TEST.</p>	<p>Deltas due to TSTF-205 Changes. ABWR and ESBWR are essentially the same.</p>

UNVERIFIED PRELIMINARY INFORMATION  
Simplified Comparisons

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>An OUTPUT CHANNEL is defined as a set of interconnected components that process outputs from associated LOGIC CHANNELS to produce an identifiable signal that deenergizes scram solenoids, deenergizes MSIV Isolation solenoids, or energizes ESF device actuators within a division. For the RPS, this includes the signal's associated OLU, transmission lines, manual divisional trip and reset switches, trip logic output bypass switch, parallel load driver test switch, and scram pilot valve solenoid load drivers. For the MSIVs, this includes the signal's associated OLU, data transmission, manual divisional isolation and reset switches, trip logic output bypass switch, and MSIV isolation pilot valve solenoid load drivers. For the ESF, this includes the signal's associated 2-out-of-2 voter, ESF Output Channel Bypass switch, and data transmission out to the ESF device actuator.</p>	<p>[No comparable definition. Addressed in Bases]</p>	<p>[No comparable definition. Addressed in Bases]</p>	<p>Some old custom TS and older STS had these types of definitions which were relocated to Bases, UFSAR, etc., during conversions to ISTS.</p>

**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

ABWR DCD TS	ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)	AP1000	Comments
<p>An OUTPUT CHANNEL FUNCTIONAL TEST is the injection of simulated or actual signals into the OUTPUT CHANNEL to verify OPERABILITY.</p>	<p>A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all logic components required for OPERABILITY of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total system steps so that the entire logic system is tested.</p>	<p>[TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)] A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of all devices in the channel required for trip actuating device OPERABILITY. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the required accuracy. The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.</p> <p>And</p> <p>An ACTUATION LOGIC TEST shall be the application of various simulated or actual input combinations in conjunction with each possible interlock logic state and the verification of the required logic output. The ACTUATION LOGIC TEST shall be conducted such that it provides component overlap with the ACTUATION DEVICE TEST.</p> <p>And</p> <p>An ACTUATION DEVICE TEST is a test of the actuated equipment. This test may consist of verification of actual operation but shall, at a minimum, consist of a continuity check of the associated actuated devices. The ACTUATION DEVICE TEST shall be conducted such that it provides component overlap with the ACTUATION LOGIC TEST.</p>	<p>ABWR OUTPUT CHANNEL FUNCTIONAL TEST is adequately addressed by combination of ESBWR LSFT and overlapping system functional tests.</p>

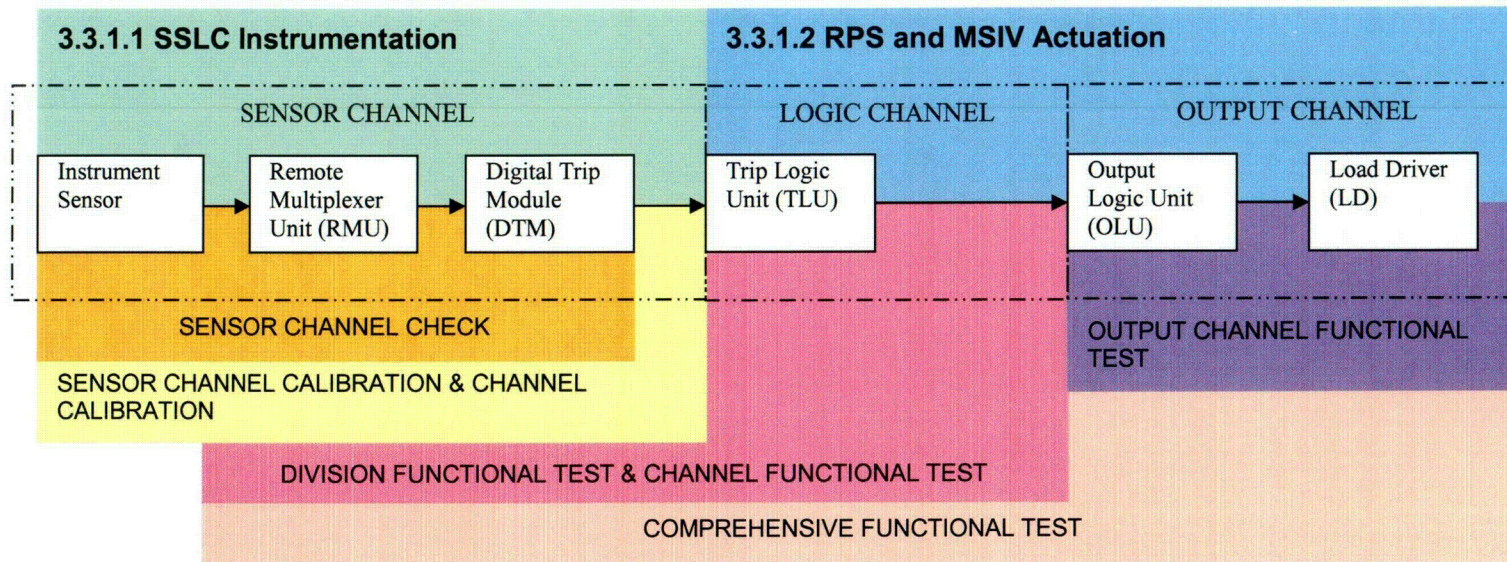
**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

<b>ABWR DCD TS</b>	<b>ESBWR DCD TS, Rev. 1 (BWR6 STS, Rev. 3)</b>	<b>AP1000</b>	<b>Comments</b>
A SENSOR CHANNEL is defined as a set of interconnected hardware and software components that process an identifiable sensor signal within a division. This includes the sensor, data acquisition, signal conditioning, data transmission, alarms, displays, and all transmission lines in the division and between divisions associated with the sensor signal up to an input of a 2-out-of-4 voter or an input of a bistable function within the TLU or SLU.	[No comparable definition. Addressed in Bases]	[No comparable definition. Addressed in Bases]	Some old custom TS and older STS had these types of definitions which were relocated to Bases, UFSAR, etc., during conversions to ISTS.
A SENSOR CHANNEL CALIBRATION is the adjustment, as necessary, of the SENSOR CHANNEL such that it responds within the specified range and accuracy to specified values of the parameter that the SENSOR CHANNEL monitors. The calibration may be performed by any series of sequential, overlapping, or total SENSOR CHANNEL test steps so that the entire SENSOR CHANNEL is calibrated. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors shall consist of an inplace cross calibration of the sensing elements and normal calibration of the remaining adjustments in the channel. Whenever a sensing element is replaced, the next required inplace cross calibration consists of comparing the other sensing elements with the recently installed sensing element.	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for channel OPERABILITY and the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel so that it responds within the required range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass all devices in the channel required for OPERABILITY. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps.	Adequately covered by definition of CHANNEL CALIBRATION.
A SENSOR CHANNEL CHECK is the qualitative assessment, by observation, of a SENSOR CHANNEL'S behavior during operation. This observation shall include comparison of this SENSOR CHANNEL'S indication to other indications derived from independent SENSOR CHANNELS. This check shall be performed so as to examine as much of the SENSOR CHANNEL as practicable.	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter.	Adequately covered by definition of CHANNEL CHECK.

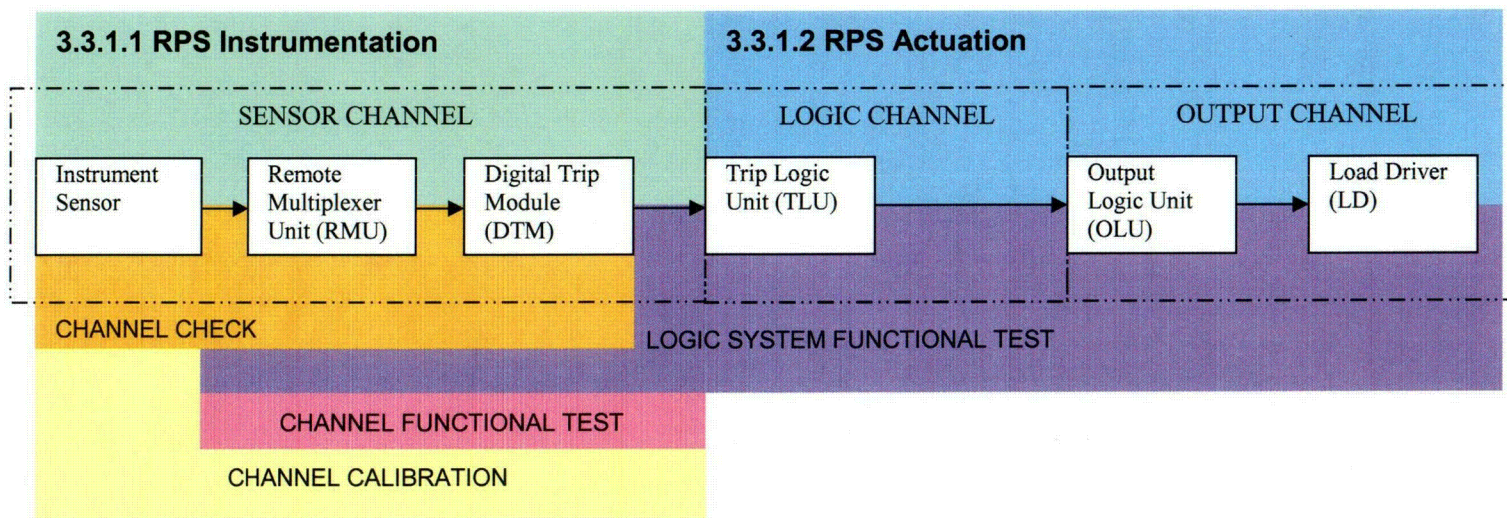


UNVERIFIED PRELIMINARY INFORMATION  
Simplified Comparisons

Example RPS Division (ABWR)



Example RPS Division (ESBWR)





**UNVERIFIED PRELIMINARY INFORMATION**  
Simplified Comparisons

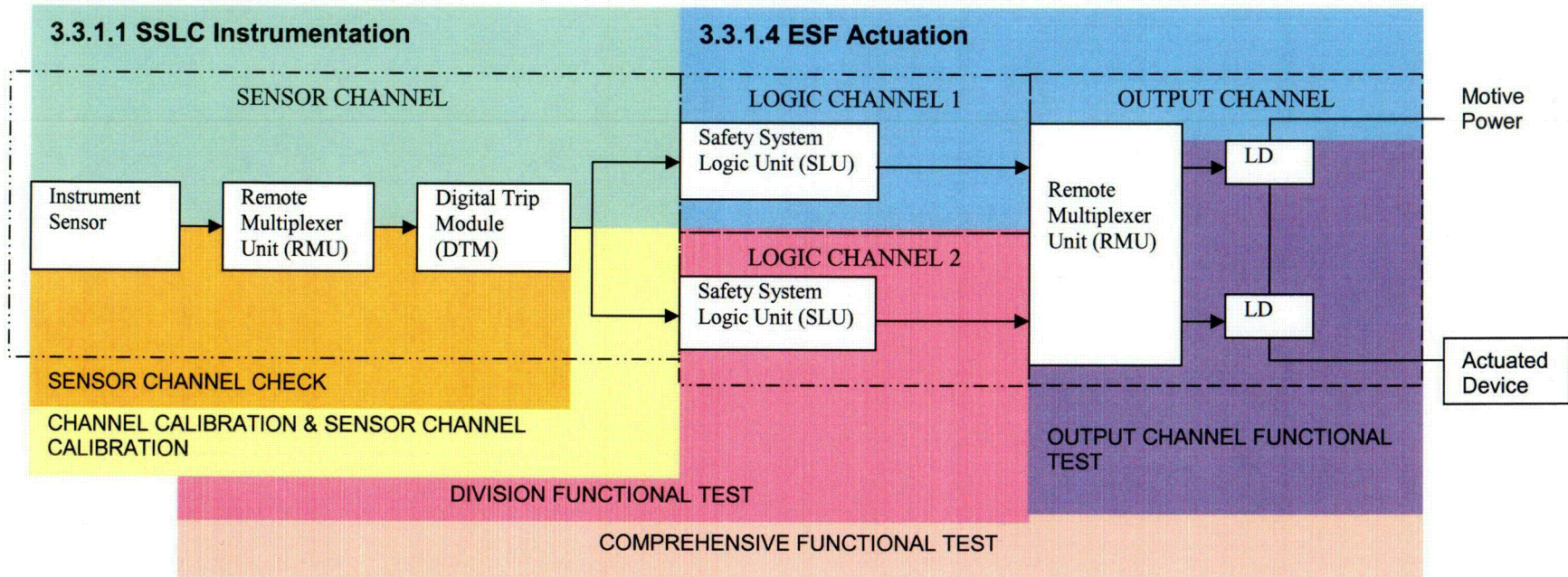
<b>ABWR SSLC Instrumentation and RPS Actuation Surveillance Requirements</b>	
SR 3.3.1.1.1	SENSOR CHANNEL CHECK
SR 3.3.1.1.3	DIVISION FUNCTIONAL TEST on SRNM and APRM – High/Setdown channels in each division
SR 3.3.1.1.4	DIVISION FUNCTIONAL TEST on SRNM and APRM functions required in MODES 1 and 5
SR 3.3.1.1.5	DIVISION FUNCTIONAL TEST
SR 3.3.1.1.6	CHANNEL FUNCTIONAL TEST
SR 3.3.1.1.9	COMPREHENSIVE FUNCTIONAL TEST
SR 3.3.1.1.10	SENSOR CHANNEL CALIBRATION
SR 3.3.1.1.11	CHANNEL CALIBRATION
SR 3.3.1.1.12	RPS RESPONSE TIME TEST
SR 3.3.1.1.13	ECCS RESPONSE TIME TEST
SR 3.3.1.1.14	ISOLATION RESPONSE TIME TEST
SR 3.3.1.2.1	CHANNEL FUNCTIONAL TEST
SR 3.3.1.2.2	DIVISION FUNCTIONAL TEST
SR 3.3.1.2.3	CHANNEL FUNCTIONAL TEST
SR 3.3.1.2.4	COMPREHENSIVE FUNCTIONAL TEST
SR 3.3.1.2.5	OUTPUT CHANNEL FUNCTIONAL TEST
SR 3.3.1.2.6	RPS RESPONSE TIME TEST
SR 3.3.1.2.7	ISOLATION RESPONSE TIME TEST

<b>ESBWR RPS Instrumentation and Actuation Surveillance Requirements</b>	
SR 3.3.1.1.1	CHANNEL CHECK
SR 3.3.1.1.2	CHANNEL FUNCTIONAL TEST
SR 3.3.1.1.3	CHANNEL CALIBRATION
SR 3.3.1.1.4	RPS RESPONSE TIME TEST
SR 3.3.1.2.1	LOGIC SYSTEM FUNCTIONAL TEST

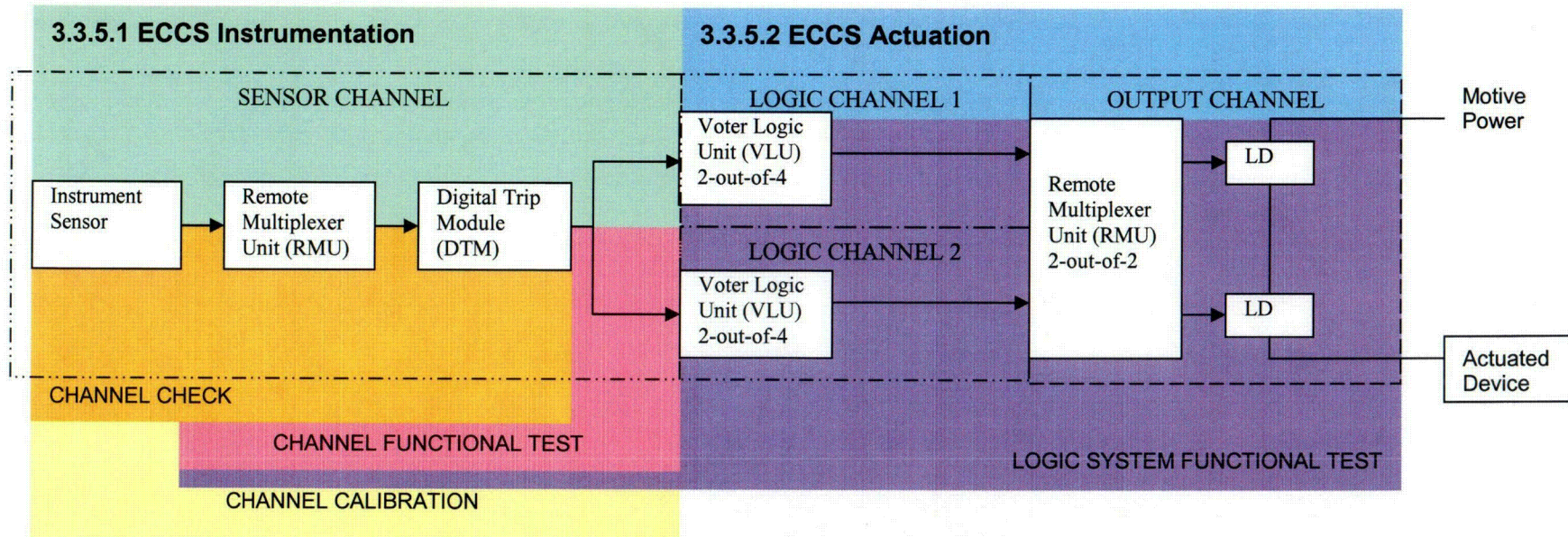


UNVERIFIED PRELIMINARY INFORMATION  
Simplified Comparisons

Example ECCS Division (ABWR)



Example ECCS Division (ESBWR)





UNVERIFIED PRELIMINARY INFORMATION  
Simplified Comparisons

<b>ABWR SSLC Instrumentation and ESF Actuation Surveillance Requirements</b>	
SR 3.3.1.1.1	SENSOR CHANNEL CHECK
SR 3.3.1.1.3	DIVISION FUNCTIONAL TEST on SRNM and APRM – High/Setdown channels in each division
SR 3.3.1.1.4	DIVISION FUNCTIONAL TEST on SRNM and APRM functions required in MODES 1 and 5
SR 3.3.1.1.5	DIVISION FUNCTIONAL TEST
SR 3.3.1.1.6	CHANNEL FUNCTIONAL TEST
SR 3.3.1.1.9	COMPREHENSIVE FUNCTIONAL TEST
SR 3.3.1.1.10	SENSOR CHANNEL CALIBRATION
SR 3.3.1.1.11	CHANNEL CALIBRATION
SR 3.3.1.1.12	RPS RESPONSE TIME TEST
SR 3.3.1.1.13	ECCS RESPONSE TIME TEST
SR 3.3.1.1.14	ISOLATION RESPONSE TIME TEST
SR 3.3.1.4.1	SENSOR CHANNEL CHECK
SR 3.3.1.4.2	OUTPUT CHANNEL FUNCTIONAL TEST
SR 3.3.1.4.3	DIVISIONAL FUNCTIONAL TEST on LOGIC CHANNELS and SENSOR CHANNELS
SR 3.3.1.4.4	COMPREHENSIVE FUNCTIONAL TEST
SR 3.3.1.4.5	ECCS RESPONSE TIME TEST
SR 3.3.1.4.6	SENSOR CHANNEL CALIBRATION
SR 3.3.1.4.7	CHANNEL FUNCTIONAL TEST

<b>ESBWR ECCS Instrumentation and Actuation Surveillance Requirements</b>	
SR 3.3.5.1.1	CHANNEL CHECK
SR 3.3.5.1.2	CHANNEL FUNCTIONAL TEST
SR 3.3.5.1.3	CHANNEL CALIBRATION
SR 3.3.5.1.4	ECCS RESPONSE TIME TEST
SR 3.3.5.2.1	LOGIC SYSTEM FUNCTIONAL TEST