

Table 3.2-9

INSTRUMENTATION WHICH INITIATES RECIRCULATION PUMP TRIP

Ref. No. (a)	Instrument	Trip Condition Nomenclature	Required Operable Channels per Trip System	Trip Setting	Remarks
1.	Reactor Vessel Water Level (ATWS RPT) <sup>(c)</sup>	Low	2 <sup>(b)(g)</sup>	≥ -73 inches H <sub>2</sub> O	Power must be reduced and the mode switch placed in a mode other than the RUN Mode.
2.	Reactor Pressure (ATWS RPT)	High	2 <sup>(b)(g)</sup>	≤ 1095 psig	Power must be reduced and the mode switch placed in a mode other than the RUN Mode.
3.	EOC - RPT <sup>(d)</sup>	1. Turbine Stop Valve Closure 2. Turbine Control Valve Fast Closure	2 <sup>(e)(f)</sup>	1. Stop Valve ≤ 90% Open 2. Control Valve Hydraulic Press Trip Point	Trips recirculation pumps on turbine control valve fast closure or stop valve closure when reactor is > 30%. <sup>(e)</sup>

(a) The column entitled "Ref. No." is only for convenience so that a one-to-one relationship can be established between items in Table 3.2-9 and items in Table 4.2-9.

(b.1) Whenever the reactor is in the RUN Mode, there shall be two operable trip systems for each parameter for each operating recirculation pump. If the required number of operable channels cannot be met for one of the trip systems, place the inoperable channel in the tripped condition or take the indicated action within 14 days. If the required number of operable channels cannot be met for both trip systems, take the indicated action within 1 hour.

(b.2) One instrument channel may be inoperable for up to 6 hours to perform required surveillances prior to entering other applicable actions.

(c) Anticipated Transients Without Scram - Recirculation Pump Trip

(d) End of Cycle - Recirculation Pump Trip

(e) Either of these two EOC - RPT systems can trip both recirculation pumps. Each EOC - RPT system will trip if 2-out-of-2 fast closure signals or 2-out-of-2 stop valve signals are received.

(f.1) The requirement for these channels applies from EOC-2000 MWD/t to EOC. The RPT system may be placed in an inoperable status for up to 2 hours to provide the required monthly surveillance. If one EOC-RPT system is inoperable for longer than 72 hours or if both EOC-RPT systems are simultaneously inoperable, an orderly power reduction will be immediately initiated and reactor power will be < 30% within the next 6 hours.

(f.2) One instrument channel may be inoperable for up to 6 hours to perform required surveillances prior to entering other applicable actions.

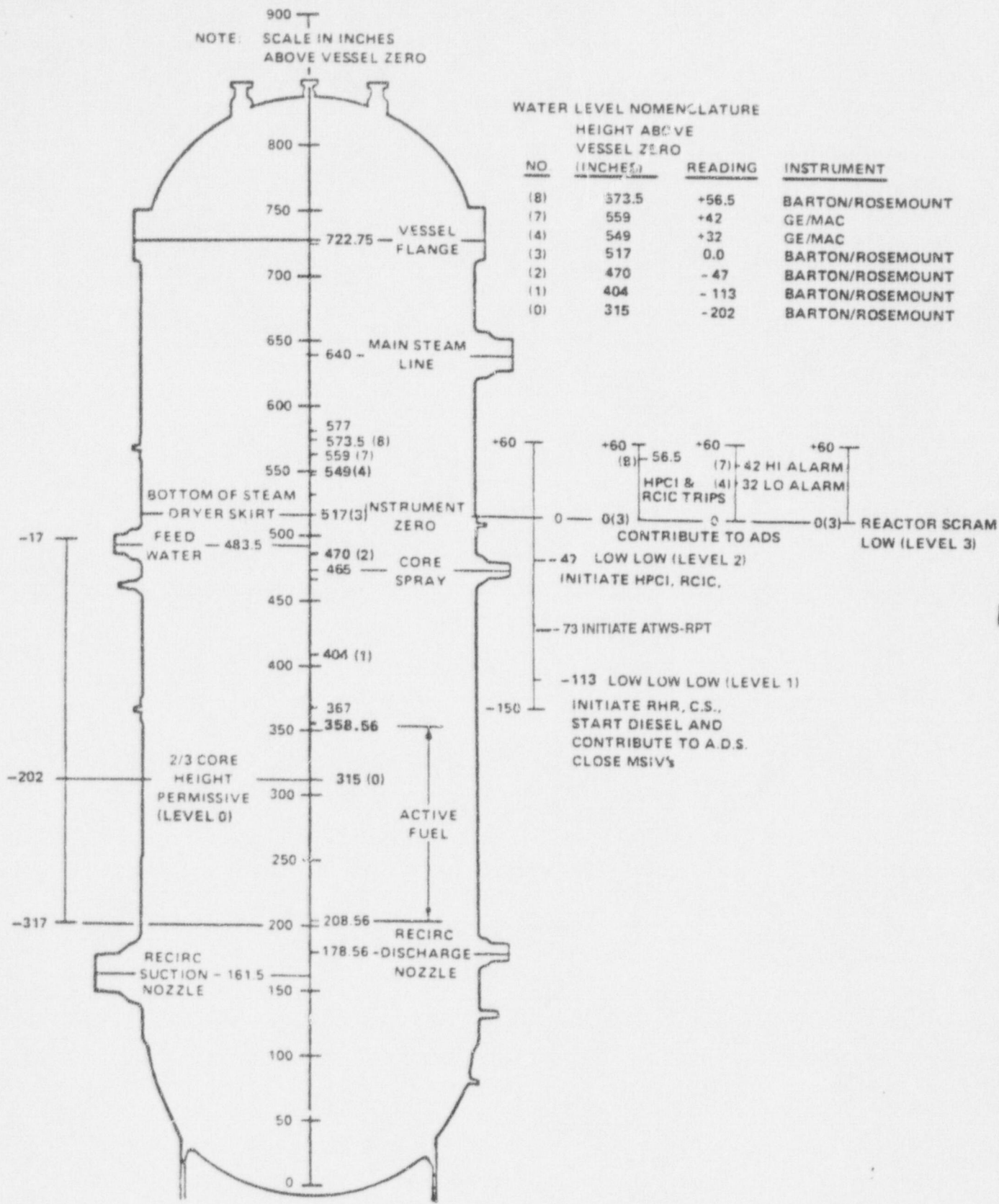
(g) Either of these two ATWS-RPT systems can trip both recirculation pumps. Each ATWS-RPT system will trip if 2-out-of-2 reactor low water level signals or 2-out-of-2 reactor high pressure signals are received.

3.6.E. Recirculation Pump Start

An idle recirculation pump shall not be started unless the temperature differential between the reactor coolant within the dome and the bottom head drain is  $\leq 145^{\circ}\text{F}$ . If the temperature differential cannot be determined, and both recirculation pumps are tripped, the restart of the recirculation pumps is allowed within 30 minutes of the trip of the pumps, provided that drive flow remained above 40% in either loop prior to the pump trip, no HPCI or RCIC injection occurred after the trip of the pumps, and the feedwater temperature remained above  $300^{\circ}\text{F}$  after the trip of the pumps. With either approach, the requirements of Specification 3.6.D must be considered.

4.6.E. Recirculation Pump Start

Prior to starting a recirculation pump, the reactor coolant temperatures in the dome and in the bottom head drain shall be compared and permanently recorded.

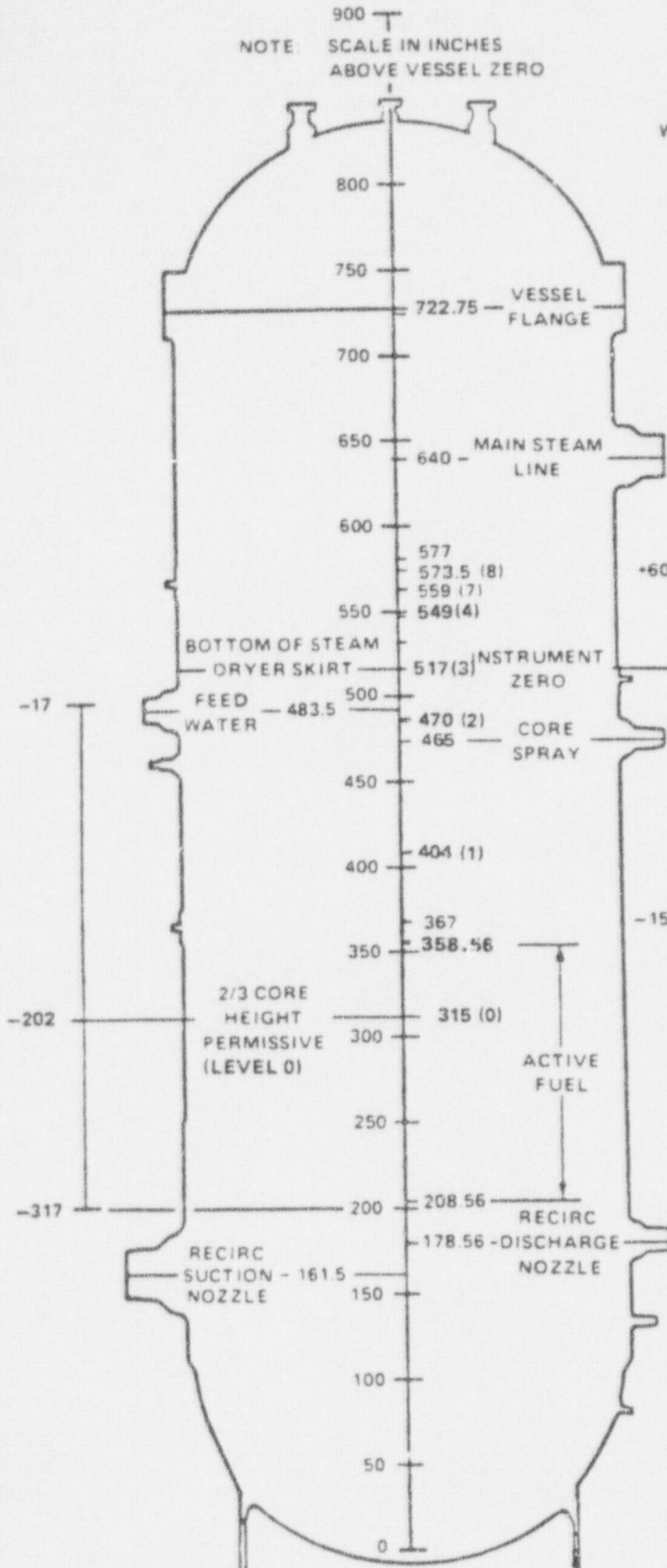


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FIGURE 2.1-1  
REACTOR VESSEL WATER LEVEL

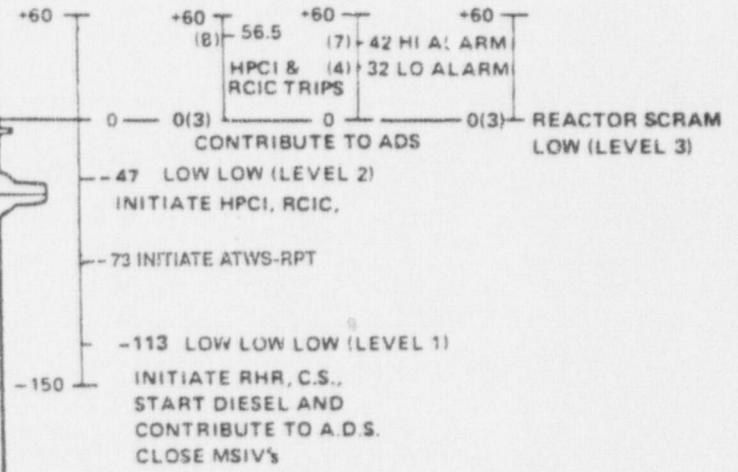


NOTE: SCALE IN INCHES ABOVE VESSEL ZERO



WATER LEVEL NOMENCLATURE  
HEIGHT ABOVE  
VESSEL ZERO

NO	(INCHES)	READING	INSTRUMENT
(8)	573.5	+56.5	BARTON/ROSEMOUNT
(7)	559	+42	GE/MAC
(4)	549	+32	GE/MAC
(3)	517	0.0	BARTON/ROSEMOUNT
(2)	470	-47	BARTON/ROSEMOUNT
(1)	404	-113	BARTON/ROSEMOUNT
(0)	315	-202	BARTON/ROSEMOUNT



BASES FIGURE B 3/4 3-1  
REACTOR VESSEL WATER LEVEL

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TABLE 3.3.9.1.1

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM</u>
1. Reactor Vessel Water Level - Low	2
2. Reactor Vessel Pressure - High	2

TABLE 3.3.9.1-2

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
1. Reactor Vessel, Water Level - Low	$\geq -73$ inches <sup>*</sup>	$\geq -73$ inches
2. Reactor Vessel Pressure - High	$\leq 1095$ psig	$\leq 1095$ psig

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\*See Bases Figure B3/4 3-1.



TABLE 4.3.9.1-1

ATWS RECIRCULATION PUMP TRIP ACTUATION INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>
1. Reactor Vessel Water Level - Low	S	Q	R
2. Reactor Vessel Pressure - High	S	Q	R

## REACTOR COOLANT SYSTEM

### IDLE RECIRCULATION LOOP STARTUP

#### LIMITING CONDITION FOR OPERATION

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3.4.1.3 An idle recirculation pump shall not be started unless the temperature differential between the reactor coolant within the dome and the bottom head drain is  $\leq 145^{\circ}\text{F}$ . If the temperature differential cannot be determined, and both recirculation pumps are tripped, the restart of the recirculation pumps is allowed within 30 minutes of the trip of the pumps, provided that drive flow remained above 40% in either loop prior to the pump trip, no HPCI or RCIC injection occurred after the trip of the pumps, and the feedwater temperature remained above  $300^{\circ}\text{F}$  after the trip of the pumps. With either approach, the requirements of Specifications 3.4.1.3.a and 3.4.1.3.b must be considered.

- a. The temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel is  $\leq 50^{\circ}\text{F}$  when both loops have been idle, or
- b. The temperature differential between the reactor coolant within the idle and operating recirculation loops is  $\leq 50^{\circ}\text{F}$  when only one loop has been idle, and the operating loop flow rate is  $\leq 50\%$  of rated loop flow.

APPLICABILITY: CONDITIONS 1, 2, 3 and 4.

#### ACTION:

With temperature differences and/or flow rate exceeding the above limits, suspend startup of any idle recirculation loop.

#### SURVEILLANCE REQUIREMENTS

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4.4.1.3 The temperature differential and flow rate shall be determined to be within the limit within 30 minutes prior to startup of an idle recirculation loop.



Table 3.2-9

## INSTRUMENTATION WHICH INITIATES RECIRCULATION PUMP TRIP

Ref. No. (a)	Instrument	Trip Condition Nomenclature	Required Operable Channels per Trip System	Trip Setting	Remarks
1.	Reactor Vessel Water Level (ATWS RPT) <sup>(c)</sup>	Low (Level 2)	2 <sup>(b)(1)</sup>	<del>≥ 47 inches H<sub>2</sub>O</del> ≥ 73 inches H <sub>2</sub> O	Power must be reduced and the mode switch placed in a mode other than the RUN Mode.
2.	Reactor Pressure (ATWS RPT)	High	2 <sup>(b)(1)</sup>	≤ 1095 psig	Power must be reduced and the mode switch placed in a mode other than the RUN Mode.
3.	EOC - RPT <sup>(d)</sup>	1. Turbine Stop Valve Closure 2. Turbine Control Valve Fast Closure	2 <sup>(b)(1)</sup>	1. Stop Valve ≤ 90% Open 2. Control Valve Hydraulic Press Trip Point	Trips recirculation pumps on turbine control valve fast closure or stop valve closure when reactor is > 30%. <sup>(e)</sup>

(a) The column entitled "Ref. No." is only for convenience so that a one-to-one relationship can be established between items in Table 3.2-9 and items in Table 4.2-9.

(b)1. Whenever the reactor is in the RUN Mode, there shall be two operable trip systems for each parameter for each operating recirculation pump. If the required number of operable channels cannot be met for one of the trip systems, place the inoperable channel in the tripped condition or take the indicated action within 14 days. If the required number of operable channels cannot be met for both trip systems, take the indicated action within 1 hour.

(b)2. One instrument channel may be inoperable for up to 6 hours to perform required surveillances prior to entering other applicable actions.

(c) Anticipated Transients Without Scram - Recirculation Pump Trip

(d) End of Cycle - Recirculation Pump Trip

(e) Either of these two EOC - RPT systems can trip both recirculation pumps. Each EOC - RPT system will trip if 2-out-of-2 fast closure signals or 2-out-of-2 stop valve signals are received.

(f)1. The requirement for these channels applies from EOC-2000 MWD/t to EOC. The RPT system may be placed in an inoperable status for up to 2 hours to provide the required monthly surveillance. If one EOC-RPT system is inoperable for longer than 72 hours or if both EOC-RPT systems are simultaneously inoperable, an orderly power reduction will be immediately initiated and reactor power will be < 30% within the next 6 hours.

(f)2. One instrument channel may be inoperable for up to 6 hours to perform required surveillances prior to entering other applicable actions.

(g) Either of these two ATWS-RPT systems can trip both recirculation pumps. Each ATWS-RPT system will trip if 2-out-of-2 reactor low water level signals or 2-out-of-2 reactor high pressure signals are received.

3.6.E. Recirculation Pump Start

~~The reactor recirculation pumps shall not be started unless the coolant temperatures between the dome and the bottom head drain are within 145°F.~~

→ replace with paragraph from next page

4.6.E. Recirculation Pump Start

Prior to starting a recirculation pump, the reactor coolant temperatures in the dome and in the bottom head drain shall be compared and permanently recorded.

An idle recirculation pump shall not be started unless the temperature differential between the reactor coolant within the dome and the bottom head drain is  $\leq 145^{\circ}\text{F}$ . If the temperature differential cannot be determined, and both recirculation pumps are tripped, the restart of the recirculation pumps is allowed within 30 minutes of the trip of the pumps, provided that drive flow remained above 40% in either loop prior to the pump trip, no HPCI or RCIC injection occurred after the trip of the pumps, and the feedwater temperature remained above  $300^{\circ}\text{F}$  after the trip of the pumps. With either approach, the requirements of specification 3.6.D must be considered.



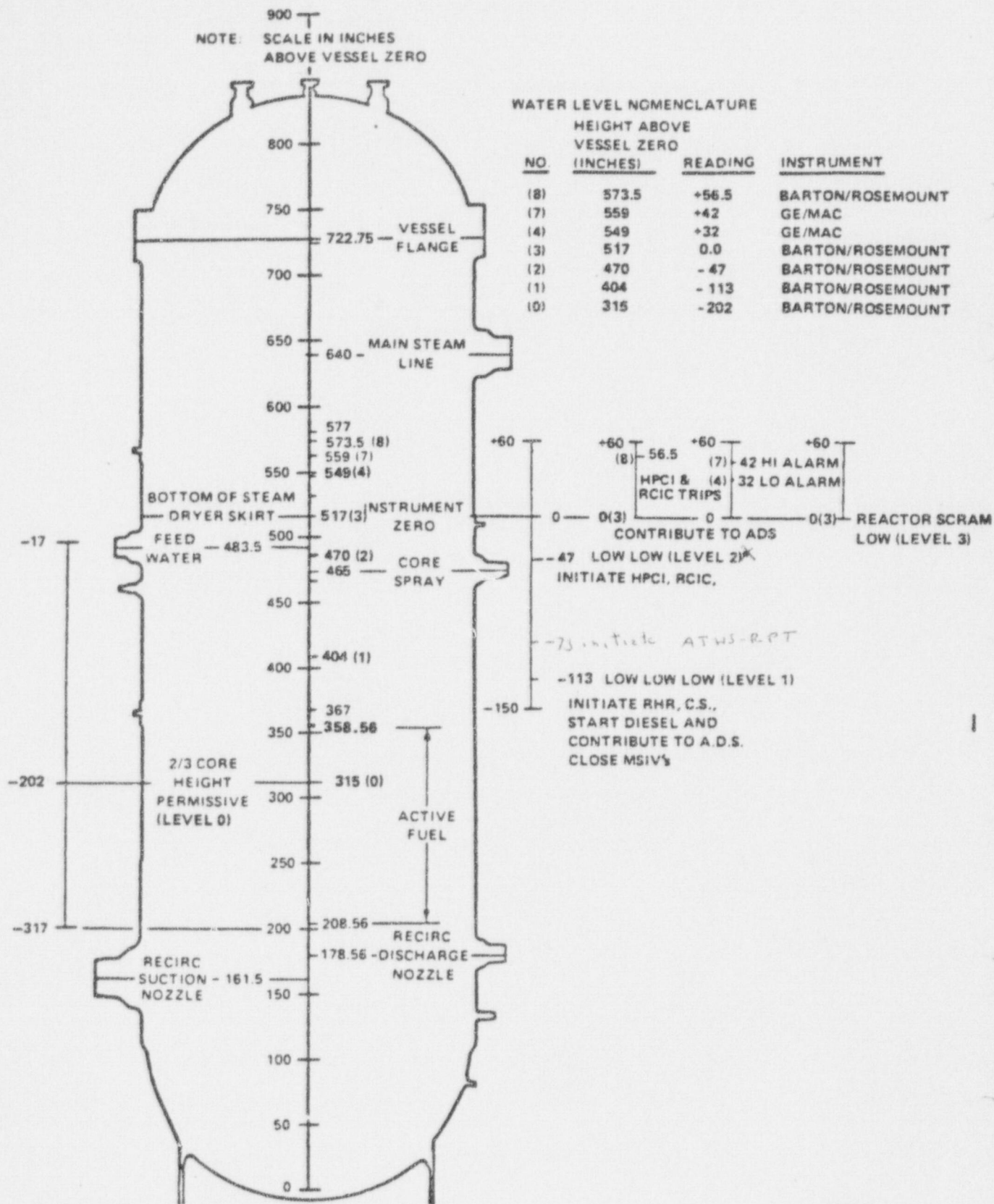
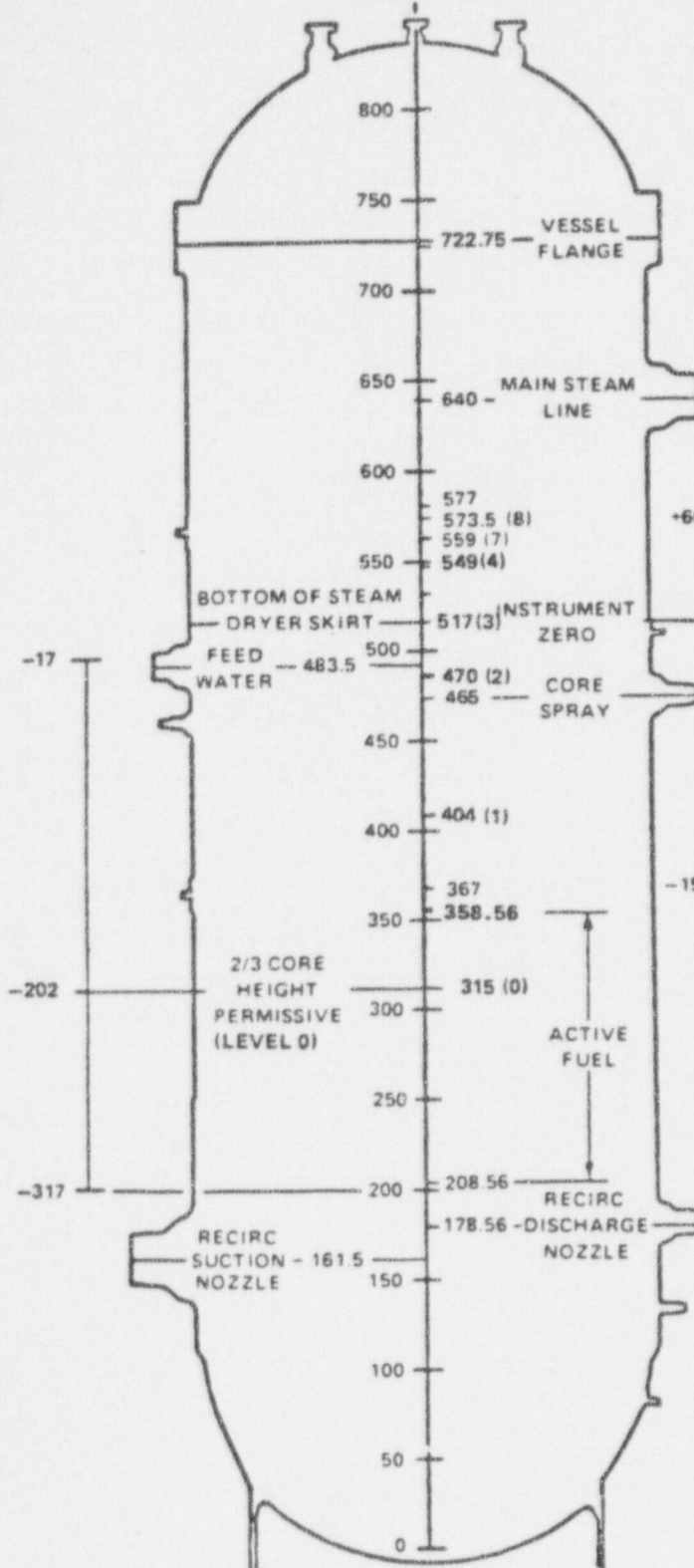


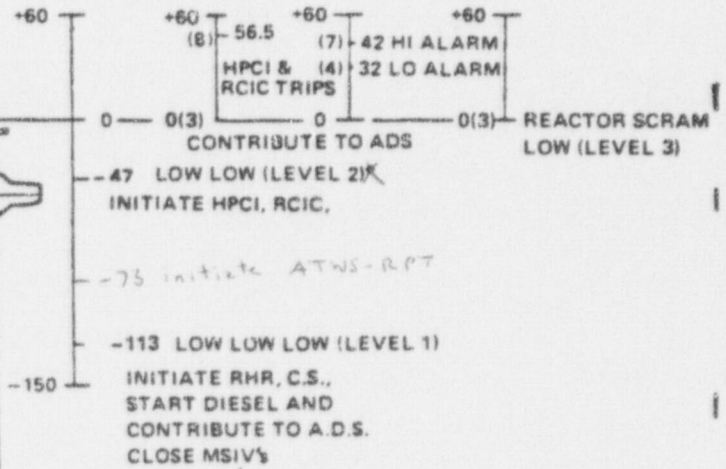
FIGURE 2.1-1  
REACTOR VESSEL WATER LEVEL

NOTE: SCALE IN INCHES ABOVE VESSEL ZERO



WATER LEVEL NOMENCLATURE  
HEIGHT ABOVE  
VESSEL ZERO

NO	(INCHES)	READING	INSTRUMENT
(8)	573.5	+56.5	BARTON/ROSEMOUNT
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(1)	517	0.0	BARTON/ROSEMOUNT
(2)	470	- 47	BARTON/ROSEMOUNT
(1)	404	- 113	BARTON/ROSEMOUNT
(0)	315	-202	BARTON/ROSEMOUNT



\*Recirculation Pump Trip Analytical Limit is -58 inches.

BASES FIGURE B 3/4 3-1  
REACTOR VESSEL WATER LEVEL

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TABLE 3.3.9.1-1

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION

HATCH - UNIT 2

TRIP FUNCTION

1. Reactor Vessel Water Level - Low ~~Low, Level 2~~
2. Reactor Vessel Pressure - High

MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM

2  
2

3/4 3-67

Amendment 1, 2, 69, 110

*Clarification 0-93-01, AS  
follows page 314 1-18*



TABLE 3.3.9.1-2

ATWS RECIRCULATION PUMP TRIP SYSTEM INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. Reactor Vessel, Water Level - Low Low, Level 2	$\geq -47$ inches $-75$	$\geq -47$ inches $-75$
2. Reactor Vessel Pressure - High	$\leq 1095$ psig	$\leq 1095$ psig

\*See Bases Figure B3/4 3-1.

HATCH - UNIT 2

3/4 3-69

Amendment No. 69, 110, 125

TABLE 4.3.9.1-1

ATWS RECIRCULATION PUMP TRIP ACTUATION INSTRUMENTATION  
SURVEILLANCE REQUIREMENTS

<u>TRIP FUNCTION</u>	<u>CHANNEL CHECK</u>	<u>CHANNEL FUNCTIONAL TEST</u>	<u>CHANNEL CALIBRATION</u>	
1. Reactor Vessel Water Level - Low <del>Low, Level 2</del>	S	Q	R	
2. Reactor Vessel Pressure - High	S	Q	R	

## REACTOR COOLANT SYSTEM

### IDLE RECIRCULATION LOOP STARTUP

#### LIMITING CONDITION FOR OPERATION

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*← replace with paragraph from next page*  
3.4.1.3 ~~An idle recirculation loop shall not be started unless the temperature differential between the reactor coolant within the dome and the bottom head drain is  $\leq 145^{\circ}\text{F}$ , and~~

- a. The temperature differential between the reactor coolant within the idle loop to be started up and the coolant in the reactor pressure vessel is  $\leq 50^{\circ}\text{F}$  when both loops have been idle, or
- b. The temperature differential between the reactor coolant within the idle and operating recirculation loops is  $\leq 50^{\circ}\text{F}$  when only one loop has been idle, and the operating loop flow rate is  $\leq 50\%$  of rated loop flow.

APPLICABILITY: CONDITIONS 1, 2, 3 and 4.

#### ACTION:

With temperature differences and/or flow rate exceeding the above limits, suspend startup of any idle recirculation loop.

#### SURVEILLANCE REQUIREMENTS

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4.4.1.3 The temperature differential and flow rate shall be determined to be within the limit within 30 minutes prior to startup of an idle recirculation loop.



An idle recirculation pump shall not be started unless the temperature differential between the reactor coolant within the dome and the bottom head drain is  $\leq 145^{\circ}\text{F}$ . If the temperature differential cannot be determined, and both recirculation pumps are tripped, the restart of the recirculation pumps is allowed within 30 minutes of the trip of the pumps, provided that drive flow remained above 40% in either loop prior to the pump trip, no HPCI or RCIC injection occurred after the trip of the pumps, and the feedwater temperature remained above  $300^{\circ}\text{F}$  after the trip of the pumps. With either approach, the requirements of specifications 3.4.1.3a and 3.4.1.3b must be considered.