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Data Report of ROSA/LSTF Experiment SB-SG-10 –Recovery Actions from Multiple Steam Generator Tube Rupture Accident–

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Data Report of ROSA/LSTF Experiment SB-SG-10
－Recovery Actions from Multiple Steam Generator Tube Rupture Accident－

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An experiment SB-SG-10 was conducted on November 17, 1992 using the Large Scale Test Facility (LSTF) in the Rig of Safety Assessment-IV (ROSA-IV) Program. The ROSA/LSTF experiment SB-SG-10 simulated recovery actions from multiple steam generator (SG) tube rupture accident under assumptions of coolant injection from high pressure injection (HPI) system of emergency core cooling system into cold and hot legs in a pressurized water reactor. The recovery actions included intact SG secondary-side depressurization by fully opening the relief valve (RV) and primary depressurization by fully opening a power-operated relief valve (PORV) in a pressurizer (PZR).

The primary pressure was kept higher than the broken SG secondary-side pressure due to the HPI coolant injection into the cold and hot legs even after the start of the full opening of the intact SG RV. The full opening of the PZR PORV resulted in the pressure equalization between the primary and broken SG systems as well as the PZR liquid level recovery. Concerning the radionuclide release to environment, the broken SG RV opened once after the initiation of the intact SG RV full opening. The core was filled with saturated or subcooled liquid through the experiment. Significant natural circulation prevailed in intact loop after the start of the intact SG RV full opening. Significant thermal stratification appeared in the hot legs in both loops especially during the time period of the HPI coolant injection into the hot legs.

The experiment was terminated when the cold shut-down condition was confirmed by the restart of primary coolant pump in intact loop after the pressure equalization between the primary and broken SG systems was attained.

The obtained data would be useful to study recovery actions and procedures in the PWR multiple SG tube rupture accident with multiple failures.

This report summarizes the test procedures, conditions and major observation in the ROSA/LSTF experiment SB-SG-10.

Keywords: PWR, LSTF, Steam Generator Tube Rupture Accident, Recovery Actions, High Pressure Injection System, Intact Steam Generator Depressurization, Primary Depressurization, Core Cooling

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ROSA/LSTF 実験 SB-SG-10 データレポート
－蒸気発生器伝熱管複数本破損事故からの回復操作－

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竹田 武司

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ROSA-IV 計画において、大型非定常実験装置(LSTF)を用いた実験(実験番号:SB-SG-10)が 1992 年 11 月 17 日に行われた。ROSA/LSTF SB-SG-10 実験では、加圧水型原子炉の蒸気発生器(SG)伝熱管複数本破損事故からの回復操作を模擬した。このとき、非常用炉心冷却系である高圧注入(HPI)系から低温側配管や高温側配管への冷却材注入を仮定した。また、回復操作として、健全ループ SG の逃し弁(RV)開放による SG 二次側減圧や加圧器(PZR)の逃し弁(PORV)開放による一次系減圧を実施した。

HPI 系から低温側配管や高温側配管への冷却材注入により、健全ループ SG の RV 開放を開始しても一次系圧力は破断ループ SG 二次側圧力よりも高く維持された。しかし、PZR の PORV 開放により、PZR の水位が回復するとともに、一次系と破断ループ SG 二次側の圧力は均圧した。放射性物質の大気放出に関して、健全ループ SG の RV 開放後、破断ループ SG の RV は一回開いた。実験中、炉心は飽和ないしサブクール水で満たされた。健全ループ SG の RV 開放後、健全ループで顕著な自然循環が継続した。また、特に両ループの HPI 系から高温側配管への冷却材注入時に高温側配管での顕著な温度成層が生じた。

一次系と破断ループ SG 二次側の圧力が均圧後、健全ループ一次系冷却材ポンプの再起動による冷温停止状態を確認して実験を終了した。

取得したデータは、PWR の多重故障を伴う SG 伝熱管複数本破損事故時の回復操作および手順の検討に役立てることができる。

本報告書は、ROSA/LSTF SB-SG-10 実験の手順、条件および実験で観察された主な結果をまとめたものである。

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Acronyms and Abbreviations

AFW	Auxiliary Feedwater
ECCS	Emergency Core Cooling System
HPI	High Pressure Injection
LSTF	Large Scale Test Facility
PORV	Power-operated Relief Valve
PWR	Pressurized Water Reactor
PZR	Pressurizer
ROSA	Rig-of-Safety Assessment
RV	Relief Valve
SG	Steam Generator
SI	Safety Injection

1. Introduction

Emergency recovery operation against a steam generator (SG) tube rupture accident in a pressurized water reactor (PWR) needs prompt operator actions to terminate primary coolant discharge to SG secondary-side and to suppress amount of radionuclide released to environment as low as possible. Typical recovery actions include depressurization of intact SG by fully opening a relief valve (RV) to assure the heat sink for the primary system through natural circulation, and the primary depressurization by fully opening a power-operated relief valve (PORV) to equalize primary and broken SG secondary-side pressures and to recover liquid level in a pressurizer (PZR). Meanwhile, the primary pressure may be kept higher than the SG secondary-side pressure when high pressure injection (HPI) system of emergency core cooling system (ECCS) is under operation. Operators thus may terminate the ECCS in the procedure to attain the equalization of primary and broken SG secondary-side pressures. Experimental data, however, have been scarcely obtained for multiple SG tube rupture accident with recovery actions.

A simulation experiment SB-SG-10 on recovery actions from PWR multiple SG tube rupture accident was conducted on November 17, 1992 using the Large Scale Test Facility (LSTF) [1][2] of Rig-of-Safety Assessment-IV (ROSA-IV) Program. The LSTF simulates a Westinghouse-type four-loop 3423 MW (thermal) PWR by a full-height and 1/48 volumetrically-scaled two-loop system. The experiment assumed coolant injection from HPI system of ECCS into cold and hot legs. The recovery actions and timings are as follows. The intact SG secondary-side depressurization by fully opening the RV was initiated 600 s after a scram signal, and was terminated when the hot leg fluid temperature decreased to 547 K in intact loop. The primary depressurization by fully opening the PZR PORV was initiated when the hot leg fluid temperature decreased to 531 K in intact loop, and was terminated when the pressure equalization between the primary and broken SG systems was achieved and the PZR liquid level recovered to 1 m.

The objectives of the ROSA/LSTF experiment SB-SG-10 are to investigate thermal-hydraulic phenomena during multiple SG tube rupture accident and to confirm the effectiveness of the recovery actions for cooling and depressurizing the primary system, as well as to provide experimental data for the assessment of thermal-hydraulic safety analysis computer codes. The obtained data would be useful to study recovery actions and procedures in the PWR multiple SG tube rupture accident with multiple failures.

This report summarizes the test procedures, conditions and major observation in the ROSA/LSTF experiment SB-SG-10. This report also includes more detailed information on the SB-SG-10 experiment than that described in the published paper [3]. All the experimental data were processed carefully and qualified to obtain the best possible accuracy.

2. Overview of LSTF

Figure 2-1 shows a schematic view of the LSTF that simulates a typical 3423 MW (thermal) four-loop Westinghouse-type PWR with a two-loop system model by full height and 1/48 in volume [1]. The reference PWR is Tsuruga Unit-2 of Japan Atomic Power Company. Loops with and without PZR are designated as loop-A and loop-B, respectively. Intact loop and broken loop correspond to loop-A and loop-B, respectively. Hot and cold legs, 207 mm in inner-diameter, are sized to conserve the volumetric scale (2/48) and the ratio of length to square root of pipe diameter to better simulate flow regime transitions in the primary loops [4]. Each loop has an active SG with 141 full-size U-tubes (inner-diameter of 19.6 mm each), inlet and outlet plena, boiler section, steam separator, steam dome, steam dryer, main steam line, four downcomer pipes and other internals (see pp.260-273 in Ref. [1]). Six U-tubes are instrumented for each SG. Tubes 1 and 6 are short tubes (Type 1; see p.267 in Ref. [1]), Tubes 3 and 4 are long tubes (Type 9), and Tubes 2 and 5 are medium-long tubes (Type 5). The LSTF represents the reference PWR bypasses including eight upper-head spray nozzles (inner-diameter of 3.4 mm each) (see p.202 in Ref. [1]) and the hot leg nozzle leakage. The spray nozzles allow bypass flow that amounts to 0.3% of the total core flow rate during initial steady state, while bypass area of the hot leg nozzle is set to allow 0.2% bypass flow for each loop. The LSTF core, 3.66 m in active height, mainly consists of 1064 electrically heater rods to simulate the fuel rod assembly and 104 non-heating tie rods to simulate control rod guide thimble (see p.39 in Ref. [2]). The angle of the PZR surge line to the hot leg is 45°.

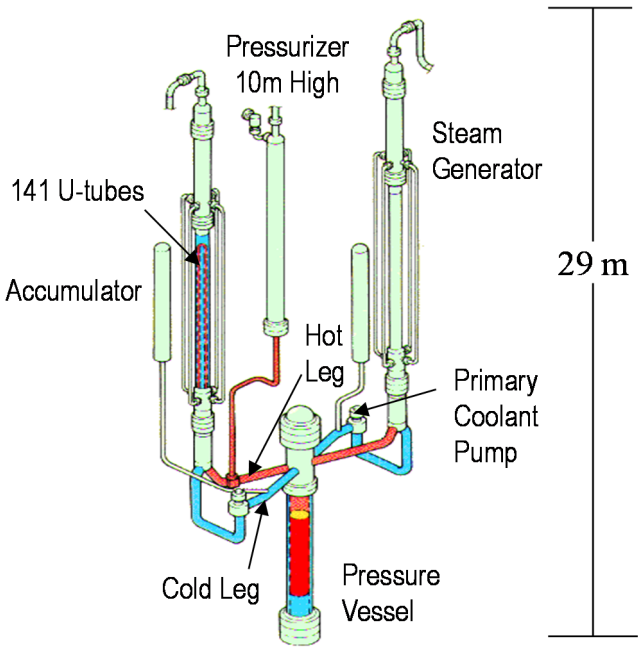

Fig. 2-1 Schematic view of the Large Scale Test Facility (LSTF)

3. Test Conditions and Procedures

Following assumptions were posed to the test conditions, referring to the conditions of a test simulating the Mihama Unit-2 SG U-tube rupture incident [5];

1) Break size (flow area) corresponds to double-ended guillotine break of 1/48 volumetrically-scaled cross-sectional area of about six of SG U-tubes.
2) SG main steam stop valve is closed and main feedwater in both SGs is terminated at a scram signal when the primary pressure decreases to 13.42 MPa.
3) Coolant injection from HPI system with PJ (charging) pump into cold legs in both loops is initiated 10 s after a safety injection (SI) signal at the primary pressure of 12.87 MPa, and is terminated after termination of primary depressurization by fully opening a PZR PORV.
4) Main feedwater in both SGs is restarted 44 s after the SI signal. Intact SG main feedwater is terminated 264 s after the SI signal, while broken SG main feedwater is terminated 125 s after the SI signal.
5) Auxiliary feedwater (AFW) injection into secondary-side of intact SG is initiated after termination of intact SG main feedwater, and is terminated after initiation of intact SG secondary-side depressurization by fully opening the RV. On the other hand, no AFW is injected into secondary-side of broken SG.
6) Coolant injection from HPI system with PH (high pressure injection) pump into hot legs in both loops is initiated 300 s after the SI signal under a condition that the primary pressure is below 10.7 MPa, and is terminated after termination of primary depressurization by fully opening the PZR PORV.
7) As a recovery action, intact SG secondary-side depressurization by fully opening the RV is initiated 600 s after the scram signal, and is terminated when hot leg fluid temperature decreases to 531 K in intact loop.
8) Main steam isolation valves in both SGs are manually closed 600 s after the scram signal.
9) As a recovery action, primary depressurization by fully opening the PZR PORV is initiated when hot leg fluid temperature decreases to 547 K in intact loop, and is terminated when pressure equalization between primary and broken SG systems is achieved and PZR liquid level recovers to 1 m.
10) Coolant injection from HPI system with PH pump into cold legs in both loops is initiated after termination of coolant injection from HPI system with PJ and PH pumps into cold and hot legs respectively, and then primary coolant pump is restarted in intact loop.
11) HPI flow rate is 1:1 to cold legs or hot legs in intact loop and broken loop. Coolant injection temperature from HPI system is 300.2 K.
12) Thresholds of maximum fuel rod surface temperature for the LSTF core protection and power controlling system are as follows;
908K=75%, 918K=50%, 919K=25%, 920K=10%, 923K=0%, of pre-determined value [6].

3.1 Initial Steady State and Boundary Conditions

The specified initial steady state and boundary conditions are listed in **Table 3-1**. Initial steady state conditions such as PZR pressure, fluid temperatures in hot and cold legs were 15.5 MPa, 589 K and 560 K, respectively, according to the reference PWR conditions.

The LSTF initial core power is limited to 10 MW due to a limitation in the capacity of power supply and corresponds to 14% of the volumetrically-scaled (1/48) PWR nominal core power (3423 MW). Radial core power profile was assumed to be flat that corresponds to “Case 1” shown in **Table 3-1**. Axial core power profile is a 9-step chopped cosine with a peaking factor of 1.495. Initial primary mass flow rate in each loop was set to about 30.1 kg/s, considering the initial fluid temperatures with this core power. Initial SG secondary-side pressure was raised to 6.9 MPa to limit the primary-to-secondary heat transfer rate to 10 MW, while 6.1 MPa is nominal value in the reference PWR. Initial PZR liquid level was 2.7 m that corresponds to about 65% of the PZR vessel height (see p.41 in Ref. [2]). Initial SG secondary-side collapsed liquid level was about 9.2 m that corresponds to the SG short tube height.

Proportional heaters in the PZR are used to trim the pressure, while backup heaters are employed to mitigate system heat losses. Powers to the proportional and backup heaters were 4.6 and 23.8 kW, respectively, as the initial conditions. Many regions of the LSTF are equipped with trace heaters to mitigate environmental heat losses.

Figure 3-1 shows the configuration of the break unit. The multiple SG tube rupture was simulated by using a 10.1 mm inner-diameter sharp-edge orifice No.10 (see p.308 in Ref. [1]) in the break unit in a piping connected to N-10 nozzle at inlet plenum and N-11 nozzle at secondary boiler section bottom of SG in broken loop (see p.260 and p.320 in Ref. [1]). The orifice flow area corresponded to double-ended guillotine break of the 1/48 volumetrically-scaled cross-sectional area of about six of SG U-tubes. Venturi flow meter (FE-570-BU; see p.303 in Ref. [1]) is installed in the break unit.

Table 3-2 shows the specified HPI flow rate in each loop that depends on pressure vessel lower plenum pressure, similar to the test condition of the Mihama Unit-2 SG U-tube rupture incident [5]. Coolant injection from the HPI system with PJ (charging) pump into cold legs in both loops was started 10 s after the SI signal at the primary pressure of 12.87 MPa. Coolant injection from the HPI system with PH (high pressure injection) pump into hot legs in both loops was initiated 300 s after the SI signal under a condition that the primary pressure was below 10.7 MPa. Coolant injection from the HPI system with PH pump into cold legs in both loops was started after the termination of HPI coolant injection with PJ pump into the cold legs and with PH pump into the hot legs following the termination of the primary depressurization by fully opening the PZR PORV. The HPI flow rate with PH pump in each loop was planned to be

about 0.26 kg/s. Coolant injection temperature from the HPI system is 300.2 K

3.2 Test Procedures

Table 3-3 shows the specified control logic, operation set points and conditions. The test was initiated by opening a break valve located downstream of the break orifice at time zero.

The scram signal was generated when the primary pressure dropped to 13.42 MPa, causing the closure of SG main steam stop valve, the termination of SG main feedwater, and the start of rotation speed increase in primary coolant pumps up to about 1550 rpm. **Table 3-4** shows the specified rotation speed ratio of primary coolant pump after the scram signal, similar to the test condition of the Mihama Unit-2 SG U-tube rupture incident [5]. The coastdown of primary coolant pumps was started 80 s after the scram signal, and the pump rotation speed was decreased to zero 400 s after the scram signal.

Table 3-5 shows the pre-determined core power decay curve after the scram signal based on calculations considering delayed neutron fission power and stored heat in PWR fuel rod [6], similar to the test condition of the Mihama Unit-2 SG U-tube rupture incident [5]. The core power was maintained at the initial value of 10 MW for 14 s after the scram signal until the scaled PWR core decay power dropped to 10 MW. The LSTF core power started to decay afterwards according to the specified core power.

Set point pressures for opening and closure of the SG RVs were 7.3 and 6.4 MPa respectively, similar to the test condition of the Mihama Unit-2 SG U-tube rupture incident [5]. Flow area of the SG RV was simulated by using a 19.4 mm inner-diameter sharp-edge orifice. Intact SG secondary-side depressurization by fully opening the RV was initiated 600 s after the scram signal, and was terminated when the hot leg fluid temperature decreased to 531 K in intact loop. Intact SG secondary-side pressure was kept constant at 2.6 MPa by means of steam discharge through the intact SG flow control valve.

Main feedwater in both SGs was restarted 44 s after the SI signal. Then, the main feedwater flow rate was planned to be about 1.5 and 1.1 kg/s, respectively, in intact SG and broken SG. Intact SG main feedwater was terminated 264 s after the SI signal, while broken SG main feedwater was terminated 125 s after the SI signal.

No AFW was injected into secondary-side of broken SG. AFW injection into secondary-side of intact SG was started after the termination of intact SG main feedwater, and was terminated after the start of intact SG secondary-side depressurization by fully opening the RV. AFW injection into secondary-side of intact SG was restarted when the intact SG secondary-side collapsed liquid level decreased to a certain liquid level due to steam discharge through the intact SG flow control valve. AFW flow rate in intact loop was planned to be about 0.6-0.72

kg/s to avoid a significant drop in the SG secondary-side liquid level after the start of the SG secondary-side depressurization. The AFW is injected monitoring the narrow-range (0-1 kg/s) feedwater flow rate [Tag Name; FE520B-PAA (for intact loop)] (see pp.257-258 in Ref. [1]).

Primary depressurization by fully opening the PZR PORV was initiated when the hot leg fluid temperature decreased to 547 K in intact loop, and was terminated when the pressure equalization between the primary and broken SG systems was achieved and the PZR liquid level recovered to 1 m. Flow area of the PZR PORV was simulated by using a 6.83 mm inner-diameter sharp-edge orifice.

3.3 Instrumentation

Instruments are equipped in the LSTF to understand and evaluate thermal-hydraulic responses during simulated accidents and transients.

3.3.1 Measured Data

A list of available experimental data is to be shown in **Table A-1**, which is composed of Sequential No., Function ID., Tag Name, measurement location, range, unit and uncertainty. The Tag Name is a fixed naming unique to each measurement. The alphabetical prefix in the Function ID. and Tag Name represent the kind of variable or the kind of measurement as follows;

TE, fluid temperature,

DT, differential temperature,

TW, heater rod and structure temperature,

FE, flow rate measured with conventional (differential pressure) flow meters,

PE, pressure,

MI, miscellaneous instrumented-signal (power, pump rotation speed, *etc.*),

LE, liquid level,

DP, differential pressure,

DE, fluid density with gamma-ray densitometer.

Data from these measurements are processed after the experiment to obtain the “secondary” data such as area-averaged fluid density derived from measurement with three-beam gamma-ray densitometer. These data are stored with Function ID. starting with a prefix of “RC”.

3.3.2 Data Conversion, Reduction and Calibration

The instrumented-signals are recorded in volts by the data logger of DARWIN system (Yokogawa Electric Co.) and are converted into engineering units using appropriate conversion

equations and factors. Some parameters such as flow rate (FE) and liquid level (LE) that employ differential pressure (DP) cell data require the calculation of the single-phase coolant density based on local pressure and fluid temperature data using steam table.

DP cell data for both the differential pressures and liquid levels are corrected based on a similar calibration test for static pressure effect. Three-valve manifold is operated for each of DP cells to obtain zero calibration data for 200 s twice at a little before the break valve opening and at a little after the closure of the break valve.

The applicability of flow rates measured with the conventional flow meters using venturi, orifice or nozzle and DP cell is limited in principle to either single-phase liquid or vapor flow. In addition, the accuracy is poor when the readings are below about 20% of the measurement range, because the flow rate is proportional to the square root of the measured DP. For example, a zero level drift of 1% in the DP cell output may result in the flow rate reading of 10% of the measurement range especially when the actual flow rate is nearly equal to zero. It is thus good to pay attention when the flow rate is below about 20% of the measurement range even though the data are corrected based on a calibration test for static pressure effect.

Two-phase flow instruments such as gamma-ray densitometers use certain conversion equations considering attenuation effects of gamma-ray that goes through coolant flow.

After the data acquisition, some experimental data are calibrated. The high-range pressure data in the PZR and the upper plenum, for example, are corrected based on a zero level shift using the low-range pressure data first, and then all the density data are calibrated at two points with different fluid conditions.

3.3.3 Data Qualification

The experimental data are qualified manually. Thermocouple data are reviewed by using pre-test ambient temperature data for anomalous readings and are mutually compared with readings of instruments in the same vicinity. Pressure transducers are checked for zero level drift as well as any other suspicious behaviors. The outputs of conductance probe, power meters, pump speed and vibration meters and valve position indicators are individually reviewed for inconsistent readings.

The flow meters, DP transducers, gamma-ray densitometers and drag disk transducers require extensive manual qualification efforts. The validity of the flow meters and differential pressure data mostly depends on whether the reading is in the sensitive range of the measurement or not. The data from these instruments are presented with appropriate corrections based on calibration data for each transducer.

Available experimental data are “Good” defined as follows. “Good” means that the type of

data has been reviewed manually and is presumed to lie within the published span and uncertainty values. Certain measurements, however, may be affected by various extraneous factors such as flow velocity, flow regime and wall effects. **Table A-1** shows the list of available experimental data qualified as “Good” for LSTF SB-SG-10 (Run ID designated to be SSA).

Table 3-1 Initial steady state and boundary conditions (1/2)

Core	Initial core power	10 MW
	Radial core power profile	Case 1
	Axial core power profile	9-step chopped cosine, peaking factor = 1.495
Primary Loops	Initial hot leg fluid temperatures	585.2 K
	Initial cold leg fluid temperatures	558.2 K
	Initial mass flow rate	30.1 kg/s / loop
	Initial downcomer-to-hot leg bypass	0.049 kg/s / loop
Pressurizer (PZR)	Initial pressure	15.5 MPa
	Initial liquid level	2.7 m
	Inner-diameter of relief valve orifice	6.83 mm
	Relief valve open / closure	Primary pressure = 16.20 / 16.07 MPa
	Inner-diameter of safety valve orifice	14.5 mm
	Safety valve open / closure	Primary pressure = 17.26 / 17.06 MPa
Steam Generators (SGs)	Initial secondary-side pressure	6.9 MPa
	Initial secondary-side liquid level	9.2 m
	Initial main steam flow rate	2.74 kg/s
	Initial main feedwater flow rate	2.74 kg/s
	Main feedwater temperature	495.2 K
	Inner-diameter of relief valve orifice	19.4 mm
	Relief valve open / closure	SG secondary-side pressure = 7.3 / 6.4 MPa
	Inner-diameter of safety valve orifice	26.6 mm
	Safety valve open / closure	SG secondary-side pressure = 8.68 / 7.69 MPa

Table 3-1 Initial steady state and boundary conditions (2/2)

Break

Location	Piping connected between N-10 nozzle at inlet plenum and N-11 nozzle at secondary boiler section bottom of SG in broken loop (see **Fig. 3-1**)
Type	Sharp-edge orifice
Inner-diameter of orifice	10.1 mm

ECCS (HPI system)

PJ and PH pumps	Fluid temperature	300.2 K
	Ratio of injection flow rate in intact and broken loops	1:1
PJ pump	Initiation of system	10 s after SI signal
	Termination of system	Termination of primary depressurization by fully opening PZR PORV
	Injection location	Cold legs in both loops
PH pump	Initiation of system	300 s after SI signal
	Termination of system	Termination of primary depressurization by fully opening PZR PORV
	Injection location	Hot legs in both loops
	Initiation of system	Termination of coolant injection from HPI system with PJ and PH pumps into cold and hot legs, respectively
	Injection location	Cold legs in both loops

Table 3-2 Specified HPI flow rate in each loop

Pressure vessel lower plenum pressure (MPa)	HPI flow rate (kg/s)
10.83	0.00
10.70	0.19
10.51	0.33
10.24	0.50
9.86	0.66
9.41	0.83
8.93	0.99
8.31	1.16
7.62	1.32
7.34	1.40
6.12	1.40

Table 3-3 Specified control logic, operation set points and conditions (1/2)

Event	Condition
Break	Time zero
PZR heater on	Primary pressure = 15.19 MPa
Generation of scram signal	Primary pressure = 13.42 MPa
Closure of SG main steam stop valve	Generation of scram signal
Termination of main feedwater in both SGs	Generation of scram signal
Start of rotation speed increase in primary coolant pumps	Generation of scram signal
PZR heater off	PZR liquid level below 1 m
Generation of safety injection (SI) signal	Primary pressure = 12.87 MPa
Initiation of core power decay	14 s after scram signal
Initiation of coolant injection from HPI system with PJ pump into cold legs in both loops	10 s after SI signal
Restart of main feedwater in both SGs	44 s after SI signal
Initiation of coastdown of primary coolant pumps	80 s after scram signal
Termination of broken SG main feedwater	125 s after SI signal
Termination of intact SG main feedwater	264 s after SI signal
Initiation of AFW injection into secondary-side of intact SG	Termination of intact SG main feedwater
Initiation of coolant injection from HPI system with PH pump into hot legs in both loops	300 s after SI signal under condition that primary pressure is below 10.7 MPa.
Stop of primary coolant pumps	400 s after scram signal
Initiation of intact SG secondary-side depressurization by fully opening RV	600 s after scram signal
Manual closure of main steam isolation valves in both SGs	600 s after scram signal
Termination of AFW injection into secondary-side of intact SG	Initiation of intact SG secondary-side depressurization by fully opening RV
Initiation of primary depressurization by fully opening PZR PORV	Hot leg fluid temperature decreases to 547 K in intact loop.
Termination of primary depressurization by fully opening PZR PORV	Pressure equalization between primary and broken SG systems is achieved and PZR liquid level recovers to 1 m.
Termination of intact SG secondary-side depressurization by fully opening RV	Hot leg fluid temperature decreases to 531 K in intact loop.

Table 3-3 Specified control logic, operation set points and conditions (2/2)

Event	Condition
Termination of coolant injection from HPI system with PJ pump into cold legs in both loops	Termination of primary depressurization by fully opening PZR PORV
Termination of coolant injection from HPI system with PH pump into hot legs in both loops	Termination of primary depressurization by fully opening PZR PORV
Initiation of coolant injection from HPI system with PH pump into cold legs in both loops	Termination of coolant injection from HPI system with PJ and PH pumps into cold and hot legs, respectively
Restart of primary coolant pump in intact loop	Initiation of coolant injection from HPI system with PH pump into cold legs
Intact SG secondary-side pressure is kept constant at 2.6 MPa through intact SG flow control valve.	Termination of intact SG secondary-side depressurization by fully opening RV
Restart of AFW injection into secondary-side of intact SG	Intact SG secondary-side collapsed liquid level drops to certain liquid level.

Table 3-4 Specified pump rotation speed ratio after scram signal

Time (s)	Rotation Speed Ratio	Time (s)	Rotation Speed Ratio	Time (s)	Rotation Speed Ratio
0	1.000	161	0.361	269	0.148
80	1.000	170	0.325	281	0.127
83	0.951	179	0.298	290	0.114
86	0.927	191	0.271	299	0.0965
89	0.896	200	0.252	320	0.0772
101	0.754	209	0.234	341	0.0579
110	0.644	221	0.213	359	0.0386
119	0.580	230	0.197	380	0.0193
131	0.494	239	0.181	400	0
140	0.442	251	0.167		
149	0.404	260	0.158		

Table 3-5 Pre-determined core power decay curve after scram signal

Time (s)	Power (MW)	Time (s)	Power (MW)	Time (s)	Power (MW)
0	10	50	2.6580	500	1.6865
1	10	60	2.5579	600	1.6257
10	10	80	2.3982	800	1.5419
14	10	100	2.3092	1000	1.5357
15	8.5093	150	2.0900	1500	1.3603
20	5.5464	200	2.0261	2000	1.2058
30	3.6521	300	1.8832	3000	1.0656
40	3.0656	400	1.7569	4000	0.9751

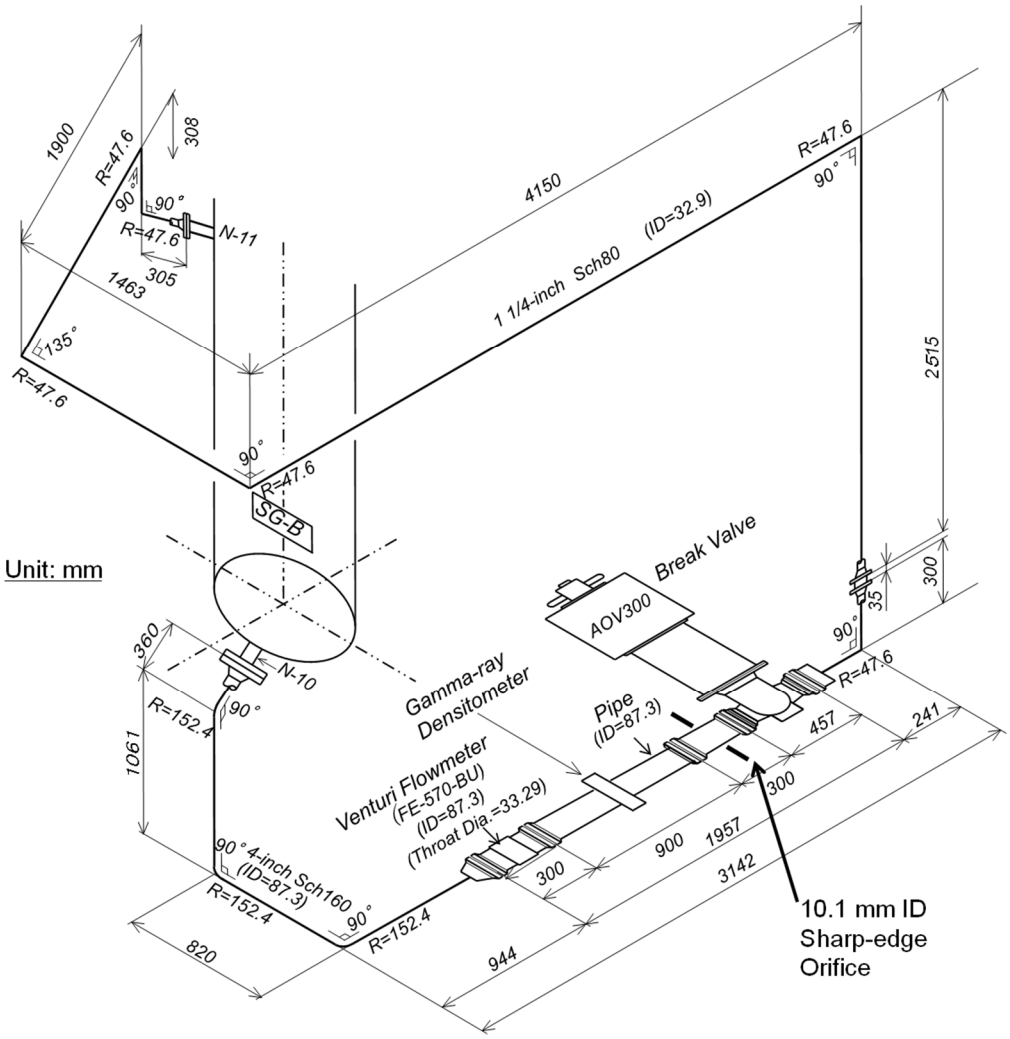

Fig. 3-1 Configuration of break unit

4. Experimental Results

4.1 Initial and Boundary Conditions

Initial steady state conditions achieved in the experiment were in reasonable agreement with the specified values, as shown in **Table 4-1**. The measured values indicated are those averaged for the last 60 s prior to the onset of the break. Initial SG re-circulation ratio estimated from the measured flow rates in the downcomer and SG main steam line was 6.5 in intact loop (loop-A) and 6.3 in broken loop (loop-B). **Table 4-2** shows the chronology of major events until 3294 s at the break valve closure.

4.2 Thermal-hydraulic Responses Concerning Boundary Conditions

As shown in **Fig. 4-1**, the core power started to decay at 72 s. The core power was controlled to the pre-determined value through the experiment because of no core uncovery (to be shown in **Figs. 4-19, 4-20 and 4-21**). The core power turned off at 3267 s.

Figure 4-2 shows that the power values of the PZR proportional and backup heaters were initially kept constant at 4.6 and 24.0 kW, respectively. After the primary pressure decreased to 15.19 MPa, they began to increase up to 6.6 and 55.4 kW and turned to zero by 61 and 66 s, respectively. The proportional and backup heaters were powered-off because of low liquid level in the PZR when the PZR liquid level became below 1 m (as shown in **Fig. 4-3**). The PZR liquid level began to decrease immediately and monotonously after the break. The PZR became empty of liquid by 96 s.

Figures 4-4 and 4-5 show the primary coolant pump rotation speed and the primary loop mass flow rate measured by using a venturi flow meter at each primary coolant pump suction leg, respectively. The pump rotation speed started to increase simultaneously with the scram signal, and reached about 1550 rpm in 8 s. The pump coastdown started at 137 s. The primary loop mass flow rate decreased thereafter according to the decrease in the primary coolant pump rotation speed.

Figures 4-6 and 4-7 show the SG main steam and feedwater flow rates, respectively. The SG main steam was terminated by SG main steam stop valve (AOV-220) at 56 s. The main steam isolation valves of intact and broken SGs (AOV-170 and -200) respectively were manually closed at 807 and 657 s following 600 s after the scram signal. The main feedwater in both SGs was terminated by 56 s by closing the SG main feedwater line valve (AOV-260) following the scram signal. The main feedwater in both SGs was restarted at 117 s: 44 s after the SI signal. The intact SG main feedwater was terminated by 331 s: 264 s after the SI signal. On the other hand, the broken SG main feedwater was terminated by 200 s: 125 s after the SI signal. The main feedwater flow rate by 331 s in intact SG was a little larger than that by 200

s in broken SG.

Figures 4-8 and 4-9 show the SG secondary-side collapsed liquid level and auxiliary feedwater (AFW) flow rate, respectively. The secondary-side collapsed liquid levels of both SGs began to increase after the main steam stop valve closure and the main feedwater termination (**Figs. 4-6 and 4-7**) probably due to the decrease in the net upward steam flow through the boiling section. The secondary-side collapsed liquid levels of both SGs further increased after the restart of the main feedwater in both SGs (**Fig. 4-7**). Flow meter for AFW counts flow rate in the return line from the pump to the refueling water storage tank during the time period except the pump actuation. The AFW injection into the secondary-side of intact SG was initiated at 338 s after the termination of the intact SG main feedwater, and was terminated at 670 s after the initiation of the intact SG secondary-side depressurization. Then, the AFW flow rate was about 0.6 kg/s. No AFW was injected into secondary-side of broken SG. The secondary-side collapsed liquid level of both SGs were enough to cover the SG medium U-tubes until 655 s when the intact SG secondary-side depressurization was started. The broken SG secondary-side collapsed liquid level decreased when the broken SG RV opened. The AFW injection into the secondary-side of intact SG was restarted at 2117 s, and the AFW flow rate was about 0.72 kg/s. The intact SG secondary-side collapsed liquid level began to decrease at 655 s when the intact SG secondary-side depressurization was initiated, and turned to increase at around 2300 s because the steam discharge flow rate through the intact SG RV became lower than the AFW flow rate in intact loop.

Figure 4-10 shows the break flow rate measured by venturi flow meter (FE-570A-BU). The break flow rate was due to the pressure difference between the primary and broken SG secondary systems. The break flow rate became almost zero when the pressure equalization between the primary and broken SG secondary systems was attained.

Figure 4-11 shows the coolant injection flow rate from the HPI system with PJ (charging) pump into the cold leg. The HPI coolant injection was initiated at 80 s: 10 s after the SI signal. The HPI flow rate with PJ pump in intact loop was lower than that in broken loop, though the HPI flow rate was planned to be symmetrical. The HPI coolant injection was terminated at 1365 s after the termination of the primary depressurization by fully opening the PZR PORV at 1314 s. **Figure 4-12** shows the coolant injection flow rate from the HPI system with PH (high pressure injection) pump into the hot leg. The HPI coolant injection was initiated at 370 s: 300 s after the SI signal. Then, the primary pressure was lower than 10.7 MPa. The HPI flow rate with PH pump in intact loop was lower than that in broken loop, though the HPI flow rate was planned to be symmetrical. The HPI coolant injection was terminated at 1376 s after the termination of the primary depressurization. **Figure 4-13** shows the coolant injection flow rate from the HPI system with PH pump into the cold leg. The HPI coolant injection was initiated at

1400 s after the termination of coolant injection from HPI system with PJ and PH pumps into the cold and hot legs respectively. The HPI flow rate with PH pump in intact loop was higher than that in broken loop, though the HPI flow rate was planned to be symmetrical.

4.3 Transient Thermal-hydraulic Responses

Figure 4-14 shows the primary and secondary pressures. The primary pressure began to drop after the break, but was held at rather high value until the start of the primary depressurization by fully opening the PZR PORV after around 150 s because of the HPI coolant injection into the cold and hot legs. The scram signal and the SI signal were generated at 53 and 69 s, respectively, when the primary pressure decreased to 13.42 and 12.87 MPa. The scram signal caused the closure of SG main steam stop valve, the termination of SG main feedwater, and the start of the primary coolant pumps rotation speed increase. The SG secondary-side pressure increased up to 7.3 MPa after the closure of the SG main steam stop valve. The SG secondary-side pressure decreased to 6.4 MPa by opening the RVs in both SGs until about 210 s, as shown in **Fig. 4-15**. The intact SG secondary-side depressurization was initiated by fully opening the RV at 655 s: 600 s after the scram signal. However, the primary pressure was kept higher than the broken SG secondary-side pressure because of the HPI coolant injection into the cold and hot legs. Concerning the radionuclide release to environment, the broken SG RV opened once after the start of the intact SG secondary-side depressurization. The primary depressurization was initiated by fully opening the PZR PORV at 1146 s when the fluid temperature at the hot leg top decreased to 547 K in intact loop (to be shown in **Fig. 4-28**). **Figures 4-16 and 4-17** respectively show the time-integrated discharge flow through the PZR PORV evaluated from liquid level increase in the storage tank connected to the PORV line and the discharge flow rate derived from differential of the integrated discharge flow. The primary depressurization continued until 1277 s when the pressure equalization between the primary and broken SG systems was achieved (**Fig. 4-14**) and the PZR liquid level recovered to 1 m (to be shown in **Fig. 4-26**). The full opening of the PZR PORV thus was effective for the primary depressurization. The primary and broken SG secondary-side pressures increased after the termination of the full opening of the PZR PORV. The intact SG secondary-side pressure increased after the full opening of the intact SG RV was terminated at 1314 s when the fluid temperature at the hot leg top decreased to 531 K in intact loop (to be shown in **Fig. 4-28**).

The intact SG secondary-side pressure turned to decrease at around 1600 s by means of steam discharge through the intact SG flow control valve (FCV-441) in the turbine bypass line (see p.106 in Ref. [1]). Primary coolant pump was restarted in intact loop at 1848 s, resulting in a great decrease in the hot leg fluid temperature in intact loop (to be shown in **Fig. 4-28**). The primary pressure gradually decreased thereafter due to a further drop in the PZR liquid

level (to be shown in **Fig. 4-26**) because of the great decrease in the hot leg fluid temperature. The intact SG secondary-side pressure was kept constant at around 2.6 MPa due to steam discharge through the intact SG flow control valve till the end of the test after around 2000 s.

4.3.1 Thermal-hydraulic Responses in Pressure Vessel

Liquid level behaviors in upper plenum and core

Figures 4-18 and 4-19 respectively show the collapsed liquid levels in upper plenum and core. The upper plenum collapsed liquid level changed in response to the hot leg liquid level (to be shown in **Fig. 4-27**). Liquid level appeared in the upper plenum at around 400 s. The upper plenum liquid level gradually increased due to the HPI coolant injection with the PH pump into the cold legs. The core was filled with saturated or subcooled liquid through the experiment.

Core exit and fuel rod surface temperature responses

Figure 4-20 shows fluid temperatures at the core exit measured at the center [Tag Name; TE-EX040-B22-UCP, -B21-UCP], middle region [TE-EX040-B19-UCP, -B18-UCP] and outer region [TE-EX040-B03-UCP, -B01-UCP] of upper core plate. The core exit temperatures were kept saturated or subcooled. The core exit temperature gradually decreased during the intact SG secondary-side depressurization period, rapidly decreased after the start of the primary depressurization, and largely dropped by the forced circulation flow after the restart of the primary coolant pump in intact loop.

Figures 4-21 shows the core fluid temperatures in high-power bundle (B20) at Positions 9 through 5 (= respectively at 3.610 through 1.830 m above the core bottom (= 0.0 m EL)). The arrangement of high-, mean- and low-power bundles is presented in Ref. [1] (p.228). The core fluid temperatures were maintained saturated or subcooled through the experiment. The core fluid temperature gradually decreased during the intact SG secondary-side depressurization period, rapidly decreased after the start of the primary depressurization, and largely dropped by the forced circulation flow after the restart of the primary coolant pump in intact loop.

Coolant behaviors in pressure vessel

Figure 4-22 shows the downcomer collapsed liquid level. A little drop occurred in the downcomer liquid level during the time period of the primary depressurization by fully opening the PZR PORV.

Figure 4-23 shows the upper-head collapsed liquid level. The upper-head liquid level gradually decreased soon after the break, and became empty of liquid by around 1300 s. The upper-head liquid level began to recover after around 2000 s due to the HPI coolant injection with the PH pump into the cold legs.

4.3.2 Thermal-hydraulic Responses in Primary Loops

Figures 4-24 and 4-25 respectively show the primary coolant pump rotation speed and primary loop mass flow rate, respectively. The primary mass flow rate was almost the same in the two loops until the initiation of the intact SG secondary-side depressurization by fully opening the RV. Single-phase liquid natural circulation started at 457 s when the pump coastdown completed in both loops. Significant natural circulation prevailed in intact loop after the initiation of the intact SG secondary-side depressurization. The circulation flow rate was kept at around 7.5 kg/s until the restart of the primary coolant pump in intact loop. The circulation flow rate in broken loop became low especially during the time period of the primary depressurization by fully opening the PZR PORV. The circulation flow rate largely increased in intact loop after the restart of the primary coolant pump in intact loop, while reverse flow appeared in broken loop.

Figure 4-26 shows the PZR liquid level. The PZR liquid level recovered rapidly and largely after the start of the primary depressurization by fully opening the PZR PORV. A gradual decrease appeared in the PZR liquid level after the termination of the primary depressurization. The PZR liquid level further dropped after the restart of the primary coolant pump in intact loop. The PZR liquid level turned to increase after around 2500 s due to the HPI coolant injection with the PH pump into the cold legs.

Figures 4-27 show liquid levels in the hot legs estimated from fluid densities measured by a three-beam gamma-ray densitometer. **Figures 4-28 and 4-29** show the hot leg fluid temperatures in intact loop and broken loop, respectively. Liquid level appeared in the hot leg in intact loop due to steam ingress from the PZR after the PZR became empty of liquid (**Fig. 4-26**). A little drop occurred in the hot leg liquid level until the liquid level recovered in the PZR. The fluid temperature at the hot leg bottom was significantly lower than that at the hot leg top in both loops especially during the time period of the coolant injection from the HPI system into the hot legs. Significant thermal stratification thus appeared in the hot legs in both loops. The hot leg fluid temperature largely decreased in intact loop after the restart of the primary coolant pump in intact loop.

Figures 4-30 show liquid levels in the cold legs estimated from fluid densities measured by a three-beam gamma-ray densitometer. **Figures 4-31 and 4-32** show the cold leg fluid temperatures in intact loop and broken loop, respectively. The cold legs in both loops were mostly filled with subcooled liquid through the experiment, but a slight drop temporarily appeared in the cold leg in intact loop during the time period of the primary depressurization by fully opening the PZR PORV. The cold leg fluid temperature gradually decreased in intact loop because of the significant natural circulation until the restart of the primary coolant pump in intact loop after the initiation of the intact SG secondary-side depressurization by fully

opening the RV, while the cold leg fluid temperature decreased a little in broken loop due to the low circulation flow rate.

4.3.3 Thermal-hydraulic Responses of Steam Generators

Figures 4-33 and 4-34 show the collapsed liquid levels in the instrumented U-tube upflow-side of intact SG and broken SG, respectively. The instrumented SG U-tubes designated as Tubes 1 and 6 are short tubes (Type 1; see p.267 in Ref. [1], Tubes 3 and 4 are long tubes (Type 9), and Tubes 2 and 5 are medium-long tubes (Type 5). The SG U-tubes were full of liquid through the experiment. Liquid level behaviors were similar to each other in the U-tube upflow-side of intact SG and broken SG.

Figures 4-35 and 4-36 show the fluid temperatures in secondary-side of intact SG and broken SG, respectively. Positions 1, 3, 5, 7 and 9 are located at 0.811, 2.101, 3.381, 5.941 and 8.501 m respectively above the SG U-tube bottom. The fluid temperature in secondary-side of intact SG mostly changed following the saturation temperature, but the fluid temperature in secondary-side of intact SG at Position 9 indicated some superheating after around 2150 s because the intact SG secondary-side collapsed liquid level decreased to a certain low level (**Fig. 4-8**). Coolant at Position 1 in broken SG was kept subcooled till the end of the test after around 690 s, being influenced by low-temperature coolant injection from the AFW system (**Fig. 4-9**).

Table 4-1 Initial steady state conditions

Items	Tag Name (Intact/broken loops)	Specified (Intact/broken loops)	Measured *1 (Intact/broken loops)
Pressure vessel			
Core power (MW)	WE270A-T	10.0±0.12	10.00
Downcomer-to-upper head bypass (%)	None	0.3	Not Measured
Primary loop			
Hot leg fluid temperature (K)	TE020C-HLA/TE160C-HLB	585.2±3.3	589.4 / 587.8
Cold leg fluid temperature (K)	TE070C-CLA/TE210C-CLB	558.2±3.3	559.8 / 559.6
Mass flow rate (kg/s / loop)	FE020A-LSA/FE160A-LSB	30.1±1.01	31.53 / 31.48
Downcomer-to-hot leg bypass (kg/s)	FE010-HLA/FE150-HLB	0.049±0.0065	0.072 / 0.064
Pressurizer (PZR)			
Pressure (MPa)	PE300A-PR	15.5±0.064	15.49
Liquid level (m)	LE280-PR	2.7±0.016	2.72
Steam generator			
Secondary-side pressure (MPa)	PE430-SGA / PE450-SGB	6.9±0.032	6.89 / 6.91
Secondary-side liquid level (m)	LE430-SGA / LE450-SGB	9.2±0.054	9.21 / 9.20
Steam flow rate (kg/s)	FE440-SGA / FE480-SGB	2.74±0.11	2.65 / 2.62
Main feedwater flow rate (kg/s)	FE430-SGA / FE470-SGB	2.74±0.065	2.75 / 2.66
Main feedwater temperature (K)	TE430-SGA / TE470-SGB	495.2±3.1	497.4 / 497.3
Auxiliary feedwater temperature (K)	TE880-RWST	300.2±1.9	301.2
High pressure injection system			
Temperature (K)	TE880-RWST	300.2±1.9	301.2

*1 Averaged for 60 s (-60 to 0 s)

Table 4-2 Chronology of major events until break valve closure

Time (s)	Event
0	Break valve open
53	Scram signal
56	Closure of SG main steam stop valve Termination of main feedwater in both SGs Start of primary coolant pumps rotation speed increase (to 1550 rpm in 8 s)
69	Safety injection signal
72	Initiation of core power decay
80	Initiation of coolant injection from HPI system with PJ pump into cold legs
117	Restart of main feedwater in both SGs
137	Initiation of coastdown of primary coolant pumps
200	Termination of broken SG main feedwater
331	Termination of intact SG main feedwater
338	Initiation of AFW injection into secondary-side of intact SG
370	Initiation of coolant injection from HPI system with PH pump into hot legs
457	Stop of primary coolant pumps
655	Initiation of intact SG secondary-side depressurization by fully opening RV
657	Manual closure of broken SG main steam isolation valve
670	Termination of AFW injection into secondary-side of intact SG
807	Manual closure of intact SG main steam isolation valve
1146	Initiation of primary depressurization by fully opening PZR PORV
1277	Termination of primary depressurization by fully opening PZR PORV
1314	Termination of intact SG secondary-side depressurization by fully opening RV
1365	Termination of coolant injection from HPI system with PJ pump into cold legs
1376	Termination of coolant injection from HPI system with PH pump into hot legs
1400	Initiation of coolant injection from HPI system with PH pump into cold legs
1848	Restart of primary coolant pump in intact loop
2000 to test end	Intact SG secondary-side pressure was kept constant at around 2.6 MPa by means of steam discharge through intact SG flow control valve.
2117	Restart of AFW injection into secondary-side of intact SG
2924	Restart of primary coolant pump in broken loop
3267	Core power off
3294	Break valve closure

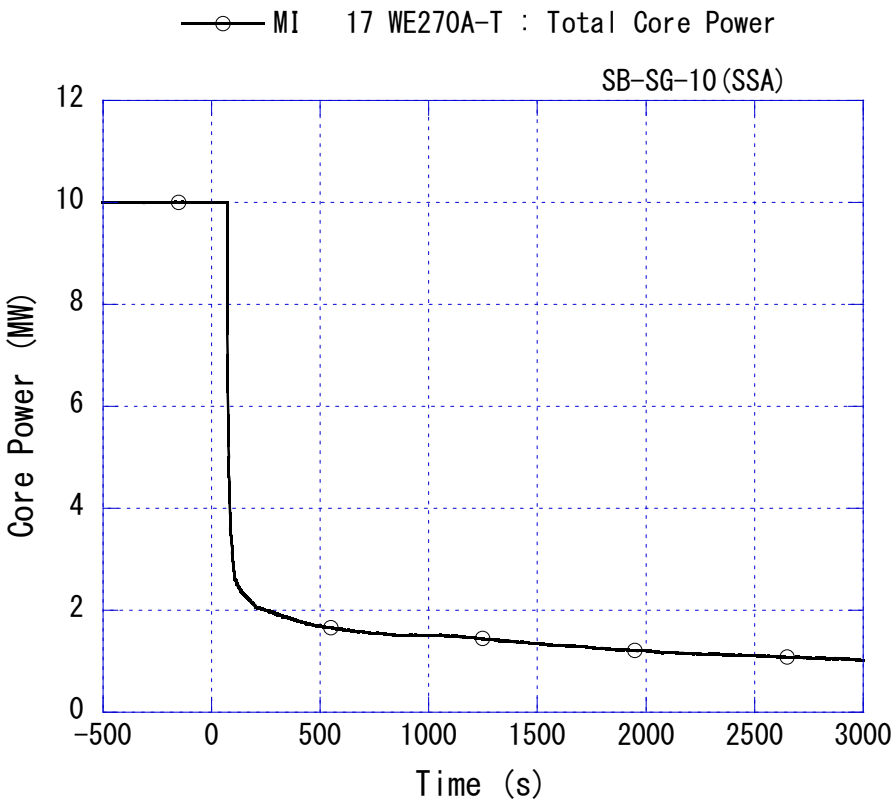

Fig. 4-1 Core power

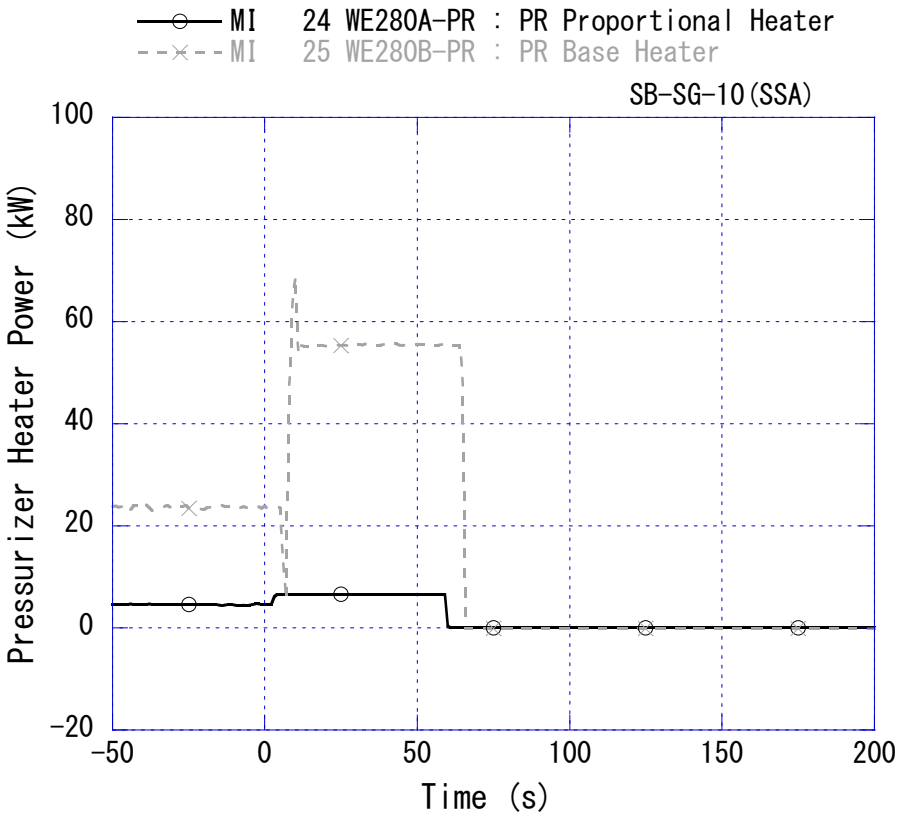

Fig. 4-2 Pressurizer heater power

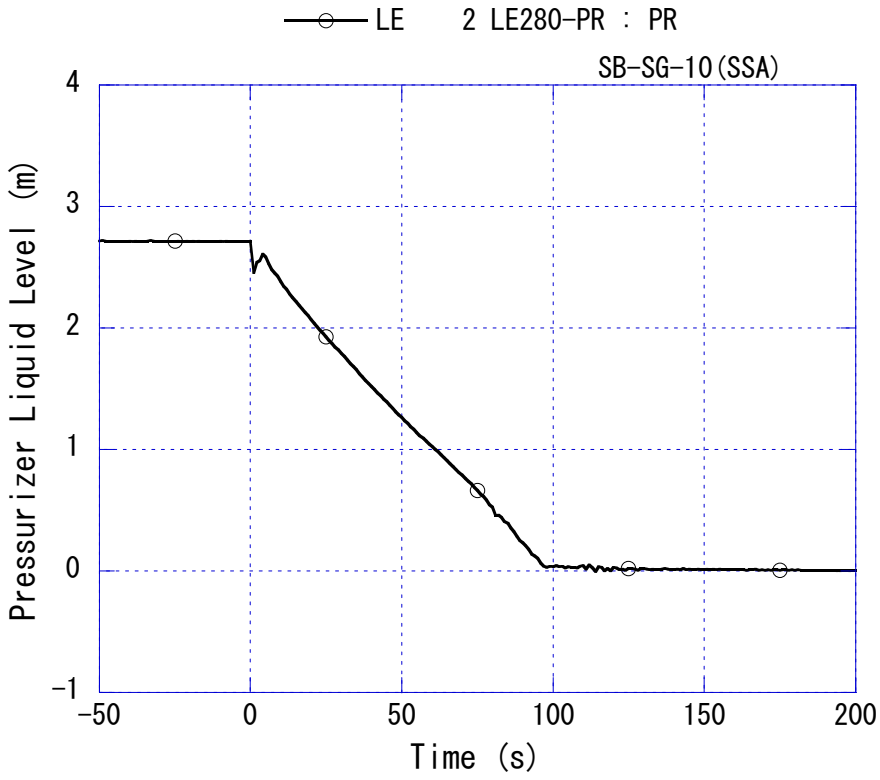

Fig. 4-3 Pressurizer liquid level (-50 to 200 s)

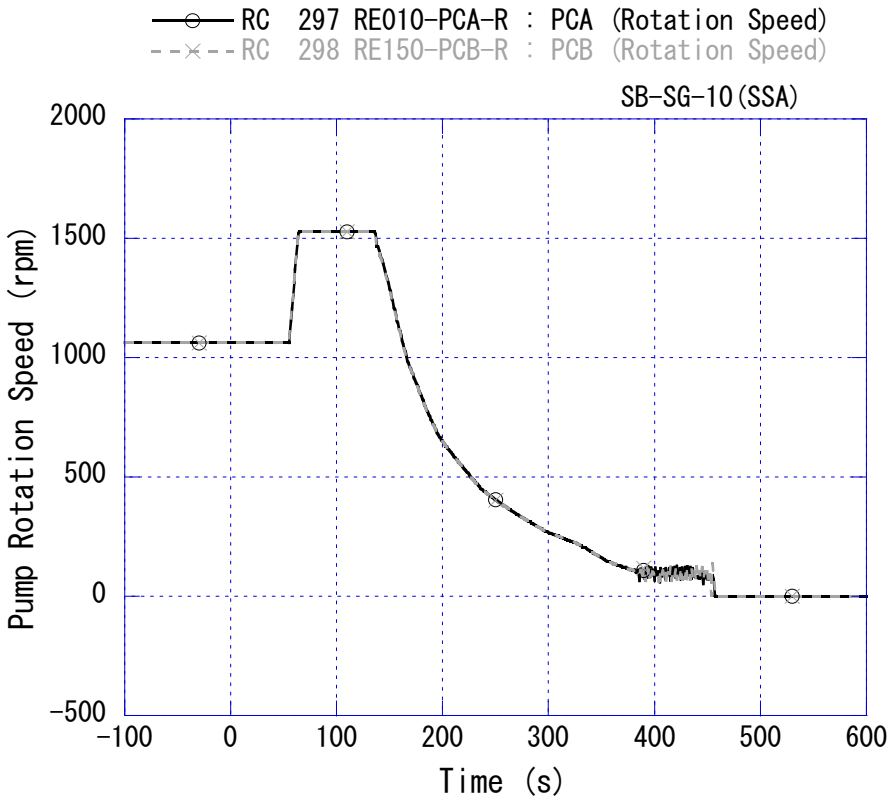

Fig. 4-4 Primary coolant pump rotation speed (-100 to 600 s)

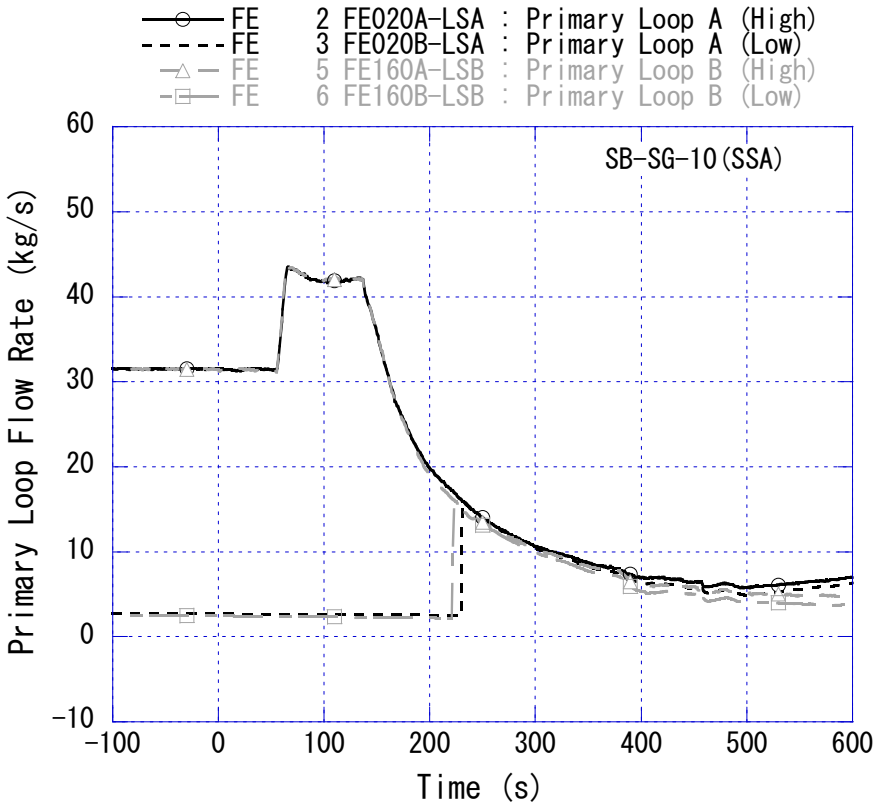

Fig. 4-5 Primary loop mass flow rate (-100 to 600 s)

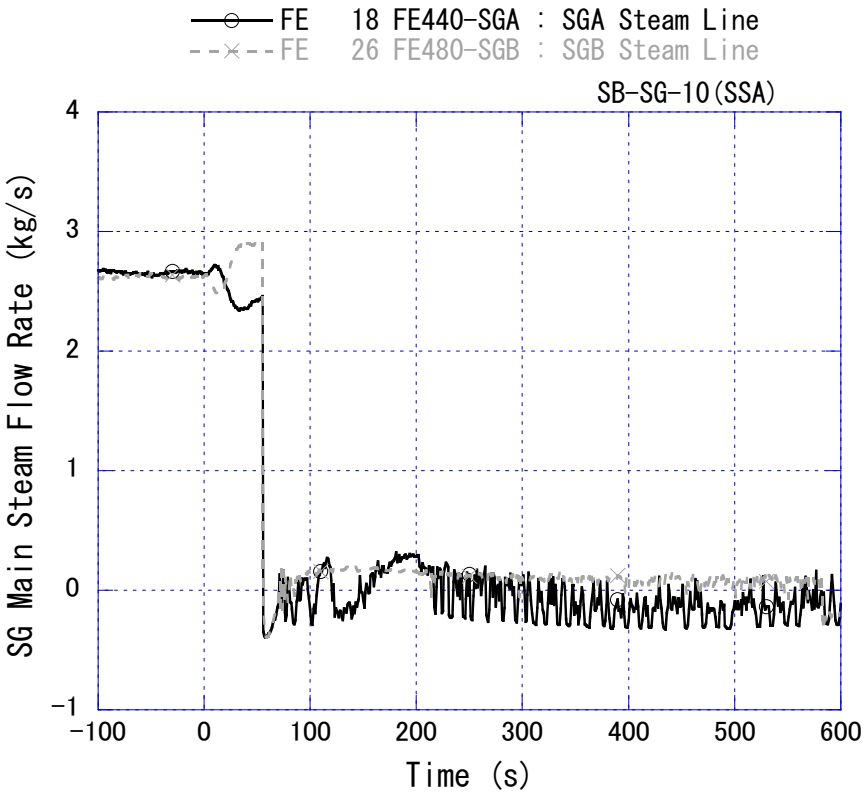

Fig. 4-6 SG main steam flow rate

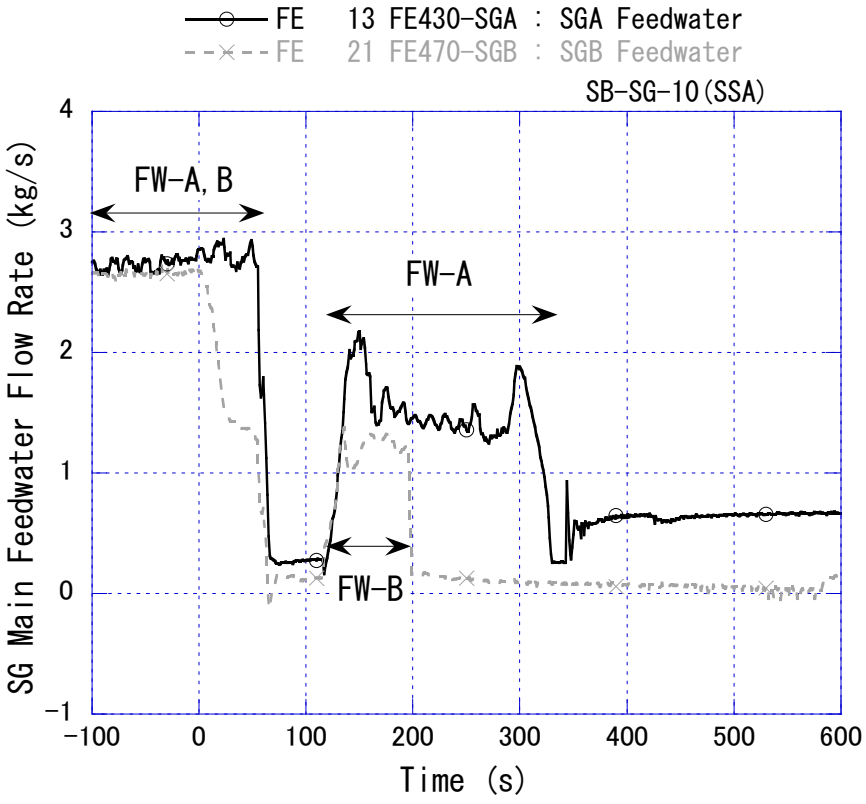

Fig. 4-7 SG main feedwater flow rate

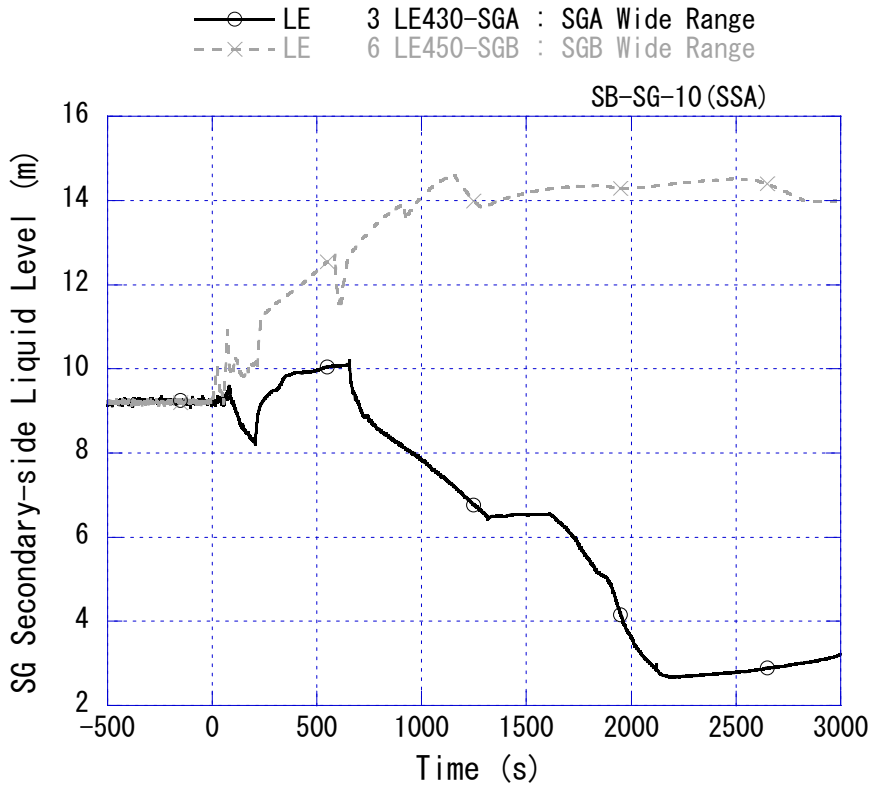

Fig. 4-8 SG secondary-side collapsed liquid level

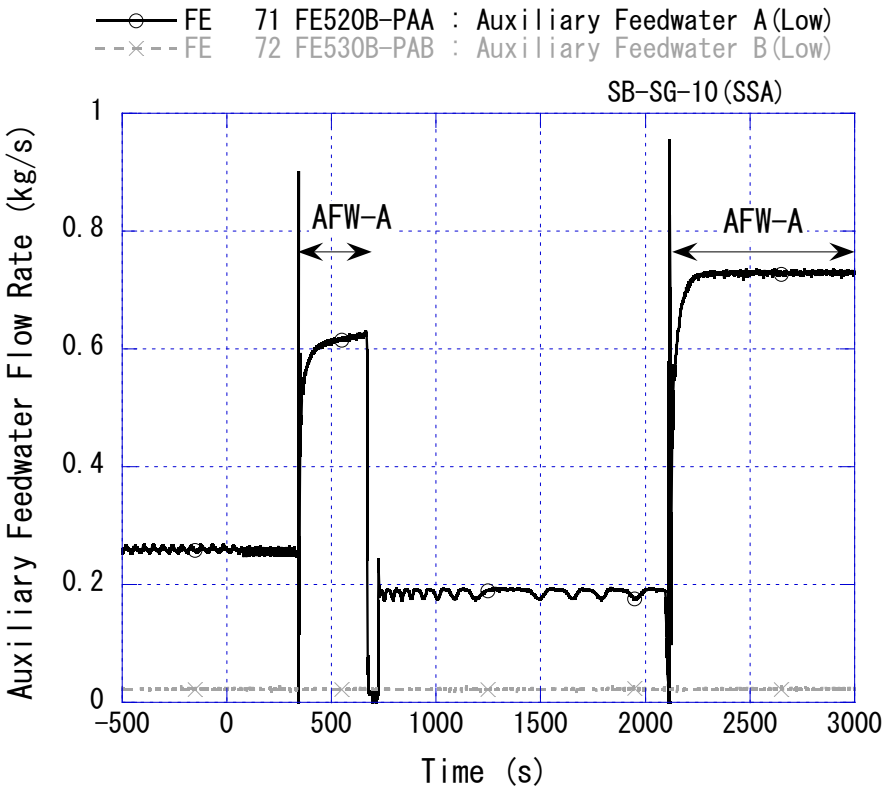

Fig. 4-9 Auxiliary feedwater flow rate

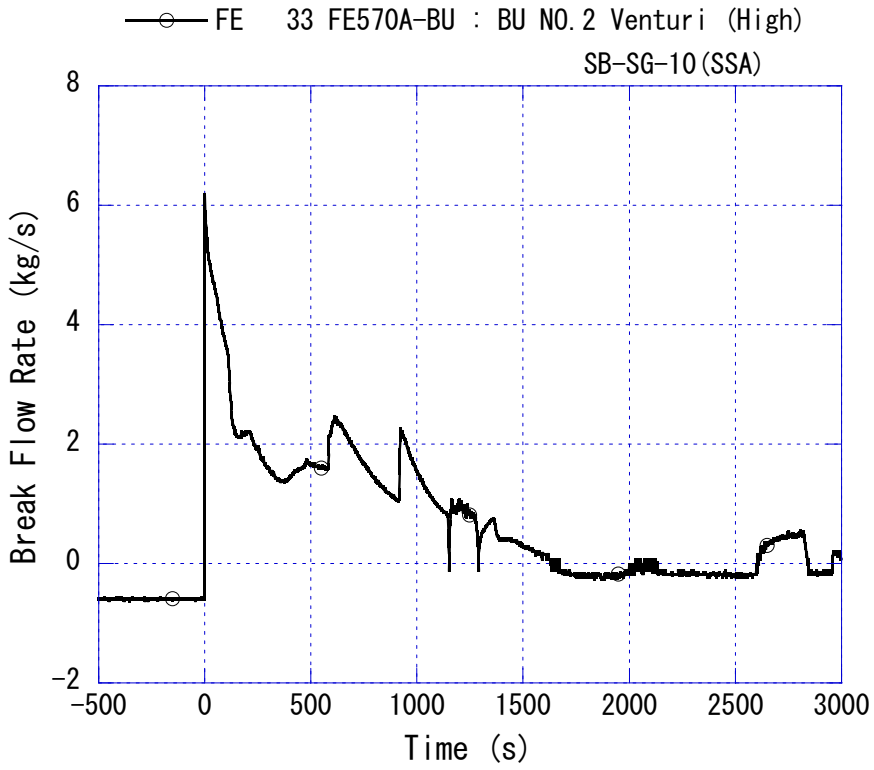

Fig. 4-10 Break flow rate (venturi data)

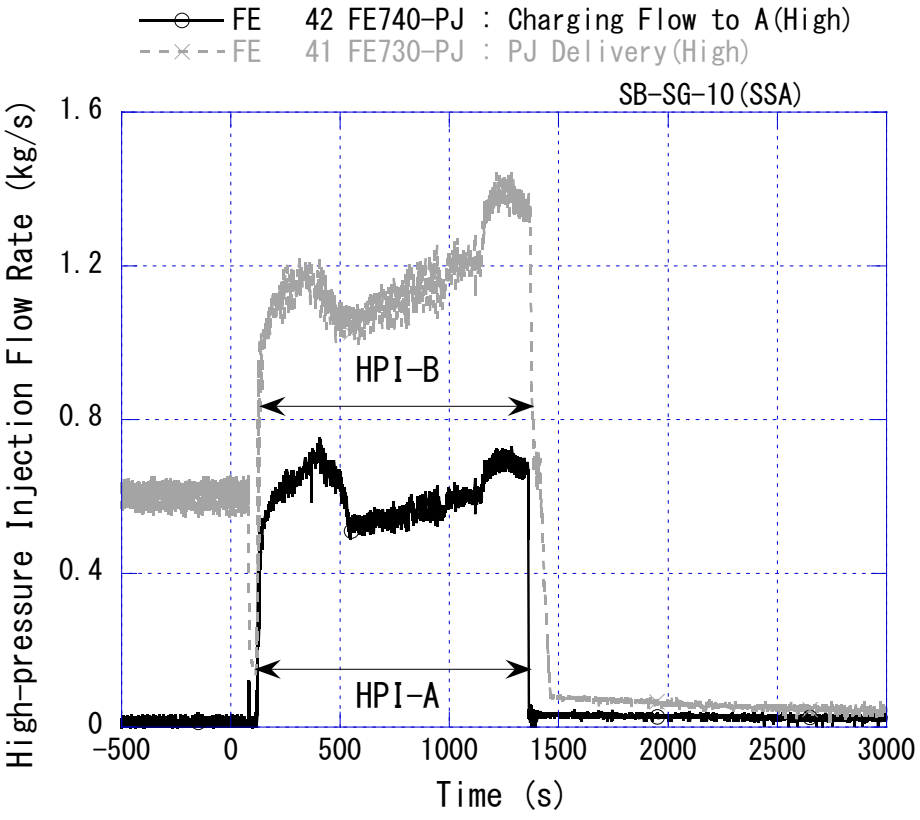

Fig. 4-11 Coolant injection flow rate from HPI system with PJ pump into cold leg

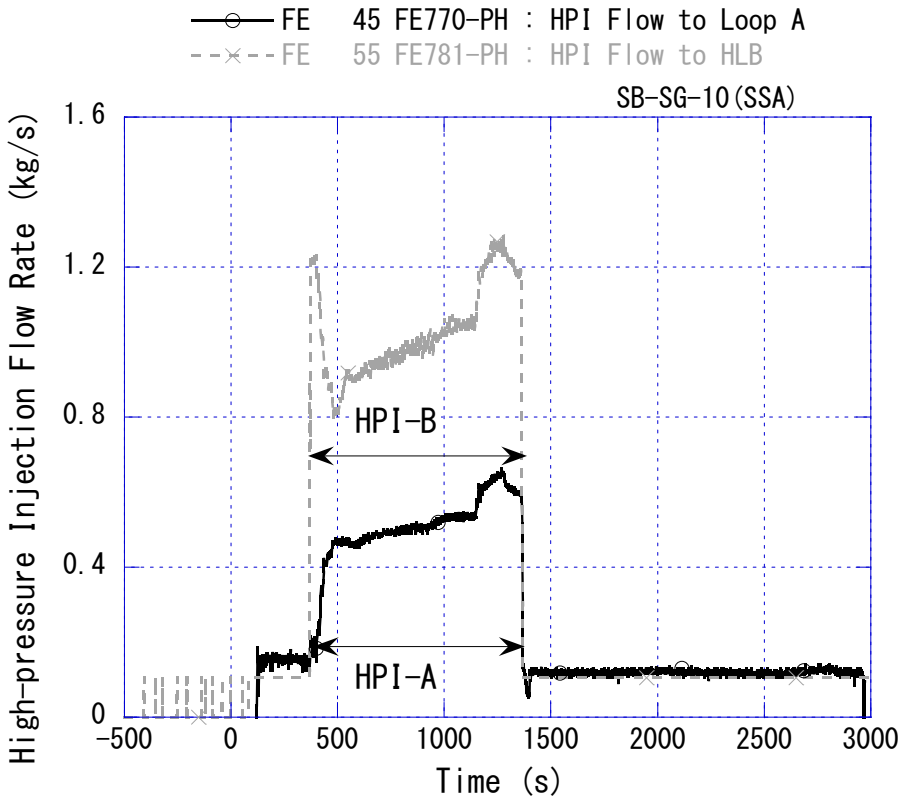

Fig. 4-12 Coolant injection flow rate from HPI system with PH pump into hot leg

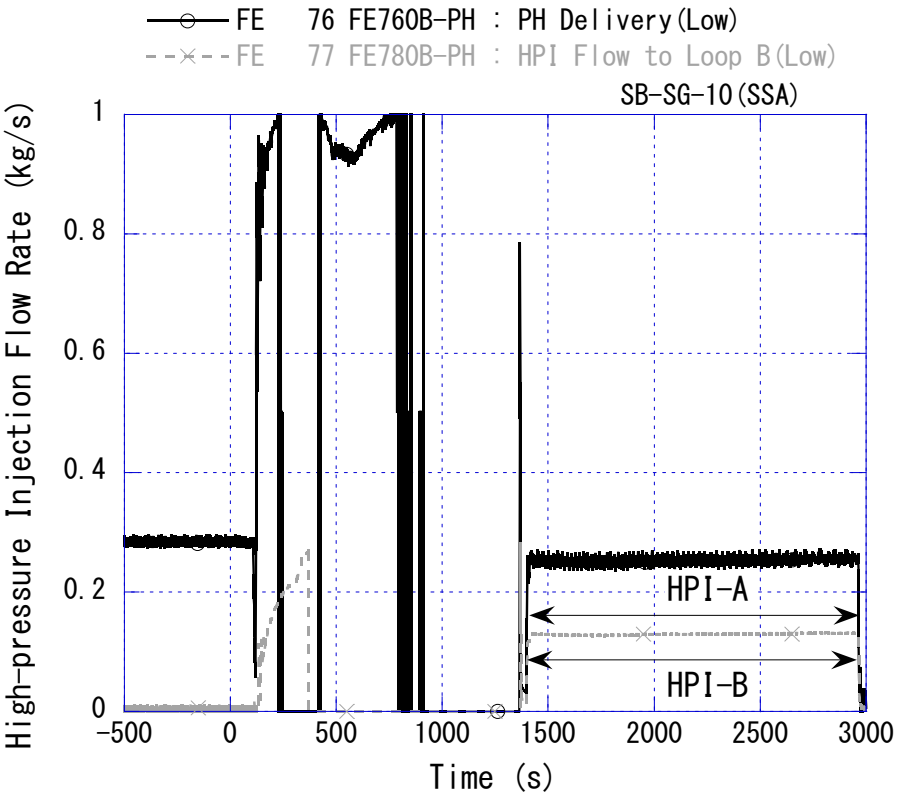

Fig. 4-13 Coolant injection flow rate from HPI system with PH pump into cold leg

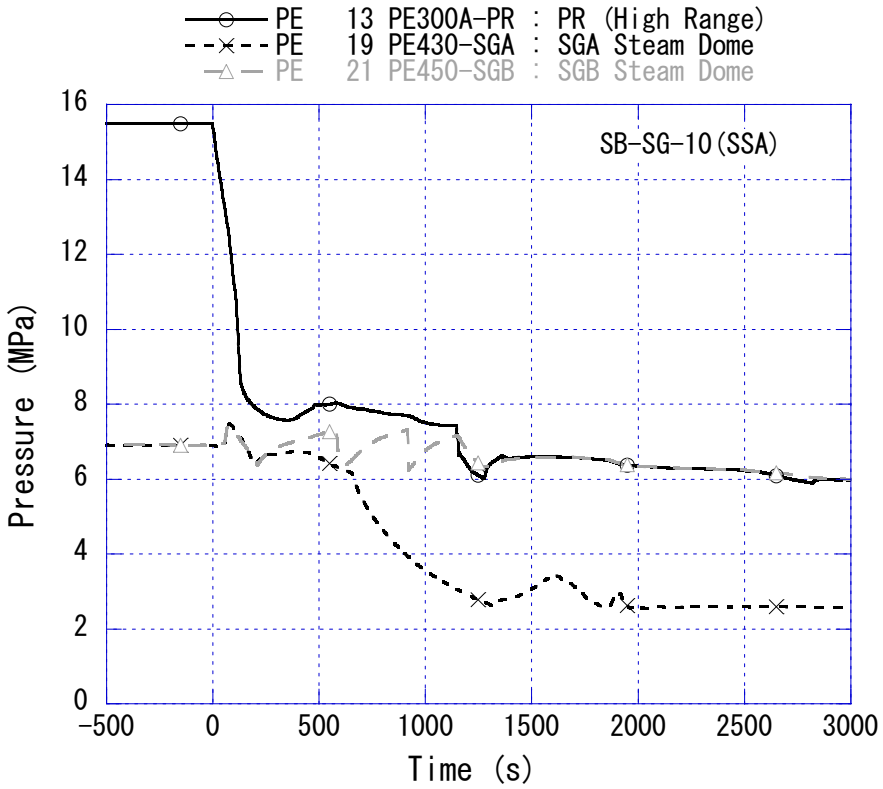

Fig. 4-14 Primary and secondary pressures

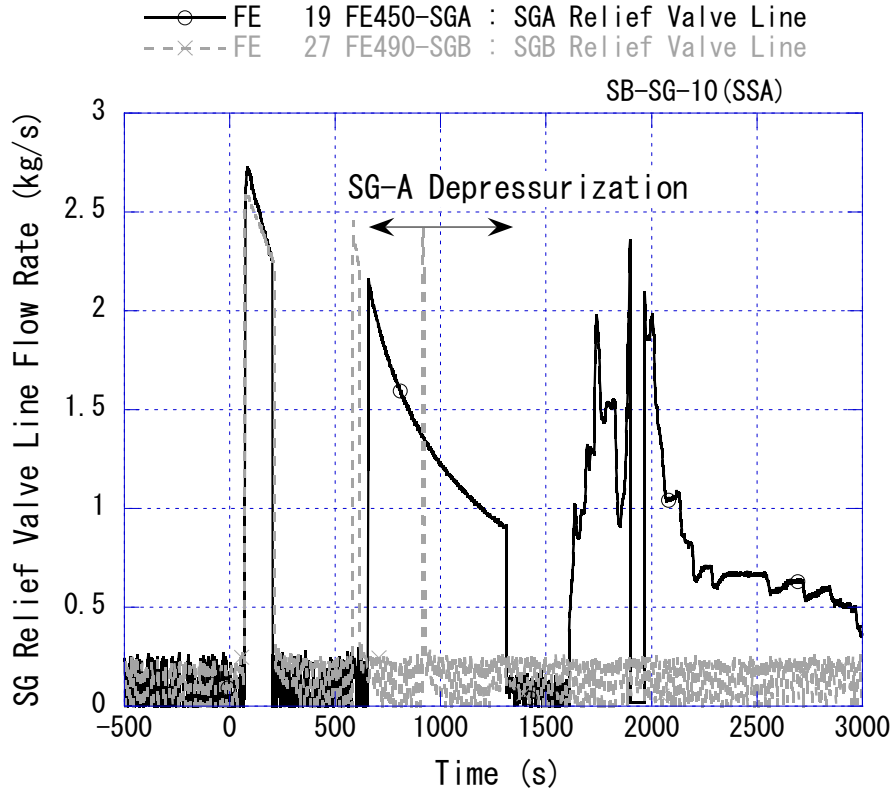

Fig. 4-15 SG relief valve line flow rate

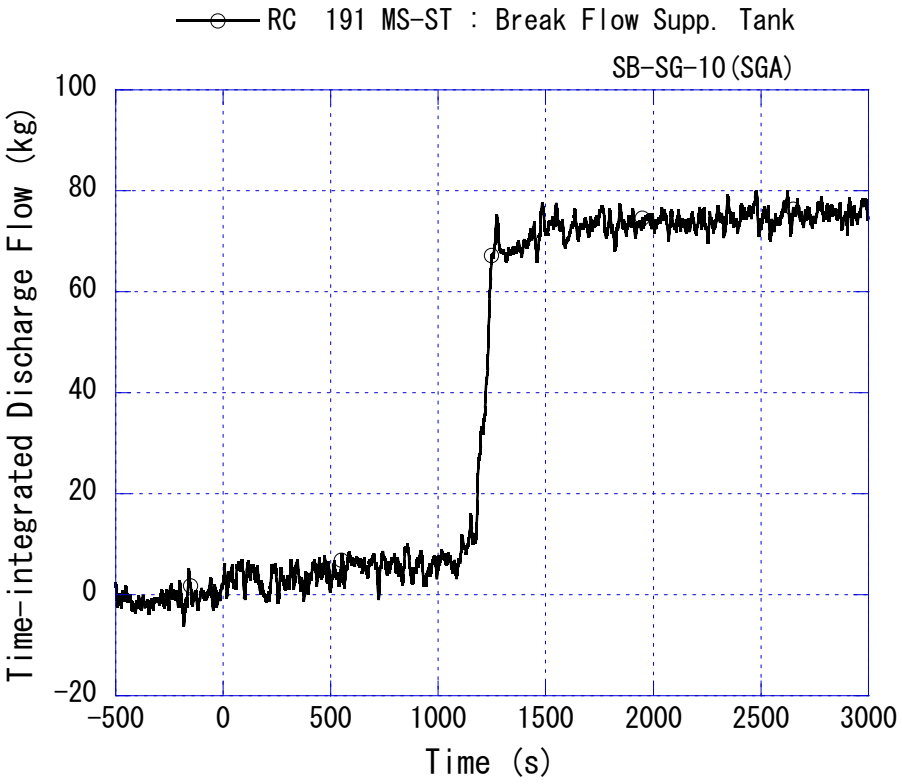

Fig. 4-16 Time-integrated discharge flow through pressurizer PORV

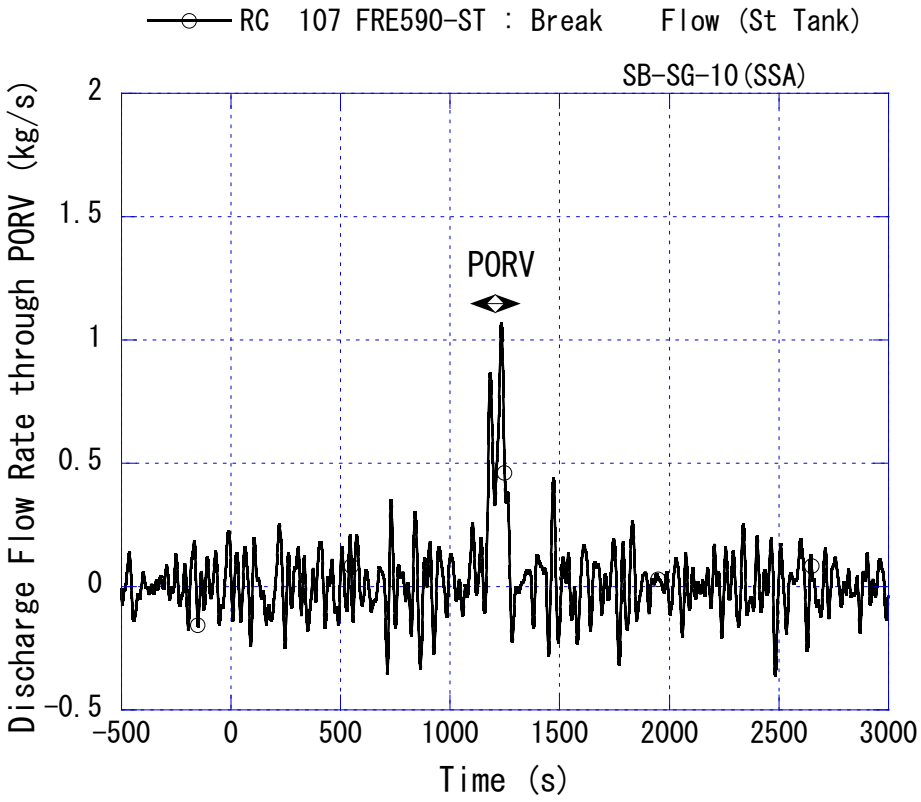

Fig. 4-17 Discharge flow rate through pressurizer PORV

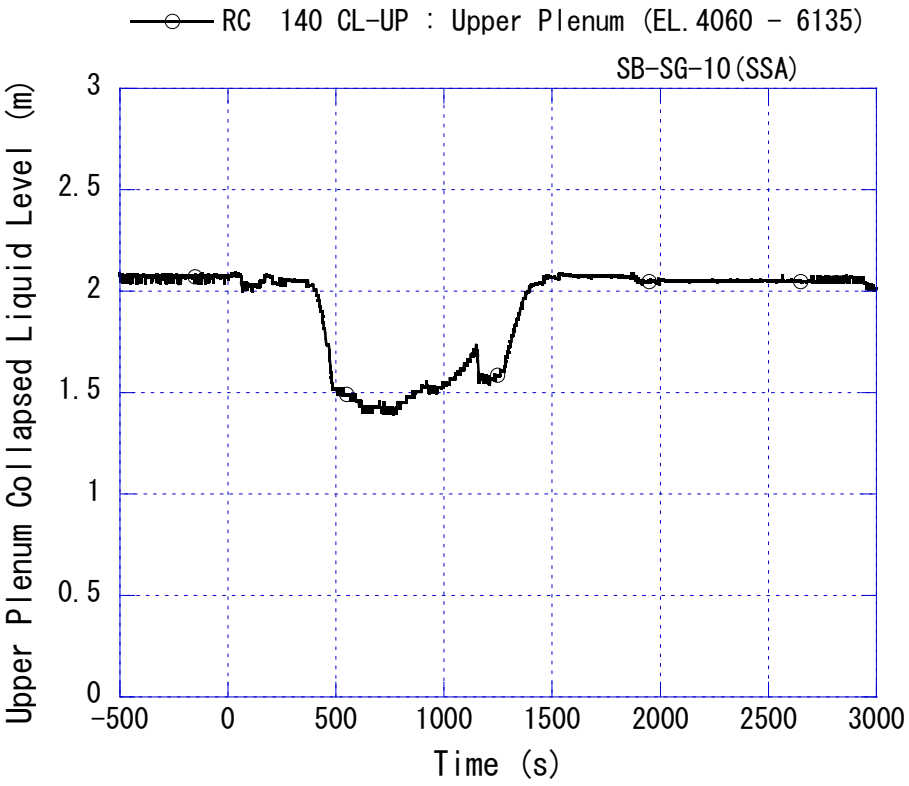

Fig. 4-18 Upper plenum collapsed liquid level

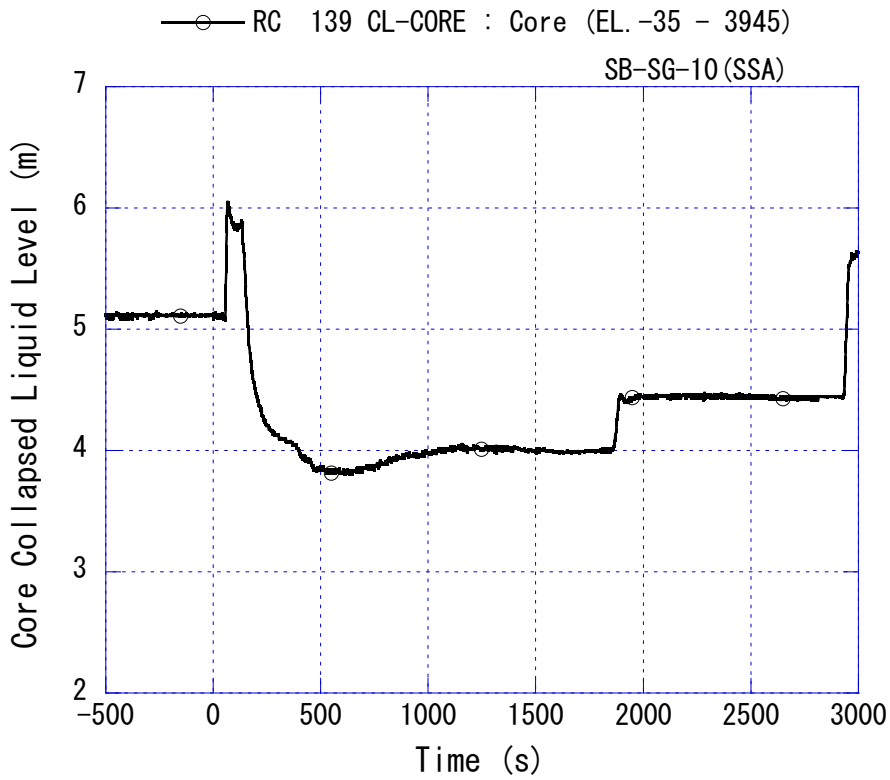

Fig. 4-19 Core collapsed liquid level

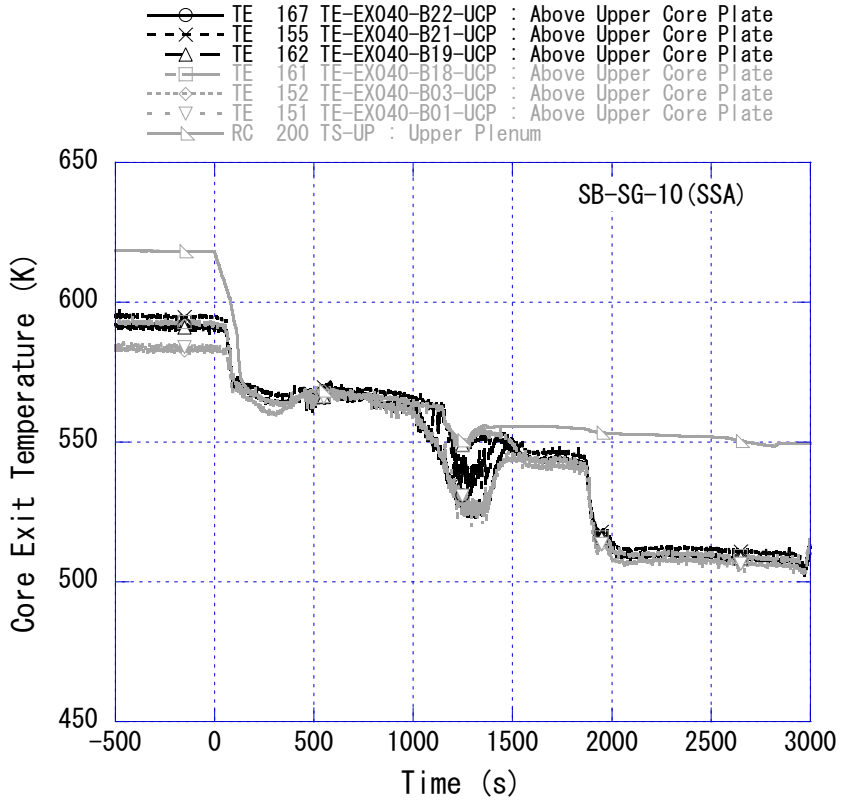

Fig. 4-20 Core exit temperature

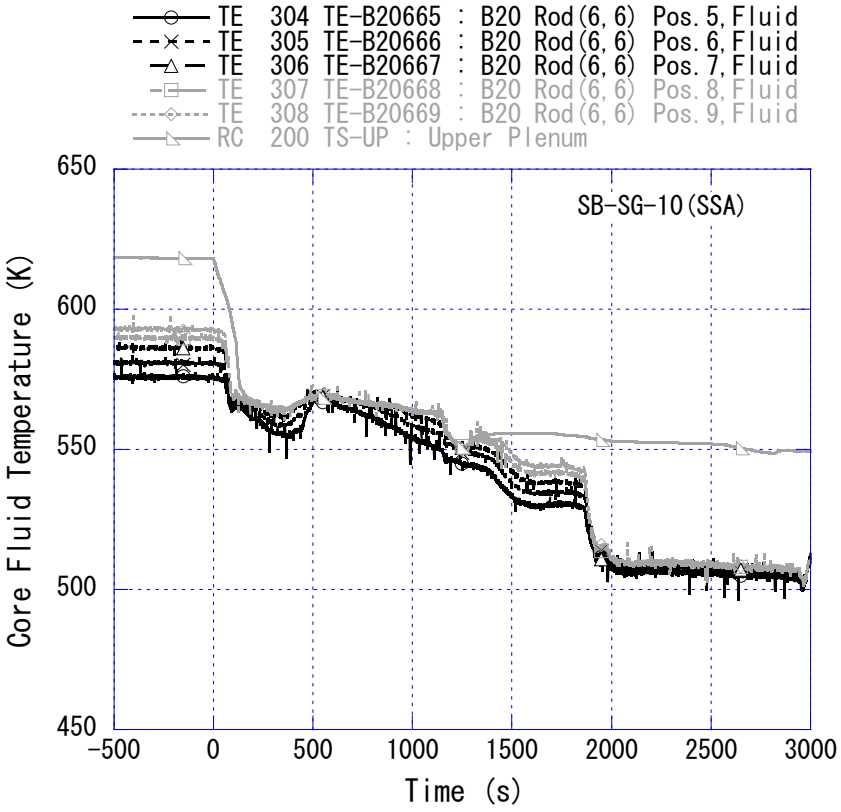

Fig. 4-21 Core fluid temperatures in high-power bundle at Positions 9 through 5

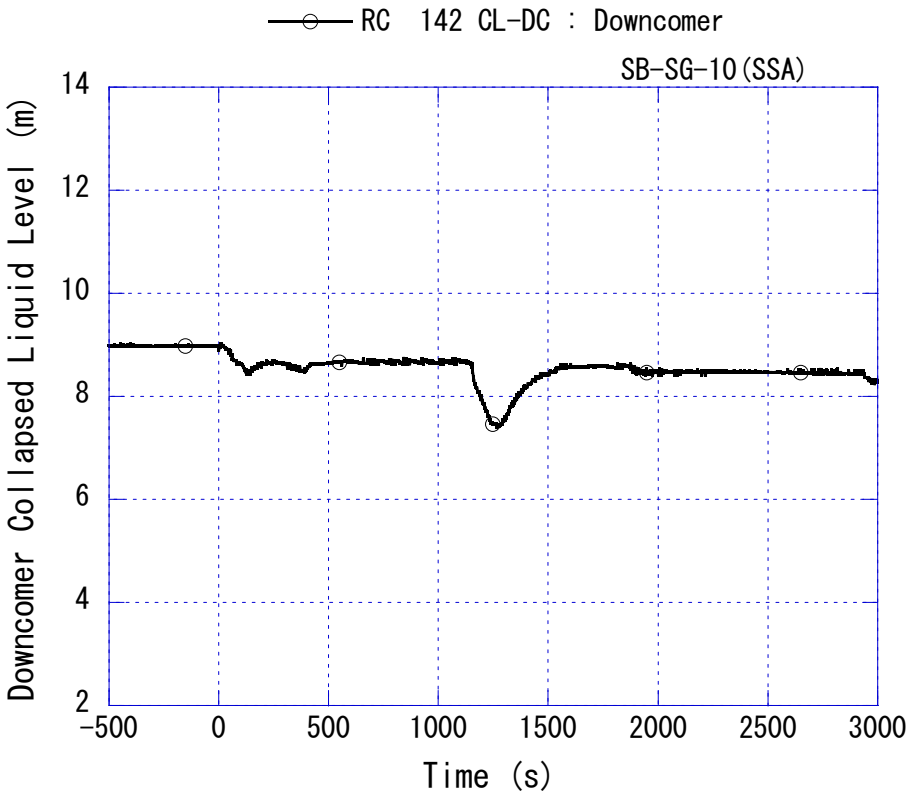

Fig. 4-22 Downcomer collapsed liquid level

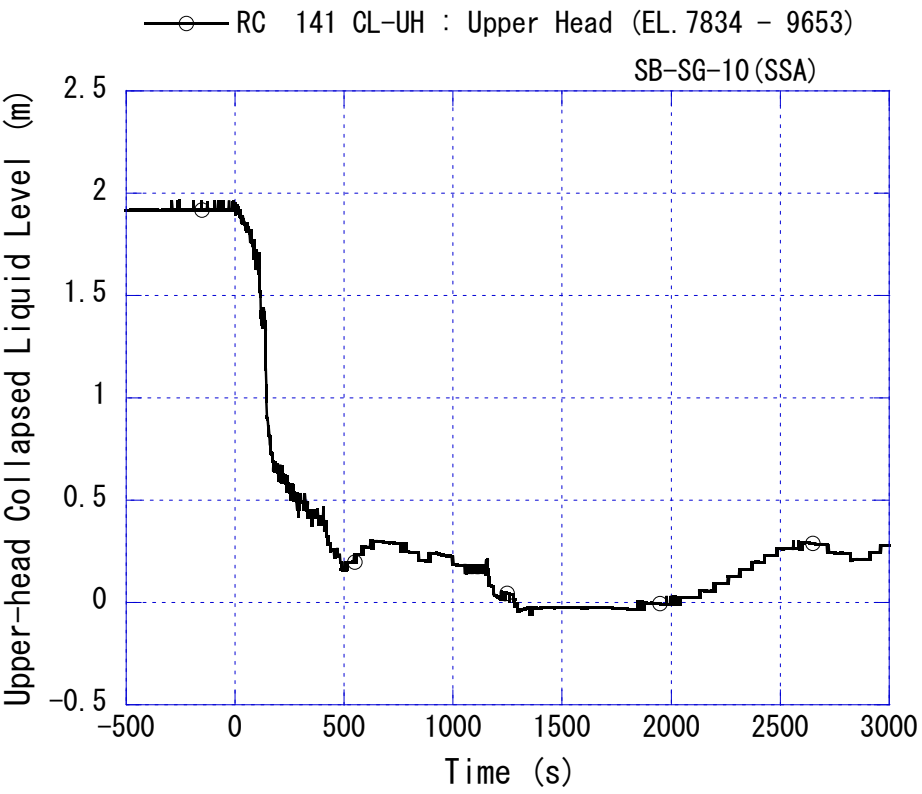

Fig. 4-23 Upper-head collapsed liquid level

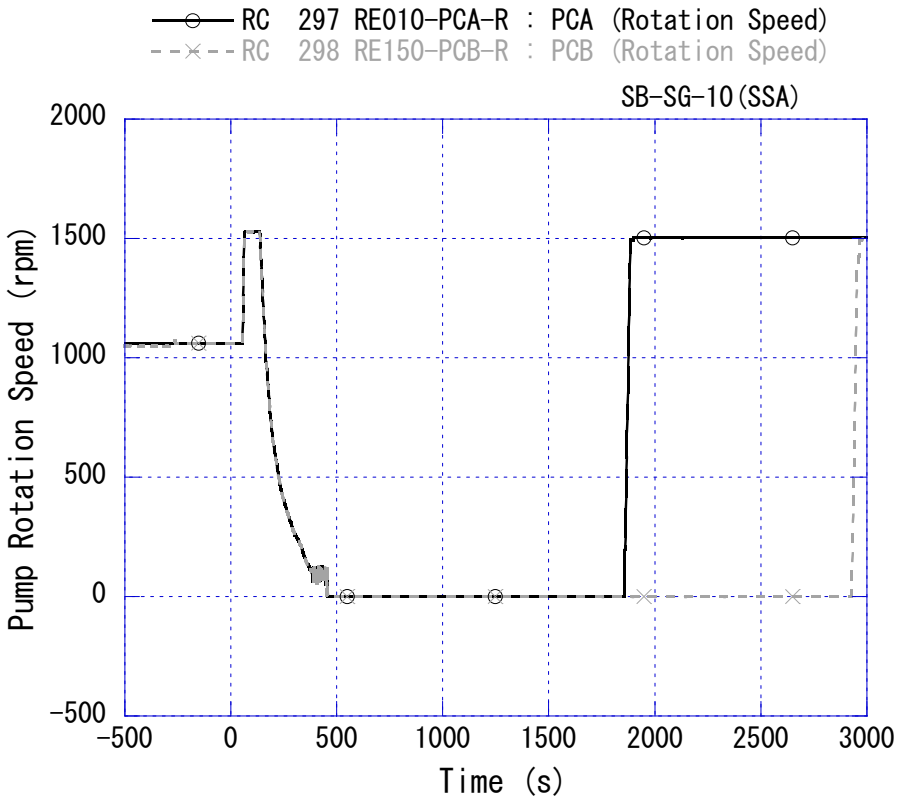

Fig. 4-24 Primary coolant pump rotation speed (-500 to 3000 s)

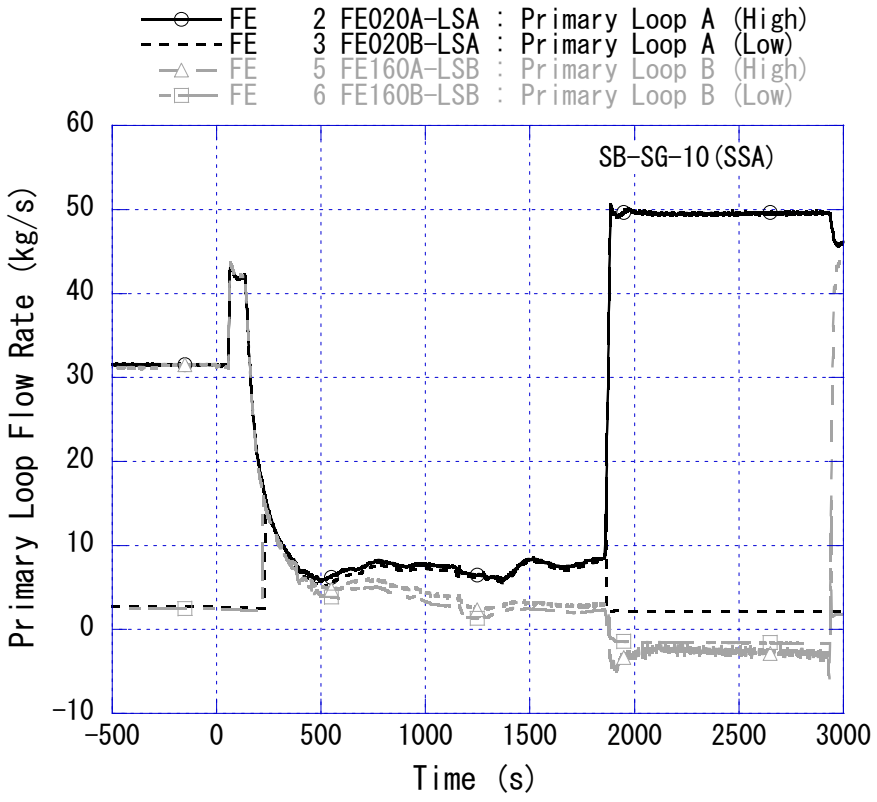

Fig. 4-25 Primary loop mass flow rate (-500 to 3000 s)

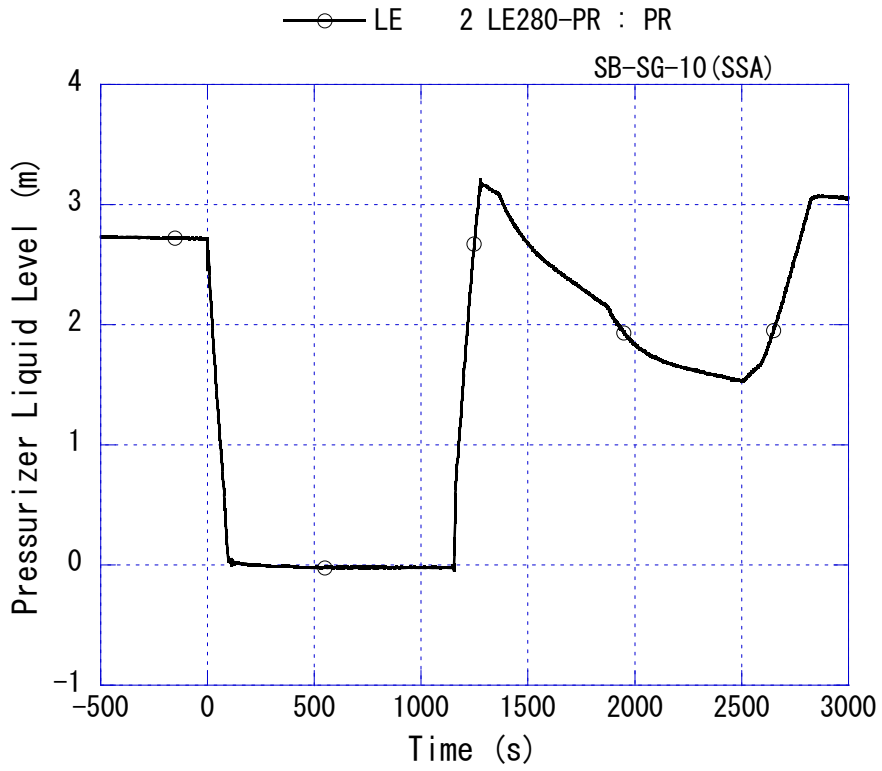

Fig. 4-26 Pressurizer liquid level (-500 to 3000 s)

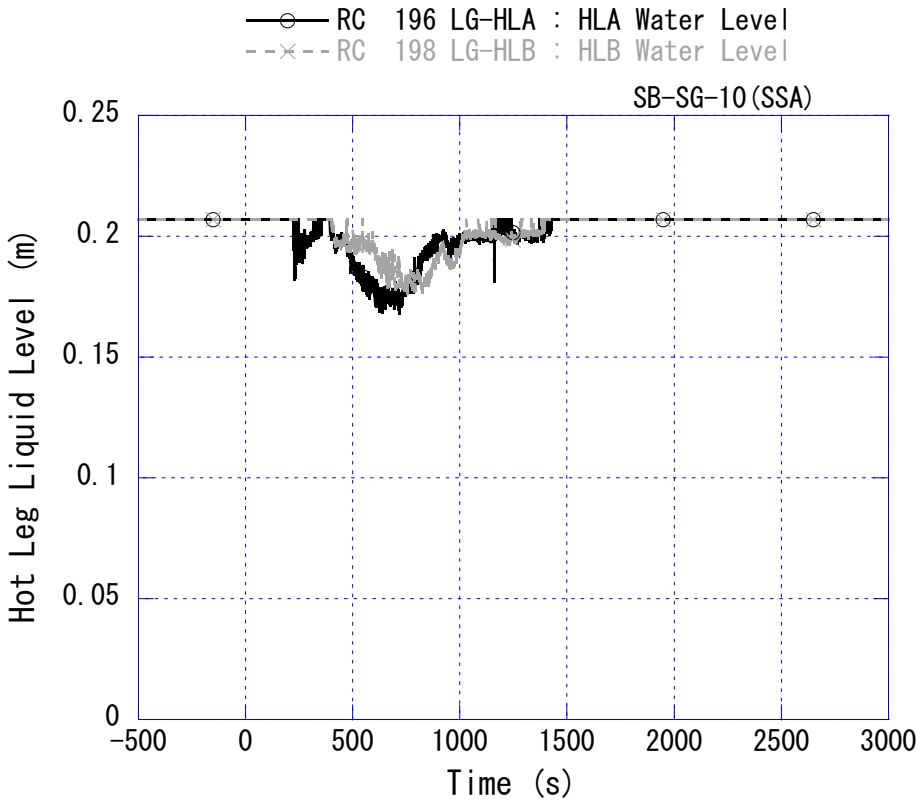

Fig. 4-27 Hot leg liquid level

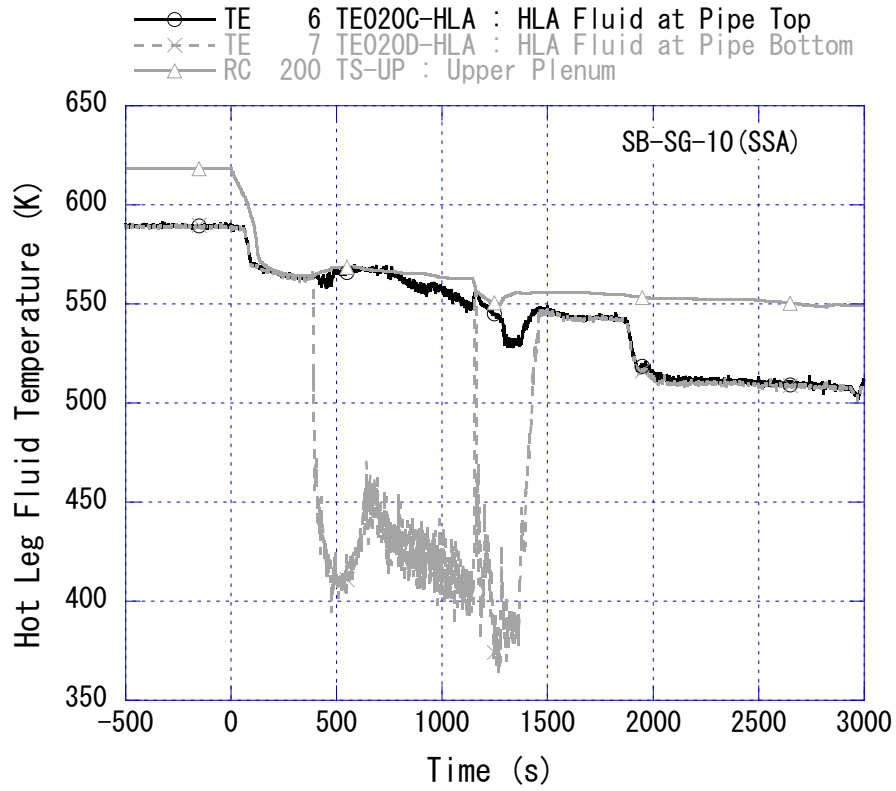

Fig. 4-28 Hot leg fluid temperature in intact loop

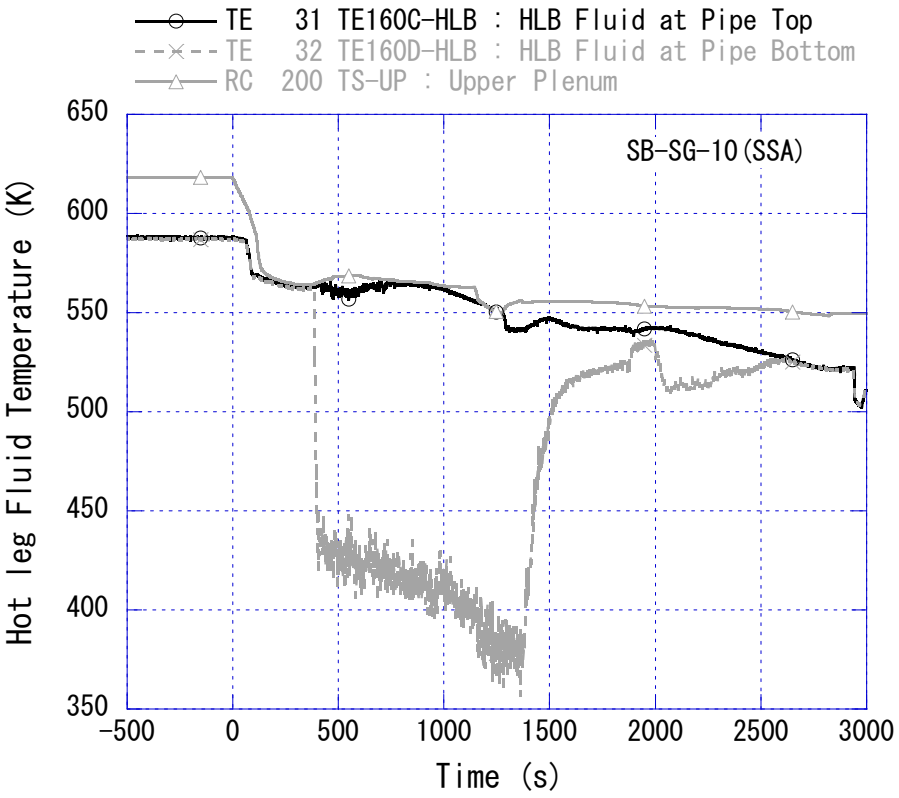

Fig. 4-29 Hot leg fluid temperature in broken loop

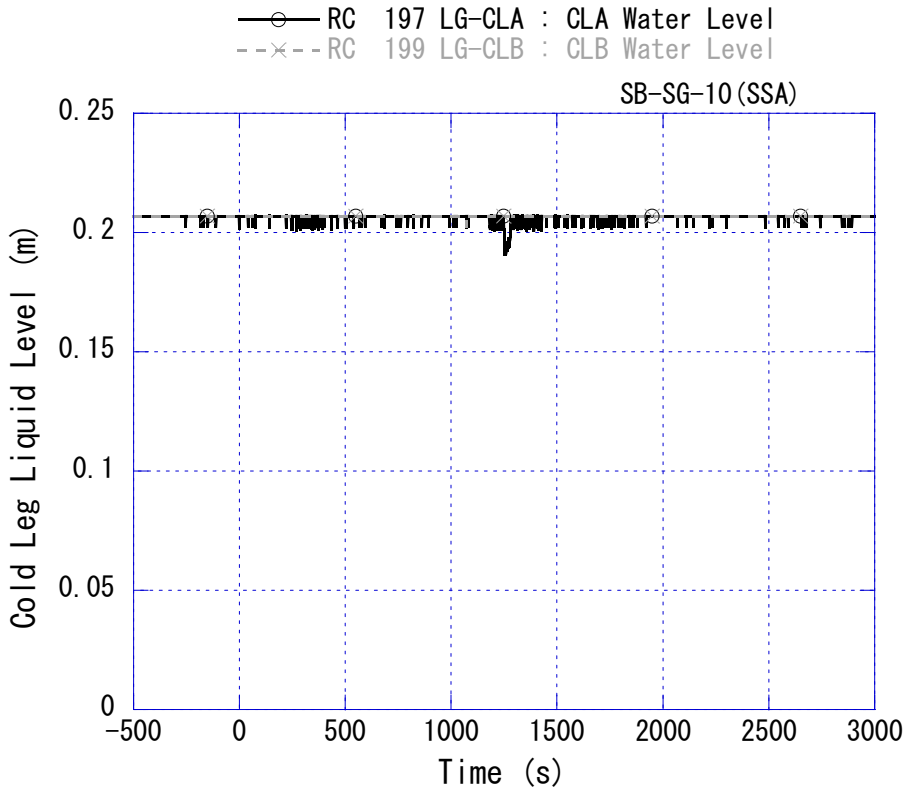

Fig. 4-30 Cold leg liquid level

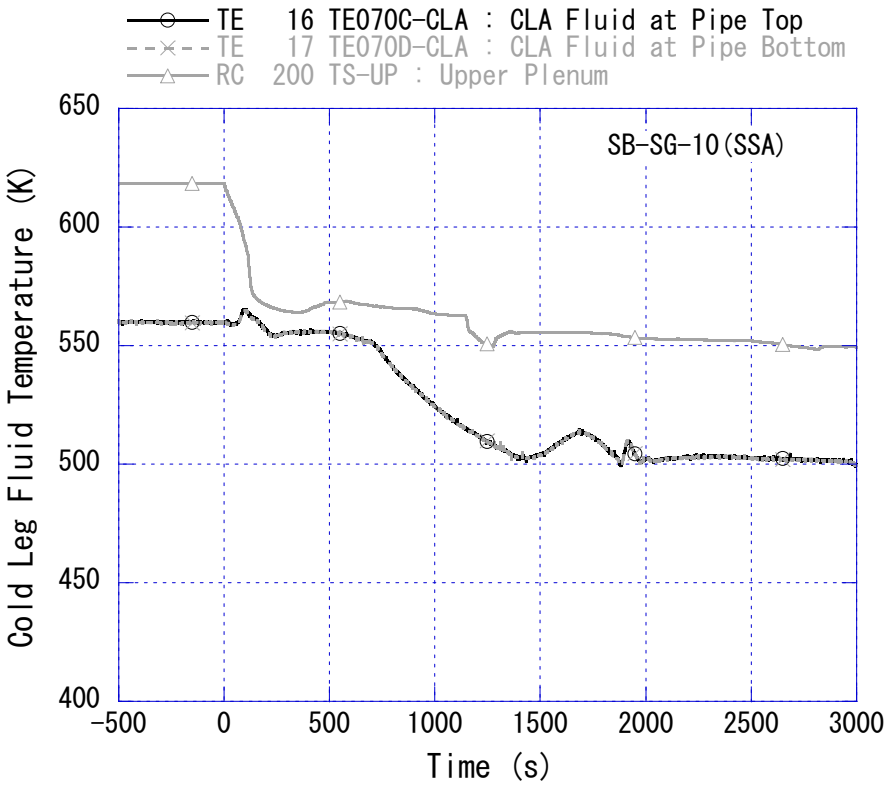

Fig. 4-31 Cold leg fluid temperature in intact loop

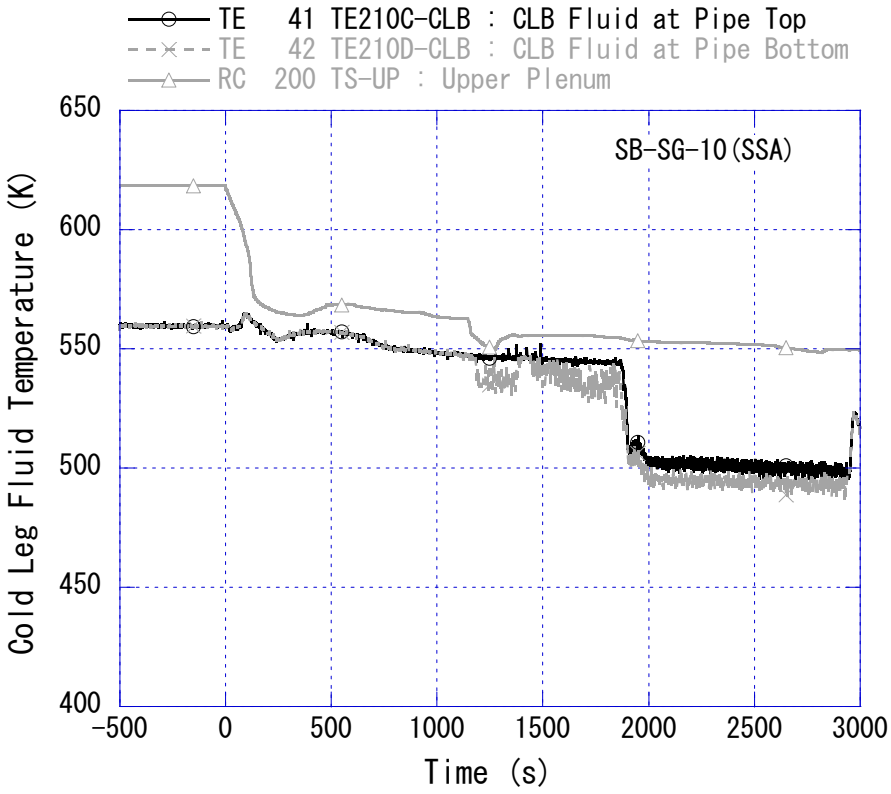

Fig. 4-32 Cold leg fluid temperature in broken loop

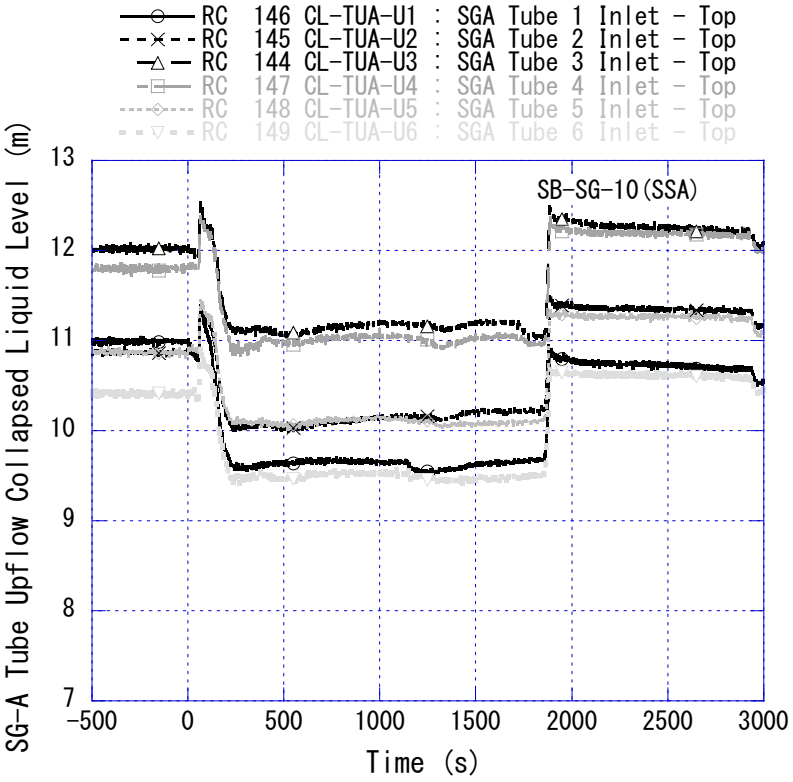

Fig. 4-33 Collapsed liquid level in U-tube upflow-side of intact SG

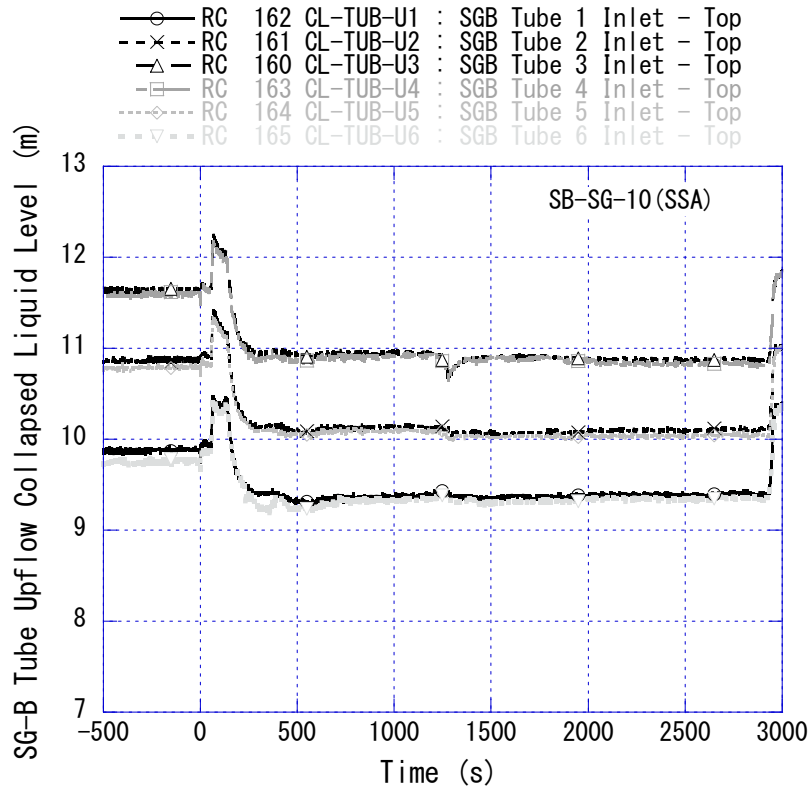

Fig. 4-34 Collapsed liquid level in U-tube upflow-side of broken SG

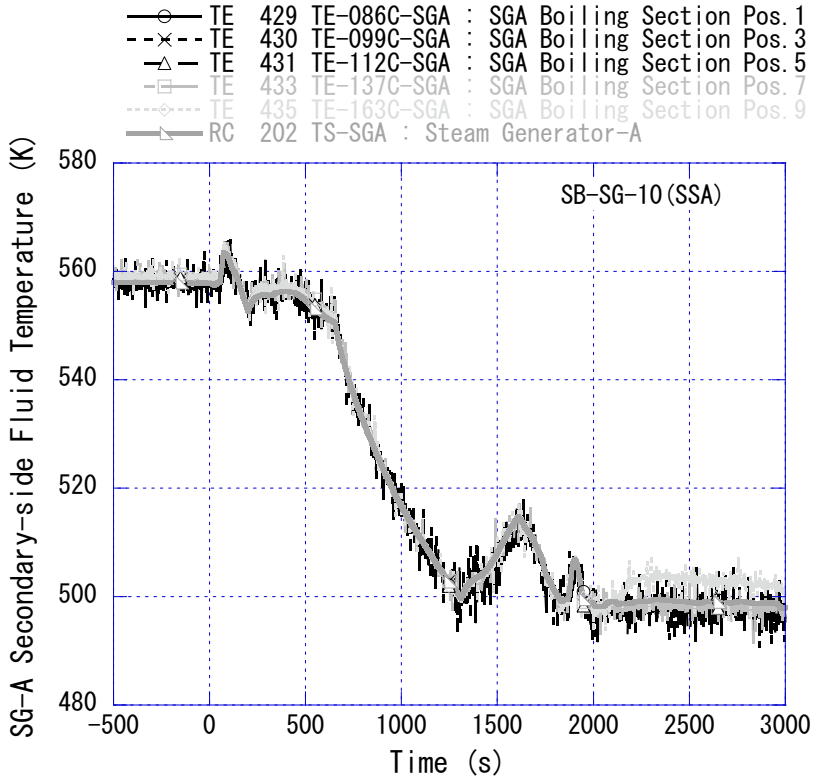

Fig. 4-35 Fluid temperature in secondary-side of intact SG

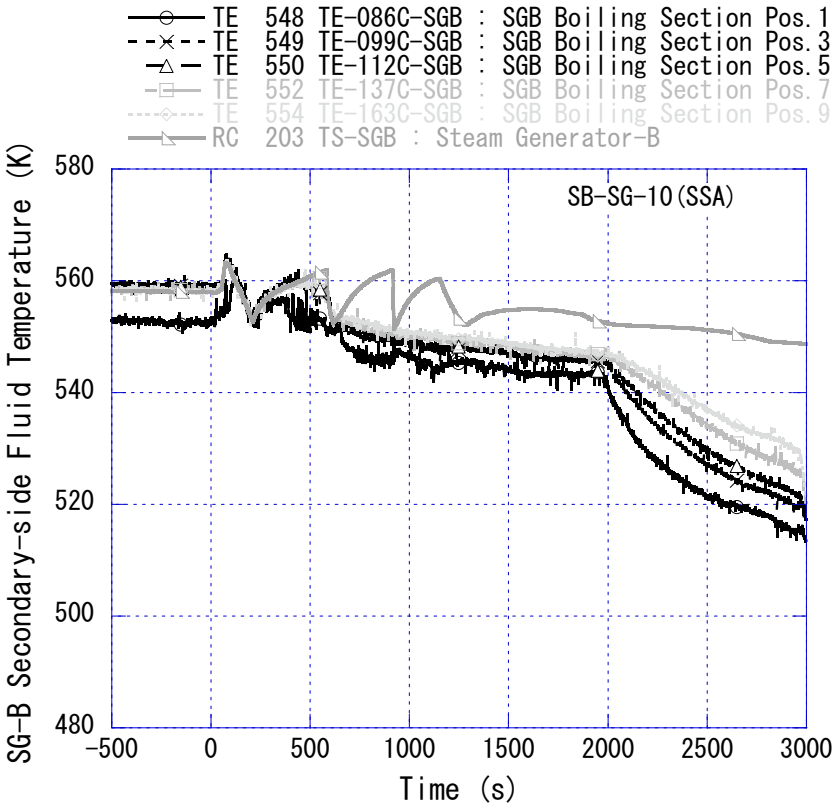

Fig. 4-36 Fluid temperature in secondary-side of broken SG

5. Summary

A ROSA/LSTF experiment SB-SG-10 was conducted on November 17, 1992, which simulated recovery actions from PWR multiple SG tube rupture accident under assumptions of coolant injection from HPI system of ECCS into cold and hot legs. Intact SG secondary-side depressurization by fully opening the RV and primary depressurization by fully opening a PZR PORV were included in the recovery actions during the multiple SG tube rupture accident. Major findings are summarized as follows;

(1) The primary pressure started to drop after the break, but was held higher than the broken SG secondary-side pressure due to the HPI coolant injection into the cold and hot legs even after the start of the full opening of the intact SG RV. The full opening of the PZR PORV contributed to the equalization between of primary and broken SG secondary-side pressures as well as the PZR liquid level recovery. As for the radionuclide release to environment, the broken SG RV opened once after the intact SG RV full opening start.

(2) Coolant in the core was kept saturated or subcooled through the experiment, while the steam ingress into hot leg in intact loop from the PZR formed a liquid level.

(3) Significant natural circulation prevailed in intact loop after the start of the full opening of the intact SG RV, while the circulation flow rate in broken loop became low especially during the time period of the full opening of the PZR PORV.

(4) The fluid temperature at the hot leg bottom was significantly lower than that at the hot leg top in both loops especially during the time period of the coolant injection from the HPI system into the hot legs.

(5) The experiment was terminated when the cold shut-down condition was confirmed by the restart of primary coolant pump in intact loop after the pressure equalization between the primary and broken SG systems was achieved.

Acknowledgements

The author would like to thank Mr. A. Ohwada of Japan Atomic Energy Agency for his useful comments to improve the manuscript as well as Miss K. Toyoda of Research Organization for Information Science and Technology for manipulating the experimental data.

References

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Appendix A Available Experimental Data List

Table A-1 shows the list of available experimental data qualified as “Good” for LSTF SB-SG-10 (Run ID designated to be SSA). This table contains Sequential No., Function ID., Tag Name, measurement location, range, unit and uncertainty. The alphabetical prefix of the Function ID. and Tag Name is explained as follows;

(1) TE, fluid temperature,
(2) DT, differential temperature,
(3) TW, heater rod and structure temperature,
(4) FE, flow rate measured with conventional (differential pressure) flow meters,
(5) PE, pressure,
(6) MI, miscellaneous instrumented-signal (power, pump rotation speed, *etc.*),
(7) LE, liquid level,
(8) DP, differential pressure,
(9) DE, fluid density with gamma-ray densitometer,
(10) RC, two-phase flow data calculated with DE and others.

Table A-1 List of available experimental data for LSTF SB-SG-10

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1	TE 1	TE010A-HLA	HLA Vessel Side CPT	270	720	K	3.31	0.74
2	TE 2	TE010B-HLA	HLA Vessel Side CPT	270	720	K	3.31	0.74
3	TE 3	TE010C-HLA	HLA Vessel Side CPT	270	720	K	3.31	0.74
4	TE 4	TE010D-HLA	HLA Vessel Side CPT	270	720	K	3.31	0.74
5	TE 5	TE010E-HLA	HLA Vessel Side CPT	270	720	K	3.31	0.74
6	TE 6	TE020C-HLA	HLA Fluid at Pipe Top	270	720	K	3.31	0.74
7	TE 7	TE020D-HLA	HLA Fluid at Pipe Bottom	270	720	K	3.31	0.74
8	TE 8	TE030C-HLA	HLA Fluid at Pipe Top	270	720	K	3.31	0.74
9	TE 9	TE030D-HLA	HLA Fluid at Pipe Bottom	270	720	K	3.31	0.74
10	TE 15	TE050C-LSA	LSA Fluid	270	720	K	3.31	0.74
11	TE 16	TE070C-CLA	CLA Fluid at Pipe Top	270	720	K	3.31	0.74
12	TE 17	TE070D-CLA	CLA Fluid at Pipe Bottom	270	720	K	3.31	0.74
13	TE 18	TE080C-CLA	CLA Fluid at Pipe Top	270	720	K	3.31	0.74
14	TE 19	TE080D-CLA	CLA Fluid at Pipe Bottom	270	720	K	3.31	0.74
15	TE 20	TE090A-CLA	CLA Vessel Side CPT	270	720	K	3.31	0.74
16	TE 21	TE090B-CLA	CLA Vessel Side CPT	270	720	K	3.31	0.74
17	TE 22	TE090C-CLA	CLA Vessel Side CPT	270	720	K	3.31	0.74
18	TE 23	TE090D-CLA	CLA Vessel Side CPT	270	720	K	3.31	0.74
19	TE 24	TE090E-CLA	CLA Vessel Side CPT	270	720	K	3.31	0.74
20	TE 25	TE100-HLA	HLA-CLA Average	270	720	K	3.31	0.74
21	TE 26	TE150A-HLB	HLB Vessel Side CPT	270	720	K	3.31	0.74
22	TE 27	TE150B-HLB	HLB Vessel Side CPT	270	720	K	3.31	0.74
23	TE 28	TE150C-HLB	HLB Vessel Side CPT	270	720	K	3.31	0.74
24	TE 29	TE150D-HLB	HLB Vessel Side CPT	270	720	K	3.31	0.74
25	TE 31	TE160C-HLB	HLB Fluid at Pipe Top	270	720	K	3.31	0.74
26	TE 32	TE160D-HLB	HLB Fluid at Pipe Bottom	270	720	K	3.31	0.74
27	TE 33	TE170C-HLB	HLB Fluid at Pipe Top	270	720	K	3.31	0.74
28	TE 34	TE170D-HLB	HLB Fluid at Pipe Bottom	270	720	K	3.31	0.74
29	TE 40	TE190C-LSB	LSB Fluid	270	720	K	3.31	0.74
30	TE 41	TE210C-CLB	CLB Fluid at Pipe Top	270	720	K	3.31	0.74
31	TE 42	TE210D-CLB	CLB Fluid at Pipe Bottom	270	720	K	3.31	0.74
32	TE 43	TE220C-CLB	CLB Fluid at Pipe Top	270	720	K	3.31	0.74
33	TE 44	TE220D-CLB	CLB Fluid at Pipe Bottom	270	720	K	3.31	0.74
34	TE 45	TE230A-CLB	CLB Vessel Side CPT	270	720	K	3.31	0.74
35	TE 46	TE230B-CLB	CLB Vessel Side CPT	270	720	K	3.31	0.74
36	TE 47	TE230C-CLB	CLB Vessel Side CPT	270	720	K	3.31	0.74
37	TE 48	TE230D-CLB	CLB Vessel Side CPT	270	720	K	3.31	0.74
38	TE 49	TE230E-CLB	CLB Vessel Side CPT	270	720	K	3.31	0.74
39	TE 50	TE240-HLB	HLB-CLB Average	270	720	K	3.31	0.74
40	TE 51	TE270C-PR	PR Spray Line	270	720	K	3.31	0.74
41	TE 52	TE280C-PR	PR Surge Line	270	720	K	3.31	0.74
42	TE 53	TE290-PR	PR Relief Valve	270	720	K	3.31	0.74
43	TE 55	TE430-SGA	SGA Feedwater Line	270	670	K	3.11	0.78
44	TE 56	TE440-SGA	SGA Main Steam Line	270	670	K	3.11	0.78
45	TE 57	TE450-SGA	SGA Relief Valve Line	270	670	K	3.11	0.78
46	TE 59	TE470-SGB	SGB Feedwater Line	270	670	K	3.11	0.78
47	TE 60	TE480-SGB	SGB Main Steam Line	270	670	K	3.11	0.78
48	TE 61	TE490-SGB	SGB Relief Valve Line	270	670	K	3.11	0.78
49	TE 63	TE510-SH	MSL Steam Header	270	670	K	3.11	0.78
50	TE 64	TE520-JC	JC Hot Water	270	670	K	3.11	0.78
51	TE 65	TE530-JC	PF Suction Line	270	670	K	3.11	0.78
52	TE 66	TE540-JC	JC Spray Water	270	670	K	3.11	0.78
53	TE 67	TE550-JC	JC Steam Vent Line	270	670	K	3.11	0.78
54	TE 68	TE431-SGA	SGA Downcomer A	270	670	K	3.11	0.78
55	TE 69	TE432-SGA	SGA Downcomer B	270	670	K	3.11	0.78
56	TE 70	TE433-SGA	SGA Downcomer C	270	670	K	3.11	0.78
57	TE 71	TE434-SGA	SGA Downcomer D	270	670	K	3.11	0.78
58	TE 72	TE471-SGB	SGB Downcomer A	270	670	K	3.11	0.78
59	TE 73	TE472-SGB	SGB Downcomer B	270	670	K	3.11	0.78
60	TE 74	TE473-SGB	SGB Downcomer C	270	670	K	3.11	0.78
61	TE 75	TE474-SGB	SGB Downcomer D	270	670	K	3.11	0.78
62	TE 80	TE580C-BU	BU No.2 Upstream Top	270	720	K	3.31	0.74
63	TE 81	TE580D-BU	BU No.2 Upstream Bottom	270	720	K	3.31	0.74
64	TE 82	TE590C-BU	BU No.2 Downstream Top	270	720	K	3.31	0.74
65	TE 83	TE590D-BU	BU No.2 Downstream Bottom	270	720	K	3.31	0.74
66	TE 84	TE600-ST	ST Inlet Line	270	470	K	2.30	1.15
67	TE 85	TE610-ST	ST Bottom Region	270	470	K	2.30	1.15
68	TE 86	TE620-ST	ST Middle Region	270	470	K	2.30	1.15
69	TE 87	TE630-ST	ST Top Region	270	470	K	2.30	1.15
70	TE 88	TE640-ST	ST Spray Line	270	470	K	2.30	1.15
71	TE 89	TE650-ACC	Cold Acc Tank Bottom	270	470	K	2.30	1.15
72	TE 90	TE660-ACC	Cold Acc Tank Top	270	470	K	2.30	1.15
73	TE 91	TE670-ACC	Cold Acc Line to CLA	270	470	K	2.30	1.15
74	TE 92	TE680-ACC	Cold Acc Line to CLB	270	470	K	2.30	1.15
75	TE 93	TE690-ACH	Hot Acc Tank Bottom	270	570	K	2.71	0.90
76	TE 94	TE700-ACH	Hot Acc Tank Top	270	570	K	2.71	0.90
77	TE 96	TE720-ACH	Hot Acc Line to CLB	270	570	K	2.71	0.90
78	TE 97	TE730-HLA	HLA ECCS Nozzle	270	670	K	3.11	0.78
79	TE 98	TE740-LSA	LSA ECCS Nozzle	270	670	K	3.11	0.78
80	TE 99	TE750-CLA	CLA ECCS Nozzle	270	670	K	3.11	0.78
81	TE 100	TE760-HLB	HLB ECCS Nozzle	270	670	K	3.11	0.78

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
82	TE 101	TE770-LSB	LSB ECCS Nozzle	270	670	K	3.11	0.78
83	TE 102	TE780-CLB	CLB ECCS Nozzle	270	670	K	3.11	0.78
84	TE 104	TE800-PV	PV Top ECCS Nozzle	270	670	K	3.11	0.78
85	TE 106	TE820-PL	RHR Inlet Region	270	670	K	3.11	0.78
86	TE 107	TE830-PL	RHR Outlet Region	270	670	K	3.11	0.78
87	TE 108	TE840-PL	RHR Injection Line	270	670	K	3.11	0.78
88	TE 112	TE880-RWST	RWST Tank Lower Region	270	370	K	1.90	1.90
89	TE 113	TE890-RWST	RWST Tank Middle Region	270	370	K	1.90	1.90
90	TE 115	TE-E066F-PV	Upper Head Bottom	270	970	K	4.31	0.62
91	TE 116	TE-W066F-PV	Upper Head Bottom	270	970	K	4.31	0.62
92	TE 117	TE-E075F-PV	Upper Head Middle	270	970	K	4.31	0.62
93	TE 118	TE-W075F-PV	Upper Head Middle	270	970	K	4.31	0.62
94	TE 119	TE-E081F-PV	Upper Head Top	270	970	K	4.31	0.62
95	TE 120	TE-W081F-PV	Upper Head Top	270	970	K	4.31	0.62
96	TE 121	TE-E080H-PV	CR Guide Tube Top	270	970	K	4.31	0.62
97	TE 122	TE-W080H-PV	CR Guide Tube Top	270	970	K	4.31	0.62
98	TE 123	TE-E049F-PV	Upper Plenum Bottom	270	970	K	4.31	0.62
99	TE 124	TE-W049F-PV	Upper Plenum Bottom	270	970	K	4.31	0.62
100	TE 125	TE-E055F-PV	Upper Plenum Middle	270	970	K	4.31	0.62
101	TE 126	TE-W055F-PV	Upper Plenum Middle	270	970	K	4.31	0.62
102	TE 127	TE-E060F-PV	Upper Plenum Top	270	970	K	4.31	0.62
103	TE 128	TE-W060F-PV	Upper Plenum Top	270	970	K	4.31	0.62
104	TE 129	TE-IN038-B09-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
105	TE 130	TE-IN038-B11-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
106	TE 131	TE-IN038-B01-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
107	TE 132	TE-IN038-B03-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
108	TE 133	TE-IN038-B05-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
109	TE 134	TE-IN038-B07-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
110	TE 135	TE-IN038-B21-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
111	TE 136	TE-IN038-B23-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
112	TE 137	TE-IN038-B02-UCP	Below Upper core Plate	270	970	K	4.31	0.62
113	TE 138	TE-IN038-B06-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
114	TE 139	TE-IN038-B14-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
115	TE 140	TE-IN038-B15-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
116	TE 141	TE-IN038-B18-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
117	TE 142	TE-IN038-B19-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
118	TE 143	TE-IN038-B10-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
119	TE 144	TE-IN038-B12-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
120	TE 145	TE-IN038-B04-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
121	TE 146	TE-IN038-B08-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
122	TE 147	TE-IN038-B22-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
123	TE 148	TE-IN038-B24-UCP	Below Upper Core Plate	270	970	K	4.31	0.62
124	TE 149	TE-EX040-B09-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
125	TE 150	TE-EX040-B11-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
126	TE 151	TE-EX040-B01-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
127	TE 152	TE-EX040-B03-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
128	TE 153	TE-EX040-B05-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
129	TE 154	TE-EX040-B07-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
130	TE 155	TE-EX040-B21-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
131	TE 156	TE-EX040-B23-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
132	TE 157	TE-EX040-B02-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
133	TE 158	TE-EX040-B06-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
134	TE 159	TE-EX040-B14-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
135	TE 160	TE-EX040-B15-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
136	TE 161	TE-EX040-B18-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
137	TE 162	TE-EX040-B19-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
138	TE 163	TE-EX040-B10-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
139	TE 164	TE-EX040-B12-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
140	TE 165	TE-EX040-B04-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
141	TE 166	TE-EX040-B08-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
142	TE 167	TE-EX040-B22-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
143	TE 168	TE-EX040-B24-UCP	Above Upper Core Plate	270	970	K	4.31	0.62
144	TE 169	TE-IN-002B02-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
145	TE 170	TE-IN-002B03-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
146	TE 171	TE-IN-002B06-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
147	TE 172	TE-IN-002B07-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
148	TE 173	TE-IN-002B09-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
149	TE 174	TE-IN-002B11-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
150	TE 175	TE-IN-002B14-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
151	TE 176	TE-IN-002B16-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
152	TE 177	TE-IN-002B18-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
153	TE 178	TE-IN-002B20-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
154	TE 179	TE-IN-002B21-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
155	TE 180	TE-IN-002B23-LCPP	Below Lower Core Plate	270	720	K	3.31	0.74
156	TE 181	TE-EX-000B02-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
157	TE 182	TE-EX-000B03-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
158	TE 183	TE-EX-000B06-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
159	TE 184	TE-EX-000B07-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
160	TE 185	TE-EX-000B09-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
161	TE 186	TE-EX-000B11-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
162	TE 187	TE-EX-000B14-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
163	TE 188	TE-EX-000B16-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
164	TE 189	TE-EX-000B18-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
165	TE 190	TE-EX-000B20-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
166	TE 191	TE-EX-000B21-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
167	TE 192	TE-EX-000B23-LCPP	Above Lower Core Plate	270	720	K	3.31	0.74
168	TE 193	TE-N000C-DC	Downcomer EL.0.0m,North	270	720	K	3.31	0.74
169	TE 194	TE-S000C-DC	Downcomer EL.0.0m,South	270	720	K	3.31	0.74
170	TE 195	TE-E000C-DC	Downcomer EL.0.0m,East	270	720	K	3.31	0.74
171	TE 196	TE-W000C-DC	Downcomer EL.0.0m,West	270	720	K	3.31	0.74
172	TE 197	TE-N018C-DC	Downcomer EL.1.8m,North	270	720	K	3.31	0.74
173	TE 198	TE-S018C-DC	Downcomer EL.1.8m,South	270	720	K	3.31	0.74
174	TE 199	TE-E018C-DC	Downcomer EL.1.8m,East	270	720	K	3.31	0.74
175	TE 200	TE-W018C-DC	Downcomer EL.1.8m,West	270	720	K	3.31	0.74
176	TE 201	TE-N036C-DC	Downcomer EL.3.6m,North	270	720	K	3.31	0.74
177	TE 202	TE-S036C-DC	Downcomer EL.3.6m,South	270	720	K	3.31	0.74
178	TE 203	TE-E036C-DC	Downcomer EL.3.6m,East	270	720	K	3.31	0.74
179	TE 204	TE-W036C-DC	Downcomer EL.3.6m,West	270	720	K	3.31	0.74
180	TE 205	TE-N060C-DC	Downcomer EL.6.0m,North	270	720	K	3.31	0.74
181	TE 206	TE-S060C-DC	Downcomer EL.6.0m,South	270	720	K	3.31	0.74
182	TE 207	TE-E060C-DC	Downcomer EL.6.0m,East	270	720	K	3.31	0.74
183	TE 208	TE-W060C-DC	Downcomer EL.6.0m,West	270	720	K	3.31	0.74
184	TE 209	TE-N055C-DC	Downcomer EL.5.5m,North	270	720	K	3.31	0.74
185	TE 210	TE-S055C-DC	Downcomer EL.5.5m,South	270	720	K	3.31	0.74
186	TE 211	TE-C-021-LP	Lower Plenum EL.-2.1m,C	270	720	K	3.31	0.74
187	TE 212	TE-C-018-LP	Lower Plenum EL.-1.8m,C	270	720	K	3.31	0.74
188	TE 213	TE-C-015-LP	Lower Plenum EL.-1.5m,C	270	720	K	3.31	0.74
189	TE 214	TE-C-012-LP	Lower Plenum EL.-1.2m,C	270	720	K	3.31	0.74
190	TE 215	TE-C-009-LP	Lower Plenum EL.-0.9m,C	270	720	K	3.31	0.74
191	TE 216	TE-C-006-LP	Lower Plenum EL.-0.6m,C	270	720	K	3.31	0.74
192	TE 217	TE-C-005-LP	Lower Plenum EL.-0.5m,C	270	720	K	3.31	0.74
193	TE 218	TE-C-003-LP	Lower Plenum EL.-0.3m,C	270	720	K	3.31	0.74
194	TE 219	TE-B18621	B18 Rod(6,2) Pos.1,Fluid	270	970	K	4.31	0.62
195	TE 220	TE-B18622	B18 Rod(6,2) Pos.2,Fluid	270	970	K	4.31	0.62
196	TE 221	TE-B18623	B18 Rod(6,2) Pos.3,Fluid	270	970	K	4.31	0.62
197	TE 222	TE-B18624	B18 Rod(6,2) Pos.4,Fluid	270	970	K	4.31	0.62
198	TE 223	TE-B18625	B18 Rod(6,2) Pos.5,Fluid	270	970	K	4.31	0.62
199	TE 224	TE-B18626	B18 Rod(6,2) Pos.6,Fluid	270	970	K	4.31	0.62
200	TE 225	TE-B18627	B18 Rod(6,2) Pos.7,Fluid	270	970	K	4.31	0.62
201	TE 226	TE-B18628	B18 Rod(6,2) Pos.8,Fluid	270	970	K	4.31	0.62
202	TE 227	TE-B18629	B18 Rod(6,2) Pos.9,Fluid	270	970	K	4.31	0.62
203	TE 234	TE-B14262	B14 Rod(2,6) Pos.2,Fluid	270	970	K	4.31	0.62
204	TE 235	TE-B14264	B14 Rod(2,6) Pos.4,Fluid	270	970	K	4.31	0.62
205	TE 236	TE-B14268	B14 Rod(2,6) Pos.8,Fluid	270	970	K	4.31	0.62
206	TE 255	TE-B09661	B09 Rod(6,6) Pos.1,Fluid	270	970	K	4.31	0.62
207	TE 256	TE-B09663	B09 Rod(6,6) Pos.3,Fluid	270	970	K	4.31	0.62
208	TE 257	TE-B09665	B09 Rod(6,6) Pos.5,Fluid	270	970	K	4.31	0.62
209	TE 258	TE-B09666	B09 Rod(6,6) Pos.6,Fluid	270	970	K	4.31	0.62
210	TE 259	TE-B09667	B09 Rod(6,6) Pos.7,Fluid	270	970	K	4.31	0.62
211	TE 260	TE-B09669	B09 Rod(6,6) Pos.9,Fluid	270	970	K	4.31	0.62
212	TE 273	TE-B14261	B14 Rod(2,6) Pos.1,Fluid	270	970	K	4.31	0.62
213	TE 274	TE-B14263	B14 Rod(2,6) Pos.3,Fluid	270	970	K	4.31	0.62
214	TE 275	TE-B14265	B14 Rod(2,6) Pos.5,Fluid	270	970	K	4.31	0.62
215	TE 276	TE-B14266	B14 Rod(2,6) Pos.6,Fluid	270	970	K	4.31	0.62
216	TE 277	TE-B14267	B14 Rod(2,6) Pos.7,Fluid	270	970	K	4.31	0.62
217	TE 278	TE-B14269	B14 Rod(2,6) Pos.9,Fluid	270	970	K	4.31	0.62
218	TE 279	TE-B15261	B15 Rod(2,6) Pos.1,Fluid	270	970	K	4.31	0.62
219	TE 280	TE-B15263	B15 Rod(2,6) Pos.3,Fluid	270	970	K	4.31	0.62
220	TE 281	TE-B15265	B15 Rod(2,6) Pos.5,Fluid	270	970	K	4.31	0.62
221	TE 282	TE-B15266	B15 Rod(2,6) Pos.6,Fluid	270	970	K	4.31	0.62
222	TE 283	TE-B15267	B15 Rod(2,6) Pos.7,Fluid	270	970	K	4.31	0.62
223	TE 284	TE-B15269	B15 Rod(2,6) Pos.9,Fluid	270	970	K	4.31	0.62
224	TE 291	TE-B15262	B15 Rod(2,6) Pos.2,Fluid	270	970	K	4.31	0.62
225	TE 292	TE-B15264	B15 Rod(2,6) Pos.4,Fluid	270	970	K	4.31	0.62
226	TE 293	TE-B15268	B15 Rod(2,6) Pos.8,Fluid	270	970	K	4.31	0.62
227	TE 294	TE-B23221	B23 Rod(2,2) Pos.1,Fluid	270	970	K	4.31	0.62
228	TE 295	TE-B23223	B23 Rod(2,2) Pos.3,Fluid	270	970	K	4.31	0.62
229	TE 296	TE-B23225	B23 Rod(2,2) Pos.5,Fluid	270	970	K	4.31	0.62
230	TE 297	TE-B23226	B23 Rod(2,2) Pos.6,Fluid	270	970	K	4.31	0.62
231	TE 298	TE-B23227	B23 Rod(2,2) Pos.7,Fluid	270	970	K	4.31	0.62
232	TE 299	TE-B23229	B23 Rod(2,2) Pos.9,Fluid	270	970	K	4.31	0.62
233	TE 300	TE-B20661	B20 Rod(6,6) Pos.1,Fluid	270	970	K	4.31	0.62
234	TE 301	TE-B20662	B20 Rod(6,6) Pos.2,Fluid	270	970	K	4.31	0.62
235	TE 302	TE-B20663	B20 Rod(6,6) Pos.3,Fluid	270	970	K	4.31	0.62
236	TE 303	TE-B20664	B20 Rod(6,6) Pos.4,Fluid	270	970	K	4.31	0.62
237	TE 304	TE-B20665	B20 Rod(6,6) Pos.5,Fluid	270	970	K	4.31	0.62
238	TE 305	TE-B20666	B20 Rod(6,6) Pos.6,Fluid	270	970	K	4.31	0.62
239	TE 306	TE-B20667	B20 Rod(6,6) Pos.7,Fluid	270	970	K	4.31	0.62
240	TE 307	TE-B20668	B20 Rod(6,6) Pos.8,Fluid	270	970	K	4.31	0.62
241	TE 308	TE-B20669	B20 Rod(6,6) Pos.9,Fluid	270	970	K	4.31	0.62
242	TE 309	TE-B22661	B22 Rod(6,6) Pos.1,Fluid	270	970	K	4.31	0.62
243	TE 310	TE-B22662	B22 Rod(6,6) Pos.2,Fluid	270	970	K	4.31	0.62
244	TE 311	TE-B22663	B22 Rod(6,6) Pos.3,Fluid	270	970	K	4.31	0.62
245	TE 312	TE-B22664	B22 Rod(6,6) Pos.4,Fluid	270	970	K	4.31	0.62

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
246	TE 313	TE-B22665	B22 Rod(6,6) Pos.5,Fluid	270	970	K	4.31	0.62
247	TE 314	TE-B22666	B22 Rod(6,6) Pos.6,Fluid	270	970	K	4.31	0.62
248	TE 315	TE-B22667	B22 Rod(6,6) Pos.7,Fluid	270	970	K	4.31	0.62
249	TE 316	TE-B22668	B22 Rod(6,6) Pos.8,Fluid	270	970	K	4.31	0.62
250	TE 317	TE-B22669	B22 Rod(6,6) Pos.9,Fluid	270	970	K	4.31	0.62
251	TE 318	TE-B24621	B24 Rod(6,2) Pos.1,Fluid	270	970	K	4.31	0.62
252	TE 319	TE-B24623	B24 Rod(6,2) Pos.3,Fluid	270	970	K	4.31	0.62
253	TE 320	TE-B24625	B24 Rod(6,2) Pos.5,Fluid	270	970	K	4.31	0.62
254	TE 321	TE-B24626	B24 Rod(6,2) Pos.6,Fluid	270	970	K	4.31	0.62
255	TE 322	TE-B24627	B24 Rod(6,2) Pos.7,Fluid	270	970	K	4.31	0.62
256	TE 323	TE-B24629	B24 Rod(6,2) Pos.9,Fluid	270	970	K	4.31	0.62
257	TE 324	TE-IN0641-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
258	TE 325	TE-IN0642-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
259	TE 326	TE-IN0643-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
260	TE 330	TE-IN0861-SGA	SGA U-Tube(1,IN) Pos.1	270	720	K	3.31	0.74
261	TE 331	TE-IN0862-SGA	SGA U-Tube(2,IN) Pos.1	270	720	K	3.31	0.74
262	TE 332	TE-IN0863-SGA	SGA U-Tube(3,IN) Pos.1	270	720	K	3.31	0.74
263	TE 333	TE-IN0864-SGA	SGA U-Tube(4,IN) Pos.1	270	720	K	3.31	0.74
264	TE 334	TE-IN0865-SGA	SGA U-Tube(5,IN) Pos.1	270	720	K	3.31	0.74
265	TE 335	TE-IN0866-SGA	SGA U-Tube(6,IN) Pos.1	270	720	K	3.31	0.74
266	TE 336	TE-EX0861-SGA	SGA U-Tube(1,EX) Pos.1	270	720	K	3.31	0.74
267	TE 337	TE-EX0862-SGA	SGA U-Tube(2,EX) Pos.1	270	720	K	3.31	0.74
268	TE 338	TE-EX0863-SGA	SGA U-Tube(3,EX) Pos.1	270	720	K	3.31	0.74
269	TE 339	TE-EX0864-SGA	SGA U-Tube(4,EX) Pos.1	270	720	K	3.31	0.74
270	TE 340	TE-EX0865-SGA	SGA U-Tube(5,EX) Pos.1	270	720	K	3.31	0.74
271	TE 341	TE-EX0866-SGA	SGA U-Tube(6,EX) Pos.1	270	720	K	3.31	0.74
272	TE 342	TE-IN0931-SGA	SGA U-Tube(1,IN) Pos.2	270	720	K	3.31	0.74
273	TE 343	TE-IN0932-SGA	SGA U-Tube(2,IN) Pos.2	270	720	K	3.31	0.74
274	TE 344	TE-IN0933-SGA	SGA U-Tube(3,IN) Pos.2	270	720	K	3.31	0.74
275	TE 345	TE-IN0934-SGA	SGA U-Tube(4,IN) Pos.2	270	720	K	3.31	0.74
276	TE 346	TE-IN0935-SGA	SGA U-Tube(5,IN) Pos.2	270	720	K	3.31	0.74
277	TE 347	TE-IN0936-SGA	SGA U-Tube(6,IN) Pos.2	270	720	K	3.31	0.74
278	TE 348	TE-IN0991-SGA	SGA U-Tube(1,IN) Pos.3	270	720	K	3.31	0.74
279	TE 349	TE-EX0991-SGA	SGA U-Tube(1,EX) Pos.3	270	720	K	3.31	0.74
280	TE 350	TE-IN0992-SGA	SGA U-Tube(2,IN) Pos.3	270	720	K	3.31	0.74
281	TE 351	TE-EX0992-SGA	SGA U-Tube(2,EX) Pos.3	270	720	K	3.31	0.74
282	TE 352	TE-IN0993-SGA	SGA U-Tube(3,IN) Pos.3	270	720	K	3.31	0.74
283	TE 353	TE-EX0993-SGA	SGA U-Tube(3,EX) Pos.3	270	720	K	3.31	0.74
284	TE 354	TE-IN0994-SGA	SGA U-Tube(4,IN) Pos.3	270	720	K	3.31	0.74
285	TE 355	TE-EX0994-SGA	SGA U-Tube(4,EX) Pos.3	270	720	K	3.31	0.74
286	TE 356	TE-IN0995-SGA	SGA U-Tube(5,IN) Pos.3	270	720	K	3.31	0.74
287	TE 357	TE-EX0995-SGA	SGA U-Tube(5,EX) Pos.3	270	720	K	3.31	0.74
288	TE 358	TE-IN0996-SGA	SGA U-Tube(6,IN) Pos.3	270	720	K	3.31	0.74
289	TE 359	TE-EX0996-SGA	SGA U-Tube(6,EX) Pos.3	270	720	K	3.31	0.74
290	TE 360	TE-IN1051-SGA	SGA U-Tube(1,IN) Pos.4	270	720	K	3.31	0.74
291	TE 361	TE-IN1052-SGA	SGA U-Tube(2,IN) Pos.4	270	720	K	3.31	0.74
292	TE 362	TE-IN1053-SGA	SGA U-Tube(3,IN) Pos.4	270	720	K	3.31	0.74
293	TE 363	TE-IN1054-SGA	SGA U-Tube(4,IN) Pos.4	270	720	K	3.31	0.74
294	TE 364	TE-IN1055-SGA	SGA U-Tube(5,IN) Pos.4	270	720	K	3.31	0.74
295	TE 365	TE-IN1056-SGA	SGA U-Tube(6,IN) Pos.4	270	720	K	3.31	0.74
296	TE 366	TE-IN1121-SGA	SGA U-Tube(1,IN) Pos.5	270	720	K	3.31	0.74
297	TE 367	TE-EX1121-SGA	SGA U-Tube(1,EX) Pos.5	270	720	K	3.31	0.74
298	TE 368	TE-IN1122-SGA	SGA U-Tube(2,IN) Pos.5	270	720	K	3.31	0.74
299	TE 369	TE-EX1122-SGA	SGA U-Tube(2,EX) Pos.5	270	720	K	3.31	0.74
300	TE 370	TE-IN1123-SGA	SGA U-Tube(3,IN) Pos.5	270	720	K	3.31	0.74
301	TE 371	TE-EX1123-SGA	SGA U-Tube(3,EX) Pos.5	270	720	K	3.31	0.74
302	TE 372	TE-IN1124-SGA	SGA U-Tube(4,IN) Pos.5	270	720	K	3.31	0.74
303	TE 373	TE-EX1124-SGA	SGA U-Tbue(4,EX) Pos.5	270	720	K	3.31	0.74
304	TE 374	TE-IN1125-SGA	SGA U-Tube(5,IN) Pos.5	270	720	K	3.31	0.74
305	TE 375	TE-EX1125-SGA	SGA U-Tube(5,EX) Pos.5	270	720	K	3.31	0.74
306	TE 376	TE-IN1126-SGA	SGA U-Tube(6,IN) Pos.5	270	720	K	3.31	0.74
307	TE 377	TE-EX1126-SGA	SGA U-Tube(6,EX) Pos.5	270	720	K	3.31	0.74
308	TE 378	TE-IN1251-SGA	SGA U-Tube(1,IN) Pos.6	270	720	K	3.31	0.74
309	TE 379	TE-EX1251-SGA	SGA U-Tube(1,EX) Pos.6	270	720	K	3.31	0.74
310	TE 380	TE-IN1252-SGA	SGA U-Tube(2,IN) Pos.6	270	720	K	3.31	0.74
311	TE 381	TE-EX1252-SGA	SGA U-Tube(2,EX) Pos.6	270	720	K	3.31	0.74
312	TE 382	TE-IN1253-SGA	SGA U-Tube(3,IN) Pos.6	270	720	K	3.31	0.74
313	TE 383	TE-EX1253-SGA	SGA U-Tube(3,EX) Pos.6	270	720	K	3.31	0.74
314	TE 384	TE-IN1254-SGA	SGA U-Tube(4,IN) Pos.6	270	720	K	3.31	0.74
315	TE 385	TE-EX1254-SGA	SGA U-Tube(4,EX) Pos.6	270	720	K	3.31	0.74
316	TE 386	TE-IN1255-SGA	SGA U-Tube(5,IN) Pos.6	270	720	K	3.31	0.74
317	TE 387	TE-EX1255-SGA	SGA U-Tube(5,EX) Pos.6	270	720	K	3.31	0.74
318	TE 388	TE-IN1256-SGA	SGA U-Tube(6,IN) Pos.6	270	720	K	3.31	0.74
319	TE 389	TE-EX1256-SGA	SGA U-Tube(6,EX) Pos.6	270	720	K	3.31	0.74
320	TE 390	TE-IN1371-SGA	SGA U-Tube(1,IN) Pos.7	270	720	K	3.31	0.74
321	TE 391	TE-EX1371-SGA	SGA U-Tube(1,EX) Pos.7	270	720	K	3.31	0.74
322	TE 392	TE-IN1372-SGA	SGA U-Tube(2,IN) Pos.7	270	720	K	3.31	0.74
323	TE 393	TE-EX1372-SGA	SGA U-Tube(2,EX) Pos.7	270	720	K	3.31	0.74
324	TE 394	TE-IN1373-SGA	SGA U-Tube(3,IN) Pos.7	270	720	K	3.31	0.74
325	TE 395	TE-EX1373-SGA	SGA U-Tube(3,EX) Pos.7	270	720	K	3.31	0.74
326	TE 396	TE-IN1374-SGA	SGA U-Tube(4,IN) Pos.7	270	720	K	3.31	0.74
327	TE 397	TE-EX1374-SGA	SGA U-Tube(4,EX) Pos.7	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
328	TE 398	TE-IN1375-SGA	SGA U-Tube(5,IN) Pos.7	270	720	K	3.31	0.74
329	TE 399	TE-EX1375-SGA	SGA U-Tube(5,EX) Pos.7	270	720	K	3.31	0.74
330	TE 400	TE-IN1376-SGA	SGA U-Tube(6,IN) Pos.7	270	720	K	3.31	0.74
331	TE 401	TE-EX1376-SGA	SGA U-Tube(6,EX) Pos.7	270	720	K	3.31	0.74
332	TE 402	TE-IN1501-SGA	SGA U-Tube(1,IN) Pos.8	270	720	K	3.31	0.74
333	TE 403	TE-EX1501-SGA	SGA U-Tube(1,EX) Pos.8	270	720	K	3.31	0.74
334	TE 404	TE-IN1502-SGA	SGA U-Tube(2,IN) Pos.8	270	720	K	3.31	0.74
335	TE 405	TE-EX1502-SGA	SGA U-Tube(2,EX) Pos.8	270	720	K	3.31	0.74
336	TE 406	TE-IN1503-SGA	SGA U-Tube(3,IN) Pos.8	270	720	K	3.31	0.74
337	TE 407	TE-EX1503-SGA	SGA U-Tube(3,EX) Pos.8	270	720	K	3.31	0.74
338	TE 408	TE-IN1504-SGA	SGA U-Tube(4,IN) Pos.8	270	720	K	3.31	0.74
339	TE 409	TE-EX1504-SGA	SGA U-Tube(4,EX) Pos.8	270	720	K	3.31	0.74
340	TE 410	TE-IN1505-SGA	SGA U-Tube(5,IN) Pos.8	270	720	K	3.31	0.74
341	TE 412	TE-IN1506-SGA	SGA U-Tube(6,IN) Pos.8	270	720	K	3.31	0.74
342	TE 413	TE-EX1506-SGA	SGA U-Tube(6,EX) Pos.8	270	720	K	3.31	0.74
343	TE 414	TE-IN1632-SGA	SGA U-Tube(2,IN) Pos.9	270	720	K	3.31	0.74
344	TE 415	TE-EX1632-SGA	SGA U-Tube(2,EX) Pos.9	270	720	K	3.31	0.74
345	TE 416	TE-IN1633-SGA	SGA U-Tube(3,IN) Pos.9	270	720	K	3.31	0.74
346	TE 417	TE-EX1633-SGA	SGA U-Tube(3,EX) Pos.9	270	720	K	3.31	0.74
347	TE 418	TE-IN1634-SGA	SGA U-Tube(4,IN) Pos.9	270	720	K	3.31	0.74
348	TE 419	TE-EX1634-SGA	SGA U-Tube(4,EX) Pos.9	270	720	K	3.31	0.74
349	TE 420	TE-IN1635-SGA	SGA U-Tube(5,IN) Pos.9	270	720	K	3.31	0.74
350	TE 421	TE-EX1635-SGA	SGA U-Tube(5,EX) Pos.9	270	720	K	3.31	0.74
351	TE 422	TE-IN1701-SGA	SGA U-Tube(1,IN) Pos.10	270	720	K	3.31	0.74
352	TE 423	TE-IN1706-SGA	SGA U-Tube(6,IN) Pos.10	270	720	K	3.31	0.74
353	TE 424	TE-IN1782-SGA	SGA U-Tube(2,IN) Pos.10	270	720	K	3.31	0.74
354	TE 425	TE-IN1785-SGA	SGA U-Tube(5,IN) Pos.10	270	720	K	3.31	0.74
355	TE 426	TE-IN1863-SGA	SGA U-Tube(3,IN) Pos.11	270	720	K	3.31	0.74
356	TE 427	TE-IN1864-SGA	SGA U-Tube(4,IN) Pos.11	270	720	K	3.31	0.74
357	TE 428	TE-223D-SGA	SGA Steam Dome	270	670	K	3.11	0.78
358	TE 429	TE-086C-SGA	SGA Boiling Section Pos.1	270	670	K	3.11	0.78
359	TE 430	TE-099C-SGA	SGA Boiling Section Pos.3	270	670	K	3.11	0.78
360	TE 431	TE-112C-SGA	SGA Boiling Section Pos.5	270	670	K	3.11	0.78
361	TE 432	TE-125C-SGA	SGA Boiling Section Pos.6	270	670	K	3.11	0.78
362	TE 433	TE-137C-SGA	SGA Boiling Section Pos.7	270	670	K	3.11	0.78
363	TE 434	TE-150C-SGA	SGA Boiling Section Pos.8	270	670	K	3.11	0.78
364	TE 435	TE-163C-SGA	SGA Boiling Section Pos.9	270	670	K	3.11	0.78
365	TE 436	TE-178C-SGA	SGA Boiling Section Pos.10	270	670	K	3.11	0.78
366	TE 437	TE-192F-SGA	SGA Boiling Section	270	670	K	3.11	0.78
367	TE 438	TE-208F-SGA	SGA Separator	270	670	K	3.11	0.78
368	TE 439	TE-192C-SGA	SGA Downcomer	270	670	K	3.11	0.78
369	TE 440	TE-208C-SGA	SGA Downcomer	270	670	K	3.11	0.78
370	TE 441	TE-223C-SGA	SGA Steam Dome	270	670	K	3.11	0.78
371	TE 442	TE-245C-SGA	SGA Steam Dome	270	670	K	3.11	0.78
372	TE 443	TE-IN0641-SGB	SGB Inlet Plenum	270	720	K	3.31	0.74
373	TE 444	TE-IN0642-SGB	SGB Inlet Plenum	270	720	K	3.31	0.74
374	TE 445	TE-IN0643-SGB	SGB Inlet Plenum	270	720	K	3.31	0.74
375	TE 449	TE-IN0861-SGB	SGB U-Tube(1,IN) Pos.1	270	720	K	3.31	0.74
376	TE 450	TE-IN0862-SGB	SGB U-Tube(2,IN) Pos.1	270	720	K	3.31	0.74
377	TE 451	TE-IN0863-SGB	SGB U-Tube(3,IN) Pos.1	270	720	K	3.31	0.74
378	TE 452	TE-IN0864-SGB	SGB U-Tube(4,IN) Pos.1	270	720	K	3.31	0.74
379	TE 453	TE-IN0865-SGB	SGB U-Tube(5,IN) Pos.1	270	720	K	3.31	0.74
380	TE 454	TE-IN0866-SGB	SGB U-Tube(6,IN) Pos.1	270	720	K	3.31	0.74
381	TE 455	TE-EX0861-SGB	SGB U-Tube(1,EX) Pos.1	270	720	K	3.31	0.74
382	TE 456	TE-EX0862-SGB	SGB U-Tube(2,EX) Pos.1	270	720	K	3.31	0.74
383	TE 457	TE-EX0863-SGB	SGB U-Tube(3,EX) Pos.1	270	720	K	3.31	0.74
384	TE 458	TE-EX0864-SGB	SGB U-Tube(4,EX) Pos.1	270	720	K	3.31	0.74
385	TE 459	TE-EX0865-SGB	SGB U-Tube(5,EX) Pos.1	270	720	K	3.31	0.74
386	TE 460	TE-EX0866-SGB	SGB U-Tube(6,EX) Pos.1	270	720	K	3.31	0.74
387	TE 461	TE-IN0931-SGB	SGB U-Tube(1,IN) Pos.2	270	720	K	3.31	0.74
388	TE 462	TE-IN0932-SGB	SGB U-Tube(2,IN) Pos.2	270	720	K	3.31	0.74
389	TE 463	TE-IN0933-SGB	SGB U-Tube(3,IN) Pos.2	270	720	K	3.31	0.74
390	TE 464	TE-IN0934-SGB	SGB U-Tube(4,IN) Pos.2	270	720	K	3.31	0.74
391	TE 465	TE-IN0935-SGB	SGB U-Tube(5,IN) Pos.2	270	720	K	3.31	0.74
392	TE 466	TE-IN0936-SGB	SGB U-Tube(6,IN) Pos.2	270	720	K	3.31	0.74
393	TE 467	TE-IN0991-SGB	SGB U-Tube(1,IN) Pos.3	270	720	K	3.31	0.74
394	TE 468	TE-EX0991-SGB	SGB U-Tube(1,EX) Pos.3	270	720	K	3.31	0.74
395	TE 469	TE-IN0992-SGB	SGB U-Tube(2,IN) Pos.3	270	720	K	3.31	0.74
396	TE 470	TE-EX0992-SGB	SGB U-Tube(2,EX) Pos.3	270	720	K	3.31	0.74
397	TE 471	TE-IN0993-SGB	SGB U-Tube(3,IN) Pos.3	270	720	K	3.31	0.74
398	TE 472	TE-EX0993-SGB	SGB U-Tube(3,EX) Pos.3	270	720	K	3.31	0.74
399	TE 473	TE-IN0994-SGB	SGB U-Tube(4,IN) Pos.3	270	720	K	3.31	0.74
400	TE 474	TE-EX0994-SGB	SGB U-Tube(4,EX) Pos.3	270	720	K	3.31	0.74
401	TE 475	TE-IN0995-SGB	SGB U-Tube(5,IN) Pos.3	270	720	K	3.31	0.74
402	TE 476	TE-EX0995-SGB	SGB U-Tube(5,EX) Pos.3	270	720	K	3.31	0.74
403	TE 477	TE-IN0996-SGB	SGB U-Tube(6,IN) Pos.3	270	720	K	3.31	0.74
404	TE 478	TE-EX0996-SGB	SGB U-Tube(6,EX) Pos.3	270	720	K	3.31	0.74
405	TE 479	TE-IN1051-SGB	SGB U-Tube(1,IN) Pos.4	270	720	K	3.31	0.74
406	TE 480	TE-IN1052-SGB	SGB U-Tube(2,IN) Pos.4	270	720	K	3.31	0.74
407	TE 482	TE-IN1054-SGB	SGB U-Tube(4,IN) Pos.4	270	720	K	3.31	0.74
408	TE 483	TE-IN1055-SGB	SGB U-Tube(5,IN) Pos.4	270	720	K	3.31	0.74
409	TE 484	TE-IN1056-SGB	SGB U-Tube(6,IN) Pos.4	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
410	TE 485	TE-IN1121-SGB	SGB U-Tube(1,IN) Pos.5	270	720	K	3.31	0.74
411	TE 486	TE-EX1121-SGB	SGB U-Tube(1,EX) Pos.5	270	720	K	3.31	0.74
412	TE 487	TE-IN1122-SGB	SGB U-Tube(2,IN) Pos.5	270	720	K	3.31	0.74
413	TE 488	TE-EX1122-SGB	SGB U-Tube(2,EX) Pos.5	270	720	K	3.31	0.74
414	TE 489	TE-IN1123-SGB	SGB U-Tube(3,IN) Pos.5	270	720	K	3.31	0.74
415	TE 490	TE-EX1123-SGB	SGB U-Tube(3,EX) Pos.5	270	720	K	3.31	0.74
416	TE 491	TE-IN1124-SGB	SGB U-Tube(4,IN) Pos.5	270	720	K	3.31	0.74
417	TE 492	TE-EX1124-SGB	SGB U-Tube(4,EX) Pos.5	270	720	K	3.31	0.74
418	TE 493	TE-IN1125-SGB	SGB U-Tube(5,IN) Pos.5	270	720	K	3.31	0.74
419	TE 494	TE-EX1125-SGB	SGB U-Tube(5,EX) Pos.5	270	720	K	3.31	0.74
420	TE 495	TE-IN1126-SGB	SGB U-Tube(6,IN) Pos.5	270	720	K	3.31	0.74
421	TE 496	TE-EX1126-SGB	SGB U-Tube(6,EX) Pos.5	270	720	K	3.31	0.74
422	TE 497	TE-IN1251-SGB	SGB U-Tube(1,IN) Pos.6	270	720	K	3.31	0.74
423	TE 498	TE-EX1251-SGB	SGB U-Tube(1,EX) Pos.6	270	720	K	3.31	0.74
424	TE 499	TE-IN1252-SGB	SGB U-Tube(2,IN) Pos.6	270	720	K	3.31	0.74
425	TE 500	TE-EX1252-SGB	SGB U-Tube(2,EX) Pos.6	270	720	K	3.31	0.74
426	TE 501	TE-IN1253-SGB	SGB U-Tube(3,IN) Pos.6	270	720	K	3.31	0.74
427	TE 502	TE-EX1253-SGB	SGB U-Tube(3,EX) Pos.6	270	720	K	3.31	0.74
428	TE 503	TE-IN1254-SGB	SGB U-Tube(4,IN) Pos.6	270	720	K	3.31	0.74
429	TE 504	TE-EX1254-SGB	SGB U-Tube(4,EX) Pos.6	270	720	K	3.31	0.74
430	TE 505	TE-IN1255-SGB	SGB U-Tube(5,IN) Pos.6	270	720	K	3.31	0.74
431	TE 506	TE-EX1255-SGB	SGB U-Tube(5,EX) Pos.6	270	720	K	3.31	0.74
432	TE 507	TE-IN1256-SGB	SGB U-Tube(6,IN) Pos.6	270	720	K	3.31	0.74
433	TE 508	TE-EX1256-SGB	SGB U-Tube(6,EX) Pos.6	270	720	K	3.31	0.74
434	TE 509	TE-IN1371-SGB	SGB U-Tube(1,IN) Pos.7	270	720	K	3.31	0.74
435	TE 510	TE-EX1371-SGB	SGB U-Tube(1,EX) Pos.7	270	720	K	3.31	0.74
436	TE 511	TE-IN1372-SGB	SGB U-Tube(2,IN) Pos.7	270	720	K	3.31	0.74
437	TE 512	TE-EX1372-SGB	SGB U-Tube(2,EX) Pos.7	270	720	K	3.31	0.74
438	TE 514	TE-EX1373-SGB	SGB U-Tube(3,EX) Pos.7	270	720	K	3.31	0.74
439	TE 515	TE-IN1374-SGB	SGB U-Tube(4,IN) Pos.7	270	720	K	3.31	0.74
440	TE 516	TE-EX1374-SGB	SGB U-Tube(4,EX) Pos.7	270	720	K	3.31	0.74
441	TE 517	TE-IN1375-SGB	SGB U-Tube(5,IN) Pos.7	270	720	K	3.31	0.74
442	TE 518	TE-EX1375-SGB	SGB U-Tube(5,EX) Pos.7	270	720	K	3.31	0.74
443	TE 519	TE-IN1376-SGB	SGB U-Tube(6,IN) Pos.7	270	720	K	3.31	0.74
444	TE 520	TE-EX1376-SGB	SGB U-Tube(6,EX) Pos.7	270	720	K	3.31	0.74
445	TE 521	TE-IN1501-SGB	SGB U-Tube(1,IN) Pos.8	270	720	K	3.31	0.74
446	TE 522	TE-EX1501-SGB	SGB U-Tube(1,EX) Pos.8	270	720	K	3.31	0.74
447	TE 523	TE-IN1502-SGB	SGB U-Tube(2,IN) Pos.8	270	720	K	3.31	0.74
448	TE 524	TE-EX1502-SGB	SGB U-Tube(2,EX) Pos.8	270	720	K	3.31	0.74
449	TE 525	TE-IN1503-SGB	SGB U-Tube(3,IN) Pos.8	270	720	K	3.31	0.74
450	TE 526	TE-EX1503-SGB	SGB U-Tube(3,EX) Pos.8	270	720	K	3.31	0.74
451	TE 527	TE-IN1504-SGB	SGB U-Tube(4,IN) Pos.8	270	720	K	3.31	0.74
452	TE 528	TE-EX1504-SGB	SGB U-Tube(4,EX) Pos.8	270	720	K	3.31	0.74
453	TE 529	TE-IN1505-SGB	SGB U-Tube(5,IN) Pos.8	270	720	K	3.31	0.74
454	TE 530	TE-EX1505-SGB	SGB U-Tube(5,EX) Pos.8	270	720	K	3.31	0.74
455	TE 531	TE-IN1506-SGB	SGB U-Tube(6,IN) Pos.8	270	720	K	3.31	0.74
456	TE 532	TE-EX1506-SGB	SGB U-Tube(6,EX) Pos.8	270	720	K	3.31	0.74
457	TE 533	TE-IN1632-SGB	SGB U-Tube(2,IN) Pos.9	270	720	K	3.31	0.74
458	TE 534	TE-EX1632-SGB	SGB U-Tube(2,EX) Pos.9	270	720	K	3.31	0.74
459	TE 535	TE-IN1633-SGB	SGB U-Tube(3,IN) Pos.9	270	720	K	3.31	0.74
460	TE 536	TE-EX1633-SGB	SGB U-Tube(3,EX) Pos.9	270	720	K	3.31	0.74
461	TE 537	TE-IN1634-SGB	SGB U-Tube(4,IN) Pos.9	270	720	K	3.31	0.74
462	TE 538	TE-EX1634-SGB	SGB U-Tube(4,EX) Pos.9	270	720	K	3.31	0.74
463	TE 539	TE-IN1635-SGB	SGB U-Tube(5,IN) Pos.9	270	720	K	3.31	0.74
464	TE 540	TE-EX1635-SGB	SGB U-Tube(5,EX) Pos.9	270	720	K	3.31	0.74
465	TE 541	TE-IN1701-SGB	SGB U-Tube(1,IN) Pos.10	270	720	K	3.31	0.74
466	TE 542	TE-IN1706-SGB	SGB U-Tube(6,IN) Pos.10	270	720	K	3.31	0.74
467	TE 544	TE-IN1785-SGB	SGB U-Tube(5,IN) Pos.10	270	720	K	3.31	0.74
468	TE 545	TE-IN1863-SGB	SGB U-Tube(3,IN) Pos.11	270	720	K	3.31	0.74
469	TE 546	TE-IN1864-SGB	SGB U-Tube(4,IN) Pos.11	270	720	K	3.31	0.74
470	TE 547	TE-223D-SGB	SGB Steam Dome	270	670	K	3.11	0.78
471	TE 548	TE-086C-SGB	SGB Boiling Section Pos.1	270	670	K	3.11	0.78
472	TE 549	TE-099C-SGB	SGB Boiling Section Pos.3	270	670	K	3.11	0.78
473	TE 550	TE-112C-SGB	SGB Boiling Section Pos.5	270	670	K	3.11	0.78
474	TE 551	TE-125C-SGB	SGB Boiling Section Pos.6	270	670	K	3.11	0.78
475	TE 552	TE-137C-SGB	SGB Boiling Section Pos.7	270	670	K	3.11	0.78
476	TE 553	TE-150C-SGB	SGB Boiling Section Pos.8	270	670	K	3.11	0.78
477	TE 554	TE-163C-SGB	SGB Boiling Section Pos.9	270	670	K	3.11	0.78
478	TE 555	TE-178C-SGB	SGB Boiling Section Pos.10	270	670	K	3.11	0.78
479	TE 556	TE-192F-SGB	SGB Boiling Section	270	670	K	3.11	0.78
480	TE 557	TE-208F-SGB	SGB Separator	270	670	K	3.11	0.78
481	TE 558	TE-192C-SGB	SGB Downcomer	270	670	K	3.11	0.78
482	TE 559	TE-208C-SGB	SGB Downcomer	270	670	K	3.11	0.78
483	TE 560	TE-223C-SGB	SGB Steam Dome	270	670	K	3.11	0.78
484	TE 561	TE-245C-SGB	SGB Steam Dome	270	670	K	3.11	0.78
485	TE 562	TE-211C-PR	PR Fluid	270	720	K	3.31	0.74
486	TE 563	TE-194C-PR	PR Fluid	270	720	K	3.31	0.74
487	TE 564	TE-177C-PR	PR Fluid	270	720	K	3.31	0.74
488	TE 596	TE-177D-PR	PR Fluid	270	720	K	3.31	0.74
489	TE 597	TE-181D-PR	PR Fluid	270	720	K	3.31	0.74
490	TE 598	TE-185D-PR	PR Fluid	270	720	K	3.31	0.74
491	TE 599	TE-189D-PR	PR Fluid	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
492	TE 600	TE-192D-PR	PR Fluid	270	720	K	3.31	0.74
493	TE 601	TE-196D-PR	PR Fluid	270	720	K	3.31	0.74
494	TE 602	TE-200D-PR	PR Fluid	270	720	K	3.31	0.74
495	TE 603	TE-204D-PR	PR Fluid	270	720	K	3.31	0.74
496	TE 604	TE-207D-PR	PR Fluid	270	720	K	3.31	0.74
497	TE 605	TE-211D-PR	PR Fluid	270	720	K	3.31	0.74
498	TE 606	TE011A-HLA	HLA S.P Top	270	720	K	3.31	0.74
499	TE 607	TE011B-HLA	HLA S.P Side	270	720	K	3.31	0.74
500	TE 609	TE012C-HLA	HLA S.P Top	270	720	K	3.31	0.74
501	TE 610	TE012D-HLA	HLA S.P Bottom	270	720	K	3.31	0.74
502	TE 612	TE051B-LSA	LSA S.P South	270	720	K	3.31	0.74
503	TE 613	TE051C-LSA	LSA S.P West	270	720	K	3.31	0.74
504	TE 614	TE051D-LSA	LSA S.P North	270	720	K	3.31	0.74
505	TE 615	TE052-LSA	LSA S.P	270	720	K	3.31	0.74
506	TE 619	TE072C-CLA	CLA S.P Top	270	720	K	3.31	0.74
507	TE 620	TE072D-CLA	CLA S.P Bottom	270	720	K	3.31	0.74
508	TE 622	TE151B-HLB	HLB S.P Side	270	720	K	3.31	0.74
509	TE 623	TE151C-HLB	HLB S.P Bottom	270	720	K	3.31	0.74
510	TE 624	TE152C-HLB	HLB S.P Top	270	720	K	3.31	0.74
511	TE 625	TE152D-HLB	HLB S.P Bottom	270	720	K	3.31	0.74
512	TE 626	TE191A-LSB	LSB S.P West	270	720	K	3.31	0.74
513	TE 628	TE191C-LSB	LSB S.P East	270	720	K	3.31	0.74
514	TE 629	TE191D-LSB	LSB S.P South	270	720	K	3.31	0.74
515	TE 630	TE192-LSB	LSB S.P	270	720	K	3.31	0.74
516	TE 631	TE211A-CLB	CLB S.P Top	270	720	K	3.31	0.74
517	TE 632	TE211B-CLB	CLB S.P Side	270	720	K	3.31	0.74
518	TE 634	TE212C-CLB	CLB S.P Top	270	720	K	3.31	0.74
519	TE 635	TE212D-CLB	CLB S.P Bottom	270	720	K	3.31	0.74
520	TE 636	TE291C-PR	PR Relief Valve Line	270	720	K	3.31	0.74
521	TE 637	TE291D-PR	PR Relief Valve Line	270	720	K	3.31	0.74
522	TE 651	TE591C-BU	BU No.2 SP	270	720	K	3.31	0.74
523	TE 652	TE591D-BU	BU No.2 SP	270	720	K	3.31	0.74
524	TE 662	TE-N-006-DC	PV Downcomer DTT North	270	720	K	3.31	0.74
525	TE 663	TE-S-006-DC	PV Downcomer DTT South	270	720	K	3.31	0.74
526	TE 664	TE-E-006-DC	PV Downcomer DTT East	270	720	K	3.31	0.74
527	TE 665	TE-W-006-DC	PV Downcomer DTT West	270	720	K	3.31	0.74
528	TE 670	TE-111A-CDP	PLR-02-1 Fluid EL.-1.18m	270	720	K	3.31	0.74
529	TE 671	TE-111B-CDP	PLR-02-1 Fluid EL. 0.25m	270	720	K	3.31	0.74
530	TE 673	TE-112B-CDP	PLR-01-2 Fluid EL. 0.61m	270	720	K	3.31	0.74
531	TE 674	TE-113A-CDP	PLR-08-3 Fluid EL.-1.18m	270	720	K	3.31	0.74
532	TE 675	TE-113B-CDP	PLR-08-3 Fluid EL. 1.01m	270	720	K	3.31	0.74
533	TE 676	TE-114A-CDP	PLR-07-4 Fluid EL.-1.18m	270	720	K	3.31	0.74
534	TE 677	TE-114B-CDP	PLR-07-4 Fluid EL. 1.42m	270	720	K	3.31	0.74
535	TE 678	TE-115A-CDP	PLR-06-5 Fluid EL.-1.18m	270	720	K	3.31	0.74
536	TE 679	TE-115B-CDP	PLR-06-5 Fluid EL. 0.21m	270	720	K	3.31	0.74
537	TE 680	TE-115C-CDP	PLR-06-5 Fluid EL. 1.83m	270	720	K	3.31	0.74
538	TE 681	TE-116A-CDP	PLR-05-6 Fluid EL.-1.18m	270	720	K	3.31	0.74
539	TE 682	TE-116B-CDP	PLR-05-6 Fluid EL. 0.21m	270	720	K	3.31	0.74
540	TE 683	TE-116C-CDP	PLR-05-6 Fluid EL. 2.24m	270	720	K	3.31	0.74
541	TE 684	TE-117A-CDP	PLR-04-7 Fluid EL.-1.18m	270	720	K	3.31	0.74
542	TE 685	TE-117B-CDP	PLR-04-7 Fluid EL. 0.21m	270	720	K	3.31	0.74
543	TE 686	TE-117C-CDP	PLR-04-7 Fluid EL. 2.64m	270	720	K	3.31	0.74
544	TE 687	TE-118A-CDP	PLR-03-8 Fluid EL.-1.18m	270	720	K	3.31	0.74
545	TE 688	TE-118B-CDP	PLR-03-8 Fluid EL. 0.21m	270	720	K	3.31	0.74
546	TE 689	TE-118C-CDP	PLR-03-8 Fluid EL. 3.05m	270	720	K	3.31	0.74
547	TE 690	TE-131-CDP	PLR-03-8 Oil EL.-2.0m,In	270	720	K	3.31	0.74
548	TE 691	TE-132-CDP	PLR-03-8 Oil EL. 0.0m,In	270	720	K	3.31	0.74
549	TE 692	TE-133-CDP	PLR-03-8 Oil EL. 1.0m,In	270	720	K	3.31	0.74
550	TE 693	TE-134-CDP	PLR-03-8 Oil EL. 2.0m,In	270	720	K	3.31	0.74
551	TE 694	TE-135-CDP	PLR-03-8 Oil EL. 3.22m,Top	270	720	K	3.31	0.74
552	TE 695	TE-136-CDP	PLR-03-8 Oil EL. 2.0m,Out	270	720	K	3.31	0.74
553	TE 696	TE-137-CDP	PLR-03-8 Oil EL. 1.0m,Out	270	720	K	3.31	0.74
554	TE 697	TE-138-CDP	PLR-03-8 Oil EL. 0.0m,Out	270	720	K	3.31	0.74
555	TE 698	TE-139-CDP	PLR-03-8 Oil EL.-2.0m,Out	270	720	K	3.31	0.74
556	TE 699	TE-111E-CDP	PLR-02-1 Oil Outlet	270	720	K	3.31	0.74
557	TE 700	TE-112E-CDP	PLR-01-2 Oil Outlet	270	720	K	3.31	0.74
558	TE 701	TE-113E-CDP	PLR-08-3 Oil Outlet	270	720	K	3.31	0.74
559	TE 702	TE-114E-CDP	PLR-07-4 Oil Outlet	270	720	K	3.31	0.74
560	TE 703	TE-115E-CDP	PLR-06-5 Oil Outlet	270	720	K	3.31	0.74
561	TE 704	TE-116E-CDP	PLR-05-6 Oil Outlet	270	720	K	3.31	0.74
562	TE 705	TE-117E-CDP	PLR-04-7 Oil Outlet	270	720	K	3.31	0.74
563	TE 706	TE-118E-CDP	PLR-03-8 Oil Outlet	270	720	K	3.31	0.74
564	TE 707	TE-121E-UHDP	PLR-UH-9 Oil Outlet	270	720	K	3.31	0.74
565	TE 708	TE-121A-UHDP	PLR-UH-9 Fluid EL. 6.9m	270	720	K	3.31	0.74
566	TE 709	TE-121B-UHDP	PLR-UH-9 Fluid EL. 7.6m	270	720	K	3.31	0.74
567	TE 710	TE-121C-UHDP	PLR-UH-9 Fluid EL. 8.2m	270	720	K	3.31	0.74
568	TE 711	TE-E071C-DC	Downcomer EL.7.1m,East	270	720	K	3.31	0.74
569	TE 712	TE-W071C-DC	Downcomer EL.7.1m,West	270	720	K	3.31	0.74
570	TE 713	TE-E067C-DC	Downcomer EL.6.7m,East	270	720	K	3.31	0.74
571	TE 714	TE-W067C-DC	Downcomer EL.6.7m,West	270	720	K	3.31	0.74
572	TE 715	TE-951-CS	Oil Inlet-Main	270	720	K	3.31	0.74
573	TE 716	TE-952-CS	Oil Outlet-Main	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
574	TE 718	TE-B05221	B05 Rod(2,2) Pos.1,Fluid	270	970	K	4.31	0.62
575	TE 719	TE-B05223	B05 Rod(2,2) Pos.3,Fluid	270	970	K	4.31	0.62
576	TE 720	TE-B05225	B05 Rod(2,2) Pos.5,Fluid	270	970	K	4.31	0.62
577	TE 721	TE-B05226	B05 Rod(2,2) Pos.6,Fluid	270	970	K	4.31	0.62
578	TE 722	TE-B05227	B05 Rod(2,2) Pos.7,Fluid	270	970	K	4.31	0.62
579	TE 723	TE-B05229	B05 Rod(2,2) Pos.9,Fluid	270	970	K	4.31	0.62
580	TE 724	TE-B07221	B07 Rod(2,2) Pos.1,Fluid	270	970	K	4.31	0.62
581	TE 725	TE-B07223	B07 Rod(2,2) Pos.3,Fluid	270	970	K	4.31	0.62
582	TE 726	TE-B07225	B07 Rod(2,2) Pos.5,Fluid	270	970	K	4.31	0.62
583	TE 727	TE-B07226	B07 Rod(2,2) Pos.6,Fluid	270	970	K	4.31	0.62
584	TE 728	TE-B07227	B07 Rod(2,2) Pos.7,Fluid	270	970	K	4.31	0.62
585	TE 729	TE-B07229	B07 Rod(2,2) Pos.9,Fluid	270	970	K	4.31	0.62
586	TE 730	TE-EX0650-SGA	SGA Outlet Plenum	270	720	K	3.31	0.74
587	TE 731	TE-EX0680-SGA	SGA Outlet Plenum	270	720	K	3.31	0.74
588	TE 732	TE-EX0720-SGA	SGA Outlet Plenum	270	720	K	3.31	0.74
589	TE 733	TE-EX0650-SGB	SGB Outlet Plenum	270	720	K	3.31	0.74
590	TE 734	TE-EX0680-SGB	SGB Outlet Plenum	270	720	K	3.31	0.74
591	TE 735	TE-EX0720-SGB	SGB Outlet Plenum	270	720	K	3.31	0.74
592	TE 739	TE275C-PR	PR Spray Inlet Nozzle	270	720	K	3.31	0.74
593	TE 744	TE183A-HLB	HLB SG Side Super Heat	270	720	K	3.31	0.74
594	TE 745	TE183B-HLB	HLB SG Side Super Heat	270	720	K	3.31	0.74
595	TE 746	TE183C-HLB	HLB SG Side Super Heat	270	720	K	3.31	0.74
596	DT 1	DTE020A-HLA	HLA Pipe Wall I/O	-150	150	K	6.24	2.08
597	DT 2	DTE020B-HLA	HLA Pipe Wall to Fluid	-150	150	K	6.24	2.08
598	DT 3	DTE030A-HLA	HLA Pipe Wall I/O	-150	150	K	6.24	2.08
599	DT 4	DTE030B-HLA	HLA Pipe Wall to Fluid	-150	150	K	6.24	2.08
600	DT 5	DTE050A-LSA	LSA Pipe Wall I/O	-150	150	K	6.24	2.08
601	DT 6	DTE050B-LSA	LSA Pipe Wall Fluid	-150	150	K	6.24	2.08
602	DT 7	DTE060A-PCA	PCA Wall I/O	-150	150	K	6.24	2.08
603	DT 8	DTE070A-CLA	CLA Pipe Wall I/O	-150	150	K	6.24	2.08
604	DT 9	DTE070B-CLA	CLA Pipe Wall to Fluid	-150	150	K	6.24	2.08
605	DT 10	DTE080A-CLA	CLA Pipe Wall I/O	-150	150	K	6.24	2.08
606	DT 11	DTE080B-CLA	CLA Pipe Wall to Fluid	-150	150	K	6.24	2.08
607	DT 12	DTE100-HLA	HLA-CLA	-150	150	K	2.49	0.83
608	DT 13	DTE160A-HLB	HLB Pipe Wall I/O	-150	150	K	6.24	2.08
609	DT 14	DTE160B-HLB	HLB Pipe Wall to Fluid	-150	150	K	6.24	2.08
610	DT 15	DTE170A-HLB	HLB Pipe Wall I/O	-150	150	K	6.24	2.08
611	DT 16	DTE170B-HLB	HLB Pipe Wall to Fluid	-150	150	K	6.24	2.08
612	DT 17	DTE190A-LSB	LSB Pipe Wall I/O	-150	150	K	6.24	2.08
613	DT 18	DTE190B-LSB	LSB Pipe Wall to Fluid	-150	150	K	6.24	2.08
614	DT 19	DTE200A-PCB	PCB Wall I/O	-150	150	K	6.24	2.08
615	DT 20	DTE210A-CLB	CLB Pipe Wall I/O	-150	150	K	6.24	2.08
616	DT 21	DTE210B-CLB	CLB Pipe Wall to Fluid	-150	150	K	6.24	2.08
617	DT 22	DTE220A-CLB	CLB Pipe Wall I/O	-150	150	K	6.24	2.08
618	DT 23	DTE220B-CLB	CLB Pipe Wall to Fluid	-150	150	K	6.24	2.08
619	DT 24	DTE240-HLB	HLB-CLB	-150	150	K	2.49	0.83
620	DT 25	DTE270A-PR	PR Spray Line	-150	150	K	6.24	2.08
621	DT 26	DTE280A-PR	PR Surge Line	-150	150	K	6.24	2.08
622	DT 27	DTE-E-015A-PV	PV Wall I/O-E at L. Plenum	-150	150	K	6.24	2.08
623	DT 28	DTE-W-015A-PV	PV Wall I/O-W at L. Plenum	-150	150	K	6.24	2.08
624	DT 29	DTE-N000A-PV	PV Wall I/O-N at DC Bottom	-150	150	K	6.24	2.08
625	DT 30	DTE-S000A-PV	PV Wall I/O-S at DC Bottom	-150	150	K	6.24	2.08
626	DT 31	DTE-E000A-PV	PV Wall I/O-E at DC Bottom	-150	150	K	6.24	2.08
627	DT 32	DTE-W000A-PV	PV Wall I/O-W at DC Bottom	-150	150	K	6.24	2.08
628	DT 33	DTE-N018A-PV	PV Wall I/O-N at DC Middle	-150	150	K	6.24	2.08
629	DT 34	DTE-S018A-PV	PV Wall I/O-S at DC Middle	-150	150	K	6.24	2.08
630	DT 35	DTE-E018A-PV	PV Wall I/O-E at DC Middle	-150	150	K	6.24	2.08
631	DT 36	DTE-W018A-PV	PV Wall I/O-W at DC Middle	-150	150	K	6.24	2.08
632	DT 37	DTE-N036A-PV	PV Wall I/O-N at Upper DC	-150	150	K	6.24	2.08
633	DT 38	DTE-S036A-PV	PV Wall I/O-S at Upper DC	-150	150	K	6.24	2.08
634	DT 39	DTE-E036A-PV	PV Wall I/O-E at Upper DC	-150	150	K	6.24	2.08
635	DT 40	DTE-W036A-PV	PV Wall I/O-W at Upper DC	-150	150	K	6.24	2.08
636	DT 41	DTE-N060A-PV	PV Wall I/O-N at DC Top	-150	150	K	6.24	2.08
637	DT 42	DTE-S060A-PV	PV Wall I/O-S at DC Top	-150	150	K	6.24	2.08
638	DT 43	DTE-E060A-PV	PV Wall I/O-E at DC Top	-150	150	K	6.24	2.08
639	DT 44	DTE-W060A-PV	PV Wall I/O-W at DC Top	-150	150	K	6.24	2.08
640	DT 45	DTE-E080A-PV	PV Wall I/O-E at DC Head	-150	150	K	6.24	2.08
641	DT 46	DTE-W080A-PV	PV Wall I/O-W at DC Head	-150	150	K	6.24	2.08
642	DT 47	DTE-N000B-PV	PV/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
643	DT 48	DTE-S000B-PV	PV/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
644	DT 49	DTE-E000B-PV	PV/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
645	DT 50	DTE-W000B-PV	PV/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
646	DT 51	DTE-N018B-PV	PV/DC Fluid at DC Middle	-150	150	K	6.24	2.08
647	DT 52	DTE-S018B-PV	PV/DC Fluid at DC Middle	-150	150	K	6.24	2.08
648	DT 53	DTE-E018B-PV	PV/DC Fluid at DC Middle	-150	150	K	6.24	2.08
649	DT 54	DTE-W018B-PV	PV/DC Fluid at DC Middle	-150	150	K	6.24	2.08
650	DT 55	DTE-N036B-PV	PV/DC Fluid at Upper DC	-150	150	K	6.24	2.08
651	DT 56	DTE-S036B-PV	PV/DC Fluid at Upper DC	-150	150	K	6.24	2.08
652	DT 57	DTE-E036B-PV	PV/DC Fluid at Upper DC	-150	150	K	6.24	2.08
653	DT 58	DTE-W036B-PV	PV/DC Fluid at Upper DC	-150	150	K	6.24	2.08
654	DT 59	DTE-N060B-PV	PV/DC Fluid at DC Top	-150	150	K	6.24	2.08

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
655	DT 60	DTE-S060B-PV	PV/DC Fluid at DC Top	-150	150	K	6.24	2.08
656	DT 61	DTE-E060B-PV	PV/DC Fluid at DC Top	-150	150	K	6.24	2.08
657	DT 62	DTE-W060B-PV	PV/DC Fluid at DC Top	-150	150	K	6.24	2.08
658	DT 63	DTE-N000C-PV	CB/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
659	DT 64	DTE-S000C-PV	CB/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
660	DT 65	DTE-E000C-PV	CB/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
661	DT 66	DTE-W000C-PV	CB/DC Fluid at DC Bottom	-150	150	K	6.24	2.08
662	DT 67	DTE-N018C-PV	CB/DC Fluid at DC Middle	-150	150	K	6.24	2.08
663	DT 68	DTE-S018C-PV	CB/DC Fluid at DC Middle	-150	150	K	6.24	2.08
664	DT 69	DTE-E018C-PV	CB/DC Fluid at DC Middle	-150	150	K	6.24	2.08
665	DT 70	DTE-W018C-PV	CB/DC Fluid at DC Middle	-150	150	K	6.24	2.08
666	DT 71	DTE-N036C-PV	CB/DC Fluid at Upper DC	-150	150	K	6.24	2.08
667	DT 72	DTE-S036C-PV	CB/DC Fluid at Upper DC	-150	150	K	6.24	2.08
668	DT 73	DTE-E036C-PV	CB/DC Fluid at Upper DC	-150	150	K	6.24	2.08
669	DT 74	DTE-W036C-PV	CB/DC Fluid at Upper DC	-150	150	K	6.24	2.08
670	DT 75	DTE-N060C-PV	CB/DC Fluid at DC Top	-150	150	K	6.24	2.08
671	DT 76	DTE-S060C-PV	CB/DC Fluid at DC Top	-150	150	K	6.24	2.08
672	DT 77	DTE-E060C-PV	CB/DC Fluid at DC Top	-150	150	K	6.24	2.08
673	DT 78	DTE-W060C-PV	CB/DC Fluid at DC Top	-150	150	K	6.24	2.08
674	DT 79	DTE-N000E-PV	CB Wall I/O at DC Bottom	-150	150	K	6.24	2.08
675	DT 80	DTE-S000E-PV	CB Wall I/O at DC Bottom	-150	150	K	6.24	2.08
676	DT 81	DTE-E000E-PV	CB Wall I/O at DC Bottom	-150	150	K	6.24	2.08
677	DT 82	DTE-W000E-PV	CB Wall I/O at DC Bottom	-150	150	K	6.24	2.08
678	DT 83	DTE-N010E-PV	CB Wall I/O at Lower DC	-150	150	K	6.24	2.08
679	DT 84	DTE-S010E-PV	CB Wall I/O at Lower DC	-150	150	K	6.24	2.08
680	DT 85	DTE-E010E-PV	CB Wall I/O at Lower DC	-150	150	K	6.24	2.08
681	DT 86	DTE-W010E-PV	CB Wall I/O at Lower DC	-150	150	K	6.24	2.08
682	DT 87	DTE-N018E-PV	CB Wall I/O at DC Middle	-150	150	K	6.24	2.08
683	DT 88	DTE-S018E-PV	CB Wall I/O at DC Middle	-150	150	K	6.24	2.08
684	DT 89	DTE-E018E-PV	CB Wall I/O at DC Middle	-150	150	K	6.24	2.08
685	DT 90	DTE-W018E-PV	CB Wall I/O at DC Middle	-150	150	K	6.24	2.08
686	DT 91	DTE-N026E-PV	CB Wall I/O at DC Center	-150	150	K	6.24	2.08
687	DT 92	DTE-S026E-PV	CB Wall I/O at DC Center	-150	150	K	6.24	2.08
688	DT 93	DTE-E026E-PV	CB Wall I/O at DC Center	-150	150	K	6.24	2.08
689	DT 94	DTE-W026E-PV	CB Wall I/O at DC Center	-150	150	K	6.24	2.08
690	DT 95	DTE-N036E-PV	CB Wall I/O at Upper DC	-150	150	K	6.24	2.08
691	DT 96	DTE-S036E-PV	CB Wall I/O at Upper DC	-150	150	K	6.24	2.08
692	DT 97	DTE-E036E-PV	CB Wall I/O at Upper DC	-150	150	K	6.24	2.08
693	DT 98	DTE-W036E-PV	CB Wall I/O at Upper DC	-150	150	K	6.24	2.08
694	DT 99	DTE-N049E-PV	CB Wall I/O below Nozzle	-150	150	K	6.24	2.08
695	DT 100	DTE-S049E-PV	CB Wall I/O below Nozzle	-150	150	K	6.24	2.08
696	DT 101	DTE-E049E-PV	CB Wall I/O below Nozzle	-150	150	K	6.24	2.08
697	DT 102	DTE-W049E-PV	CB Wall I/O below Nozzle	-150	150	K	6.24	2.08
698	DT 103	DTE-N060E-PV	CB Wall I/O at DC Top	-150	150	K	6.24	2.08
699	DT 104	DTE-S060E-PV	CB Wall I/O at DC Top	-150	150	K	6.24	2.08
700	DT 105	DTE-E060E-PV	CB Wall I/O at DC Top	-150	150	K	6.24	2.08
701	DT 106	DTE-W060E-PV	CB Wall I/O at DC Top	-150	150	K	6.24	2.08
702	DT 107	DTE-040-B09-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
703	DT 108	DTE-040-B11-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
704	DT 109	DTE-040-B01-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
705	DT 110	DTE-040-B03-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
706	DT 111	DTE-040-B05-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
707	DT 112	DTE-040-B07-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
708	DT 113	DTE-040-B21-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
709	DT 114	DTE-040-B23-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
710	DT 115	DTE-040-B02-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
711	DT 116	DTE-040-B15-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
712	DT 117	DTE-040-B06-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
713	DT 118	DTE-040-B14-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
714	DT 119	DTE-040-B18-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
715	DT 120	DTE-040-B19-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
716	DT 121	DTE-040-B10-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
717	DT 122	DTE-040-B12-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
718	DT 123	DTE-040-B04-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
719	DT 124	DTE-040-B08-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
720	DT 125	DTE-040-B22-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
721	DT 126	DTE-040-B24-UCP	In/Out Fluid across UCP	-150	150	K	6.24	2.08
722	DT 127	DTE-000-B02-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
723	DT 128	DTE-000-B03-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
724	DT 129	DTE-000-B06-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
725	DT 130	DTE-000-B07-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
726	DT 131	DTE-000-B09-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
727	DT 132	DTE-000-B11-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
728	DT 133	DTE-000-B14-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
729	DT 134	DTE-000-B16-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
730	DT 135	DTE-000-B18-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
731	DT 136	DTE-000-B20-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
732	DT 137	DTE-000-B21-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
733	DT 138	DTE-000-B23-LCP	In/Out Fluid across LCP	-40	40	K	1.66	2.08
734	DT 139	DTE-086A-SGA	SGA Wall I/O Pos.1	-40	40	K	1.66	2.08
735	DT 140	DTE-137A-SGA	SGA Wall I/O Pos.7	-40	40	K	1.66	2.08
736	DT 141	DTE-178A-SGA	SGA Wall I/O Pos.10	-40	40	K	1.66	2.08

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
737	DT 142	DTE-223A-SGA	SGA Steam Dome Wall I/O	-40	40	K	1.66	2.08
738	DT 143	DTE-IN0861-SGA	SGA U-Tube(1,IN) Pos.1	-100	100	K	1.66	0.83
739	DT 144	DTE-EX0861-SGA	SGA U-Tube(1,EX) Pos.1	-100	100	K	1.66	0.83
740	DT 145	DTE-IN0862-SGA	SGA U-Tube(2,IN) Pos.1	-100	100	K	1.66	0.83
741	DT 146	DTE-EX0862-SGA	SGA U-Tube(2,EX) Pos.1	-100	100	K	1.66	0.83
742	DT 147	DTE-IN0863-SGA	SGA U-Tube(3,IN) Pos.1	-100	100	K	1.66	0.83
743	DT 148	DTE-EX0863-SGA	SGA U-Tube(3,EX) Pos.1	-100	100	K	1.66	0.83
744	DT 149	DTE-IN0991-SGA	SGA U-Tube(1,IN) Pos.3	-100	100	K	1.66	0.83
745	DT 150	DTE-EX0991-SGA	SGA U-Tube(1,EX) Pos.3	-100	100	K	1.66	0.83
746	DT 151	DTE-IN0992-SGA	SGA U-Tube(2,IN) Pos.3	-100	100	K	1.66	0.83
747	DT 152	DTE-EX0992-SGA	SGA U-Tube(2,EX) Pos.3	-100	100	K	1.66	0.83
748	DT 153	DTE-IN0993-SGA	SGA U-Tube(3,IN) Pos.3	-100	100	K	1.66	0.83
749	DT 154	DTE-EX0993-SGA	SGA U-Tube(3,EX) Pos.3	-100	100	K	1.66	0.83
750	DT 155	DTE-IN1121-SGA	SGA U-Tube(1,IN) Pos.5	-100	100	K	1.66	0.83
751	DT 156	DTE-EX1121-SGA	SGA U-Tube(1,EX) Pos.5	-100	100	K	1.66	0.83
752	DT 157	DTE-IN1122-SGA	SGA U-Tube(2,IN) Pos.5	-100	100	K	1.66	0.83
753	DT 158	DTE-EX1122-SGA	SGA U-Tube(2,EX) Pos.5	-100	100	K	1.66	0.83
754	DT 159	DTE-IN1123-SGA	SGA U-Tube(3,IN) Pos.5	-100	100	K	1.66	0.83
755	DT 160	DTE-EX1123-SGA	SGA U-Tube(3,EX) Pos.5	-100	100	K	1.66	0.83
756	DT 161	DTE-IN1371-SGA	SGA U-Tube(1,IN) Pos.7	-100	100	K	1.66	0.83
757	DT 162	DTE-EX1371-SGA	SGA U-Tube(1,EX) Pos.7	-100	100	K	1.66	0.83
758	DT 163	DTE-IN1372-SGA	SGA U-Tube(2,IN) Pos.7	-100	100	K	1.66	0.83
759	DT 164	DTE-EX1372-SGA	SGA U-Tube(2,EX) Pos.7	-100	100	K	1.66	0.83
760	DT 165	DTE-IN1373-SGA	SGA U-Tube(3,IN) Pos.7	-100	100	K	1.66	0.83
761	DT 166	DTE-EX1373-SGA	SGA U-Tube(3,EX) Pos.7	-100	100	K	1.66	0.83
762	DT 167	DTE-IN1632-SGA	SGA U-Tube(2,IN) Pos.9	-100	100	K	1.66	0.83
763	DT 168	DTE-EX1632-SGA	SGA U-Tube(2,EX) Pos.9	-100	100	K	1.66	0.83
764	DT 169	DTE-IN1633-SGA	SGA U-Tube(3,IN) Pos.9	-100	100	K	1.66	0.83
765	DT 170	DTE-EX1633-SGA	SGA U-Tube(3,EX) Pos.9	-100	100	K	1.66	0.83
766	DT 171	DTE-IN1701-SGA	SGA U-Tube(1,IN) Pos.10	-100	100	K	1.66	0.83
767	DT 172	DTE-IN1782-SGA	SGA U-Tube(2,IN) Pos.10	-100	100	K	1.66	0.83
768	DT 173	DTE-IN1863-SGA	SGA U-Tube(3,IN) Pos.11	-100	100	K	1.66	0.83
769	DT 174	DTE-086A-SGB	SGB Wall I/O Pos.1	-40	40	K	1.66	2.08
770	DT 175	DTE-137A-SGB	SGB Wall I/O Pos.7	-40	40	K	1.66	2.08
771	DT 176	DTE-178A-SGB	SGB Wall I/O Pos.10	-40	40	K	1.66	2.08
772	DT 177	DTE-223A-SGB	SGB Steam Dome Wall I/O	-40	40	K	1.66	2.08
773	DT 178	DTE-IN0861-SGB	SGB U-Tube(1,IN) Pos.1	-100	100	K	1.66	0.83
774	DT 179	DTE-EX0861-SGB	SGB U-Tube(1,EX) Pos.1	-100	100	K	1.66	0.83
775	DT 180	DTE-IN0862-SGB	SGB U-Tube(2,IN) Pos.1	-100	100	K	1.66	0.83
776	DT 181	DTE-EX0862-SGB	SGB U-Tube(2,EX) Pos.1	-100	100	K	1.66	0.83
777	DT 182	DTE-IN0863-SGB	SGB U-Tube(3,IN) Pos.1	-100	100	K	1.66	0.83
778	DT 183	DTE-EX0863-SGB	SGB U-Tube(3,EX) Pos.1	-100	100	K	1.66	0.83
779	DT 184	DTE-IN0991-SGB	SGB U-Tube(1,IN) Pos.3	-100	100	K	1.66	0.83
780	DT 185	DTE-EX0991-SGB	SGB U-Tube(1,EX) Pos.3	-100	100	K	1.66	0.83
781	DT 186	DTE-IN0992-SGB	SGB U-Tube(2,IN) Pos.3	-100	100	K	1.66	0.83
782	DT 187	DTE-EX0992-SGB	SGB U-Tube(2,EX) Pos.3	-100	100	K	1.66	0.83
783	DT 188	DTE-IN0993-SGB	SGB U-Tube(3,IN) Pos.3	-100	100	K	1.66	0.83
784	DT 189	DTE-EX0993-SGB	SGB U-Tube(3,EX) Pos.3	-100	100	K	1.66	0.83
785	DT 190	DTE-IN1121-SGB	SGB U-Tube(1,IN) Pos.5	-100	100	K	1.66	0.83
786	DT 191	DTE-EX1121-SGB	SGB U-Tube(1,EX) Pos.5	-100	100	K	1.66	0.83
787	DT 192	DTE-IN1122-SGB	SGB U-Tube(2,IN) Pos.5	-100	100	K	1.66	0.83
788	DT 193	DTE-EX1122-SGB	SGB U-Tube(2,EX) Pos.5	-100	100	K	1.66	0.83
789	DT 194	DTE-IN1123-SGB	SGB U-Tube(3,IN) Pos.5	-100	100	K	1.66	0.83
790	DT 195	DTE-EX1123-SGB	SGB U-Tube(3,EX) Pos.5	-100	100	K	1.66	0.83
791	DT 196	DTE-IN1371-SGB	SGB U-Tube(1,IN) Pos.7	-100	100	K	1.66	0.83
792	DT 197	DTE-EX1371-SGB	SGB U-Tube(1,EX) Pos.7	-100	100	K	1.66	0.83
793	DT 198	DTE-IN1372-SGB	SGB U-Tube(2,IN) Pos.7	-100	100	K	1.66	0.83
794	DT 199	DTE-EX1372-SGB	SGB U-Tube(2,EX) Pos.7	-100	100	K	1.66	0.83
795	DT 200	DTE-IN1373-SGB	SGB U-Tube(3,IN) Pos.7	-100	100	K	1.66	0.83
796	DT 201	DTE-EX1373-SGB	SGB U-Tube(3,EX) Pos.7	-100	100	K	1.66	0.83
797	DT 202	DTE-IN1632-SGB	SGB U-Tube(2,IN) Pos.9	-100	100	K	1.66	0.83
798	DT 203	DTE-EX1632-SGB	SGB U-Tube(2,EX) Pos.9	-100	100	K	1.66	0.83
799	DT 204	DTE-IN1633-SGB	SGB U-Tube(3,IN) Pos.9	-100	100	K	1.66	0.83
800	DT 205	DTE-EX1633-SGB	SGB U-Tube(3,EX) Pos.9	-100	100	K	1.66	0.83
801	DT 206	DTE-IN1701-SGB	SGB U-Tube(1,IN) Pos.10	-100	100	K	1.66	0.83
802	DT 207	DTE-IN1782-SGB	SGB U-Tube(2,IN) Pos.10	-100	100	K	1.66	0.83
803	DT 208	DTE-IN1863-SGB	SGB U-Tube(3,IN) Pos.11	-100	100	K	1.66	0.83
804	TW 1	TWE020B-HLA	HLA Pipe Inner Wall	270	720	K	3.31	0.74
805	TW 2	TWE030B-HLA	HLA Pipe Inner Wall	270	720	K	3.31	0.74
806	TW 3	TWE050B-LSA	LSA Pipe Inner Wall	270	720	K	3.31	0.74
807	TW 4	TWE060B-PCA	PCA Inner Wall	270	720	K	3.31	0.74
808	TW 5	TWE070B-CLA	CLA Pipe Inner Wall	270	720	K	3.31	0.74
809	TW 6	TWE080B-CLA	CLA Pipe Inner Wall	270	720	K	3.31	0.74
810	TW 7	TWE160B-HLB	HLB Pipe Inner Wall	270	720	K	3.31	0.74
811	TW 8	TWE170B-HLB	HLB Pipe Inner Wall	270	720	K	3.31	0.74
812	TW 9	TWE190B-LSB	LSB Pipe Inner Wall	270	720	K	3.31	0.74
813	TW 10	TWE200B-PCB	PCB Inner Wall	270	720	K	3.31	0.74
814	TW 11	TWE210B-CLB	CLB Pipe Inner Wall	270	720	K	3.31	0.74
815	TW 12	TWE220B-CLB	CLB Pipe Inner Wall	270	720	K	3.31	0.74
816	TW 13	TWE280B-PR	PR Surge Line	270	720	K	3.31	0.74
817	TW 14	TWE431A-SGA	SGA Downcomer A Wall	270	670	K	3.11	0.78

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
818	TW 15	TWE432A-SGA	SGA Downcomer B Wall	270	670	K	3.11	0.78
819	TW 16	TWE433A-SGA	SGA Downcomer C Wall	270	670	K	3.11	0.78
820	TW 17	TWE434A-SGA	SGA Downcomer D Wall	270	670	K	3.11	0.78
821	TW 18	TWE471A-SGB	SGB Downcomer A Wall	270	670	K	3.11	0.78
822	TW 19	TWE472A-SGB	SGB Downcomer B Wall	270	670	K	3.11	0.78
823	TW 20	TWE473A-SGB	SGB Downcomer C Wall	270	670	K	3.11	0.78
824	TW 21	TWE474A-SGB	SGB Downcomer D Wall	270	670	K	3.11	0.78
825	TW 22	TWE-E-015B-PV	PV Inner Wall EL.-1.5m,E	270	720	K	3.31	0.74
826	TW 23	TWE-W-015B-PV	PV Inner Wall EL.-1.5m,W	270	720	K	3.31	0.74
827	TW 24	TWE-N000B-PV	PV Inner Wall EL.0.0m,N	270	720	K	3.31	0.74
828	TW 25	TWE-S000B-PV	PV Inner Wall EL.0.0m,S	270	720	K	3.31	0.74
829	TW 26	TWE-E000B-PV	PV Inner Wall EL.0.0m,E	270	720	K	3.31	0.74
830	TW 27	TWE-W000B-PV	PV Inner Wall EL.0.0m,W	270	720	K	3.31	0.74
831	TW 28	TWE-N018B-PV	PV Inner Wall EL.1.8m,N	270	720	K	3.31	0.74
832	TW 29	TWE-S018B-PV	PV Inner Wall EL.1.8m,S	270	720	K	3.31	0.74
833	TW 30	TWE-E018B-PV	PV Inner Wall EL.1.8m,E	270	720	K	3.31	0.74
834	TW 31	TWE-W018B-PV	PV Inner Wall EL.1.8m,W	270	720	K	3.31	0.74
835	TW 32	TWE-N036B-PV	PV Inner Wall EL.3.6m,N	270	720	K	3.31	0.74
836	TW 33	TWE-S036B-PV	PV Inner Wall EL.3.6m,S	270	720	K	3.31	0.74
837	TW 34	TWE-E036B-PV	PV Inner Wall EL.3.6m,E	270	720	K	3.31	0.74
838	TW 35	TWE-W036B-PV	PV Inner Wall EL.3.6m,W	270	720	K	3.31	0.74
839	TW 36	TWE-N060B-PV	PV Inner Wall EL.6.0m,N	270	720	K	3.31	0.74
840	TW 37	TWE-S060B-PV	PV Inner Wall EL.6.0m,S	270	720	K	3.31	0.74
841	TW 38	TWE-E060B-PV	PV Inner Wall EL.6.0m,E	270	720	K	3.31	0.74
842	TW 39	TWE-W060B-PV	PV Inner Wall EL.6.0m,W	270	720	K	3.31	0.74
843	TW 40	TWE-E080B-PV	PV Inner Wall EL.8.0m,E	270	720	K	3.31	0.74
844	TW 41	TWE-W080B-PV	PV Inner Wall EL.8.0m,W	270	720	K	3.31	0.74
845	TW 42	TWE-N000D-CB	CB Outer Wall EL.0.0m,N	270	970	K	4.31	0.62
846	TW 43	TWE-S000D-CB	CB Outer Wall EL.0.0m,S	270	970	K	4.31	0.62
847	TW 44	TWE-E000D-CB	CB Outer Wall EL.0.0m,E	270	970	K	4.31	0.62
848	TW 45	TWE-W000D-CB	CB Outer Wall EL.0.0m,W	270	970	K	4.31	0.62
849	TW 46	TWE-N010D-CB	CB Outer Wall EL.1.0m,N	270	970	K	4.31	0.62
850	TW 47	TWE-S010D-CB	CB Outer Wall EL.1.0m,S	270	970	K	4.31	0.62
851	TW 48	TWE-E010D-CB	CB Outer Wall EL.1.0m,E	270	970	K	4.31	0.62
852	TW 49	TWE-W010D-CB	CB Outer Wall EL.1.0m,W	270	970	K	4.31	0.62
853	TW 50	TWE-N018D-CB	CB Outer Wall EL.1.8m,N	270	970	K	4.31	0.62
854	TW 51	TWE-S018D-CB	CB Outer Wall EL.1.8m,S	270	970	K	4.31	0.62
855	TW 52	TWE-E018D-CB	CB Outer Wall EL.1.8m,E	270	970	K	4.31	0.62
856	TW 53	TWE-W018D-CB	CB Outer Wall EL.1.8m,W	270	970	K	4.31	0.62
857	TW 54	TWE-N026D-CB	CB Outer Wall EL.2.6m,N	270	970	K	4.31	0.62
858	TW 55	TWE-S026D-CB	CB Outer Wall EL.2.6m,S	270	970	K	4.31	0.62
859	TW 56	TWE-E026D-CB	CB Outer Wall EL.2.6m,E	270	970	K	4.31	0.62
860	TW 57	TWE-W026D-CB	CB Outer Wall EL.2.6m,W	270	970	K	4.31	0.62
861	TW 58	TWE-N036D-CB	CB Outer Wall EL.3.6m,N	270	970	K	4.31	0.62
862	TW 59	TWE-S036D-CB	CB Outer Wall EL.3.6m,S	270	970	K	4.31	0.62
863	TW 60	TWE-E036D-CB	CB Outer Wall EL.3.6m,E	270	970	K	4.31	0.62
864	TW 61	TWE-W036D-CB	CB Outer Wall EL.3.6m,W	270	970	K	4.31	0.62
865	TW 62	TWE-N049D-CB	CB Outer Wall EL.4.9m,N	270	970	K	4.31	0.62
866	TW 63	TWE-S049D-CB	CB Outer Wall EL.4.9m,S	270	970	K	4.31	0.62
867	TW 64	TWE-E049D-CB	CB Outer Wall EL.4.9m,E	270	970	K	4.31	0.62
868	TW 65	TWE-W049D-CB	CB Outer Wall EL.4.9m,W	270	970	K	4.31	0.62
869	TW 66	TWE-N060D-CB	CB Outer Wall EL.6.0m,N	270	970	K	4.31	0.62
870	TW 67	TWE-S060D-CB	CB Outer Wall EL.6.0m,S	270	970	K	4.31	0.62
871	TW 68	TWE-E060D-CB	CB Outer Wall EL.6.0m,E	270	970	K	4.31	0.62
872	TW 69	TWE-W060D-CB	CB Outer Wall EL.6.0m,W	270	970	K	4.31	0.62
873	TW 70	TWE-N000E-CB	CB Inner Wall EL.0.0m,N	270	970	K	4.31	0.62
874	TW 71	TWE-S000E-CB	CB Inner Wall EL.0.0m,S	270	970	K	4.31	0.62
875	TW 72	TWE-E000E-CB	CB Inner Wall EL.0.0m,E	270	970	K	4.31	0.62
876	TW 73	TWE-W000E-CB	CB Inner Wall EL.0.0m,W	270	970	K	4.31	0.62
877	TW 74	TWE-N010E-CB	CB Inner Wall EL.1.0m,N	270	970	K	4.31	0.62
878	TW 75	TWE-S010E-CB	CB Inner Wall EL.1.0m,S	270	970	K	4.31	0.62
879	TW 76	TWE-E010E-CB	CB Inner Wall EL.1.0m,E	270	970	K	4.31	0.62
880	TW 77	TWE-W010E-CB	CB Inner Wall EL.1.0m,W	270	970	K	4.31	0.62
881	TW 78	TWE-N018E-CB	CB Inner Wall EL.1.8m,N	270	970	K	4.31	0.62
882	TW 79	TWE-S018E-CB	CB Inner Wall EL.1.8m,S	270	970	K	4.31	0.62
883	TW 80	TWE-E018E-CB	CB Inner Wall EL.1.8m,E	270	970	K	4.31	0.62
884	TW 81	TWE-W018E-CB	CB Inner Wall EL.1.8m,W	270	970	K	4.31	0.62
885	TW 82	TWE-N026E-CB	CB Inner Wall EL.2.6m,N	270	970	K	4.31	0.62
886	TW 83	TWE-S026E-CB	CB Inner Wall EL.2.6m,S	270	970	K	4.31	0.62
887	TW 84	TWE-E026E-CB	CB Inner Wall EL.2.6m,E	270	970	K	4.31	0.62
888	TW 85	TWE-W026E-CB	CB Inner Wall EL.2.6m,W	270	970	K	4.31	0.62
889	TW 86	TWE-N036E-CB	CB Inner Wall EL.3.6m,N	270	970	K	4.31	0.62
890	TW 87	TWE-S036E-CB	CB Inner Wall EL.3.6m,S	270	970	K	4.31	0.62
891	TW 88	TWE-E036E-CB	CB Inner Wall EL.3.6m,E	270	970	K	4.31	0.62
892	TW 89	TWE-W036E-CB	CB Inner Wall EL.3.6m,W	270	970	K	4.31	0.62
893	TW 90	TWE-N049E-CB	CB Inner Wall EL.4.9m,N	270	970	K	4.31	0.62
894	TW 91	TWE-S049E-CB	CB Inner Wall EL.4.9m,S	270	970	K	4.31	0.62
895	TW 92	TWE-E049E-CB	CB Inner Wall EL.4.9m,E	270	970	K	4.31	0.62
896	TW 93	TWE-W049E-CB	CB Inner Wall EL.4.9m,W	270	970	K	4.31	0.62
897	TW 94	TWE-N060E-CB	CB Inner Wall EL.6.0m,N	270	970	K	4.31	0.62
898	TW 95	TWE-S060E-CB	CB Inner Wall EL.6.0m,S	270	970	K	4.31	0.62
899	TW 96	TWE-E060E-CB	CB Inner Wall EL.6.0m,E	270	970	K	4.31	0.62

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
900	TW 97	TWE-W060E-CB	CB Inner Wall EL.6.0m,W	270	970	K	4.31	0.62
901	TW 98	TWE-IN038B02-UCPP	UCP L.Surf. EL.3.8m,B02	270	970	K	4.31	0.62
902	TW 99	TWE-IN038B04-UCPP	UCP L.Surf. EL.3.8m,B04	270	970	K	4.31	0.62
903	TW 100	TWE-IN038B06-UCPP	UCP L.Surf. EL.3.8m,B06	270	970	K	4.31	0.62
904	TW 101	TWE-IN038B08-UCPP	UCP L.Surf. EL.3.8m,B08	270	970	K	4.31	0.62
905	TW 102	TWE-IN038B21-UCPP	UCP L.Surf. EL.3.8m,C	270	970	K	4.31	0.62
906	TW 103	TWE-EX040B02-UCPP	UCP U.Surf. EL.4.0m,B02	270	970	K	4.31	0.62
907	TW 104	TWE-EX040B04-UCPP	UCP U.Surf. EL.4.0m,B04	270	970	K	4.31	0.62
908	TW 105	TWE-EX040B06-UCPP	UCP U.Surf. EL.4.0m,B06	270	970	K	4.31	0.62
909	TW 106	TWE-EX040B08-UCPP	UCP U.Surf. EL.4.0m,B08	270	970	K	4.31	0.62
910	TW 107	TWE-EX040B21-UCPP	UCP U.Surf. EL.4.0m,C	270	970	K	4.31	0.62
911	TW 108	TWE-063-B09-UCSP	UCSP L.Surf. EL.6.3m,B09	270	970	K	4.31	0.62
912	TW 109	TWE-065-B09-UCSP	UCSP U.Surf. EL.6.5m,B09	270	970	K	4.31	0.62
913	TW 110	TWE-E047G-UP	UP Str. Surf. EL.4.7m,East	270	970	K	4.31	0.62
914	TW 111	TWE-W047G-UP	UP Str. Surf. EL.4.7m,West	270	970	K	4.31	0.62
915	TW 112	TWE-E056G-UP	UP Str. Surf. EL.5.6m,East	270	970	K	4.31	0.62
916	TW 113	TWE-W056G-UP	UP Str. Surf. EL.5.6m,West	270	970	K	4.31	0.62
917	TW 114	TWE-080G-UH	UH Str. Surf. EL.8.0m,C	270	970	K	4.31	0.62
918	TW 115	TWE-B01342	B01 Rod(3,4) Pos.2	270	1470	K	6.44	0.54
919	TW 116	TWE-B01344	B01 Rod(3,4) Pos.4	270	1470	K	6.44	0.54
920	TW 117	TWE-B01345	B01 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
921	TW 118	TWE-B01346	B01 Rod(3,4) Pos.6	270	1470	K	6.44	0.54
922	TW 119	TWE-B01347	B01 Rod(3,4) Pos.7	270	1470	K	6.44	0.54
923	TW 120	TWE-B01348	B01 Rod(3,4) Pos.8	270	1470	K	6.44	0.54
924	TW 121	TWE-B20431	B20 Rod(4,3) Pos.1	270	1470	K	6.44	0.54
925	TW 122	TWE-B20433	B20 Rod(4,3) Pos.3	270	1470	K	6.44	0.54
926	TW 123	TWE-B20435	B20 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
927	TW 124	TWE-B20436	B20 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
928	TW 125	TWE-B20438	B20 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
929	TW 126	TWE-B20439	B20 Rod(4,3) Pos.9	270	1470	K	6.44	0.54
930	TW 127	TWE-B02241	B02 Rod(2,4) Pos.1	270	1470	K	6.44	0.54
931	TW 128	TWE-B02242	B02 Rod(2,4) Pos.2	270	1470	K	6.44	0.54
932	TW 129	TWE-B02244	B02 Rod(2,4) Pos.4	270	1470	K	6.44	0.54
933	TW 130	TWE-B02245	B02 Rod(2,4) Pos.5	270	1470	K	6.44	0.54
934	TW 131	TWE-B02247	B02 Rod(2,4) Pos.7	270	1470	K	6.44	0.54
935	TW 132	TWE-B02249	B02 Rod(2,4) Pos.9	270	1470	K	6.44	0.54
936	TW 133	TWE-B02341	B02 Rod(3,4) Pos.1	270	1470	K	6.44	0.54
937	TW 134	TWE-B02343	B02 Rod(3,4) Pos.3	270	1470	K	6.44	0.54
938	TW 135	TWE-B02345	B02 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
939	TW 136	TWE-B02346	B02 Rod(3,4) Pos.6	270	1470	K	6.44	0.54
940	TW 137	TWE-B02348	B02 Rod(3,4) Pos.8	270	1470	K	6.44	0.54
941	TW 138	TWE-B02349	B02 Rod(3,4) Pos.9	270	1470	K	6.44	0.54
942	TW 145	TWE-B03421	B03 Rod(4,2) Pos.1	270	1470	K	6.44	0.54
943	TW 146	TWE-B03422	B03 Rod(4,2) Pos.2	270	1470	K	6.44	0.54
944	TW 147	TWE-B03424	B03 Rod(4,2) Pos.4	270	1470	K	6.44	0.54
945	TW 148	TWE-B03425	B03 Rod(4,2) Pos.5	270	1470	K	6.44	0.54
946	TW 149	TWE-B03427	B03 Rod(4,2) Pos.7	270	1470	K	6.44	0.54
947	TW 150	TWE-B03429	B03 Rod(4,2) Pos.9	270	1470	K	6.44	0.54
948	TW 151	TWE-B03431	B03 Rod(4,3) Pos.1	270	1470	K	6.44	0.54
949	TW 152	TWE-B03433	B03 Rod(4,3) Pos.3	270	1470	K	6.44	0.54
950	TW 153	TWE-B03435	B03 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
951	TW 154	TWE-B03436	B03 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
952	TW 155	TWE-B03438	B03 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
953	TW 163	TWE-B04432	B04 Rod(4,3) Pos.2	270	1470	K	6.44	0.54
954	TW 164	TWE-B04434	B04 Rod(4,3) Pos.4	270	1470	K	6.44	0.54
955	TW 165	TWE-B04435	B04 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
956	TW 166	TWE-B04436	B04 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
957	TW 167	TWE-B04437	B04 Rod(4,3) Pos.7	270	1470	K	6.44	0.54
958	TW 168	TWE-B04438	B04 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
959	TW 169	TWE-B05342	B05 Rod(3,4) Pos.2	270	1470	K	6.44	0.54
960	TW 170	TWE-B05344	B05 Rod(3,4) Pos.4	270	1470	K	6.44	0.54
961	TW 171	TWE-B05345	B05 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
962	TW 172	TWE-B05346	B05 Rod(3,4) Pos.6	270	1470	K	6.44	0.54
963	TW 173	TWE-B05347	B05 Rod(3,4) Pos.7	270	1470	K	6.44	0.54
964	TW 174	TWE-B05348	B05 Rod(3,4) Pos.8	270	1470	K	6.44	0.54
965	TW 181	TWE-B06241	B06 Rod(2,4) Pos.1	270	1470	K	6.44	0.54
966	TW 182	TWE-B06242	B06 Rod(2,4) Pos.2	270	1470	K	6.44	0.54
967	TW 183	TWE-B06244	B06 Rod(2,4) Pos.4	270	1470	K	6.44	0.54
968	TW 184	TWE-B06245	B06 Rod(2,4) Pos.5	270	1470	K	6.44	0.54
969	TW 185	TWE-B06247	B06 Rod(2,4) Pos.7	270	1470	K	6.44	0.54
970	TW 186	TWE-B06249	B06 Rod(2,4) Pos.9	270	1470	K	6.44	0.54
971	TW 187	TWE-B06341	B06 Rod(3,4) Pos.1	270	1470	K	6.44	0.54
972	TW 188	TWE-B06343	B06 Rod(3,4) Pos.3	270	1470	K	6.44	0.54
973	TW 189	TWE-B06345	B06 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
974	TW 190	TWE-B06346	B06 Rod(3,4) Pos.6	270	1470	K	6.44	0.54
975	TW 191	TWE-B06348	B06 Rod(3,4) Pos.8	270	1470	K	6.44	0.54
976	TW 192	TWE-B06349	B06 Rod(3,4) Pos.9	270	1470	K	6.44	0.54
977	TW 199	TWE-B07421	B07 Rod(4,2) Pos.1	270	1470	K	6.44	0.54
978	TW 200	TWE-B07422	B07 Rod(4,2) Pos.2	270	1470	K	6.44	0.54
979	TW 201	TWE-B07424	B07 Rod(4,2) Pos.4	270	1470	K	6.44	0.54
980	TW 202	TWE-B07425	B07 Rod(4,2) Pos.5	270	1470	K	6.44	0.54
981	TW 203	TWE-B07427	B07 Rod(4,2) Pos.7	270	1470	K	6.44	0.54

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
982	TW 204	TWE-B07429	B07 Rod(4,2) Pos.9	270	1470	K	6.44	0.54
983	TW 205	TWE-B07431	B07 Rod(4,3) Pos.1	270	1470	K	6.44	0.54
984	TW 206	TWE-B07433	B07 Rod(4,3) Pos.3	270	1470	K	6.44	0.54
985	TW 207	TWE-B07435	B07 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
986	TW 208	TWE-B07436	B07 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
987	TW 209	TWE-B07438	B07 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
988	TW 210	TWE-B07439	B07 Rod(4,3) Pos.9	270	1470	K	6.44	0.54
989	TW 217	TWE-B08222	B08 Rod(2,2) Pos.2	270	970	K	4.31	0.62
990	TW 218	TWE-B08224	B08 Rod(2,2) Pos.4	270	970	K	4.31	0.62
991	TW 219	TWE-B08225	B08 Rod(2,2) Pos.5	270	970	K	4.31	0.62
992	TW 220	TWE-B08226	B08 Rod(2,2) Pos.6	270	970	K	4.31	0.62
993	TW 221	TWE-B08227	B08 Rod(2,2) Pos.7	270	970	K	4.31	0.62
994	TW 222	TWE-B08228	B08 Rod(2,2) Pos.8	270	970	K	4.31	0.62
995	TW 223	TWE-B08432	B08 Rod(4,3) Pos.2	270	1470	K	6.44	0.54
996	TW 224	TWE-B08434	B08 Rod(4,3) Pos.4	270	1470	K	6.44	0.54
997	TW 225	TWE-B08435	B08 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
998	TW 226	TWE-B08436	B08 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
999	TW 227	TWE-B08437	B08 Rod(4,3) Pos.7	270	1470	K	6.44	0.54
1000	TW 228	TWE-B08438	B08 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
1001	TW 229	TWE-B09442	B09 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1002	TW 230	TWE-B09444	B09 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1003	TW 231	TWE-B09445	B09 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1004	TW 232	TWE-B09446	B09 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1005	TW 233	TWE-B09447	B09 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1006	TW 234	TWE-B09448	B09 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1007	TW 235	TWE-B10441	B10 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1008	TW 236	TWE-B10442	B10 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1009	TW 237	TWE-B10444	B10 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1010	TW 238	TWE-B10445	B10 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1011	TW 239	TWE-B10447	B10 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1012	TW 240	TWE-B10449	B10 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1013	TW 241	TWE-B10451	B10 Rod(4,5) Pos.1	270	1470	K	6.44	0.54
1014	TW 242	TWE-B10453	B10 Rod(4,5) Pos.3	270	1470	K	6.44	0.54
1015	TW 243	TWE-B10455	B10 Rod(4,5) Pos.5	270	1470	K	6.44	0.54
1016	TW 244	TWE-B10456	B10 Rod(4,5) Pos.6	270	1470	K	6.44	0.54
1017	TW 245	TWE-B10458	B10 Rod(4,5) Pos.8	270	1470	K	6.44	0.54
1018	TW 246	TWE-B10459	B10 Rod(4,5) Pos.9	270	1470	K	6.44	0.54
1019	TW 247	TWE-B11442	B11 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1020	TW 248	TWE-B11444	B11 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1021	TW 249	TWE-B11445	B11 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1022	TW 250	TWE-B11446	B11 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1023	TW 251	TWE-B11447	B11 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1024	TW 252	TWE-B11448	B11 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1025	TW 253	TWE-B11172	B11 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1026	TW 254	TWE-B11174	B11 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1027	TW 255	TWE-B11175	B11 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1028	TW 256	TWE-B11176	B11 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1029	TW 257	TWE-B11177	B11 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1030	TW 258	TWE-B11178	B11 Rod(1,7) Pos.8	270	1470	K	6.44	0.54
1031	TW 259	TWE-B12262	B12 Rod(2,6) Pos.2	270	970	K	4.31	0.62
1032	TW 260	TWE-B12264	B12 Rod(2,6) Pos.4	270	970	K	4.31	0.62
1033	TW 261	TWE-B12265	B12 Rod(2,6) Pos.5	270	970	K	4.31	0.62
1034	TW 262	TWE-B12266	B12 Rod(2,6) Pos.6	270	970	K	4.31	0.62
1035	TW 263	TWE-B12267	B12 Rod(2,6) Pos.7	270	970	K	4.31	0.62
1036	TW 264	TWE-B12268	B12 Rod(2,6) Pos.8	270	970	K	4.31	0.62
1037	TW 265	TWE-B12441	B12 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1038	TW 266	TWE-B12442	B12 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1039	TW 267	TWE-B12444	B12 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1040	TW 268	TWE-B12445	B12 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1041	TW 269	TWE-B12447	B12 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1042	TW 270	TWE-B12449	B12 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1043	TW 271	TWE-B12431	B12 Rod(4,3) Pos.1	270	1470	K	6.44	0.54
1044	TW 272	TWE-B12433	B12 Rod(4,3) Pos.3	270	1470	K	6.44	0.54
1045	TW 273	TWE-B12435	B12 Rod(4,3) Pos.5	270	1470	K	6.44	0.54
1046	TW 274	TWE-B12436	B12 Rod(4,3) Pos.6	270	1470	K	6.44	0.54
1047	TW 275	TWE-B12438	B12 Rod(4,3) Pos.8	270	1470	K	6.44	0.54
1048	TW 276	TWE-B12439	B12 Rod(4,3) Pos.9	270	1470	K	6.44	0.54
1049	TW 277	TWE-B13662	B13 Rod(6,6) Pos.2	270	970	K	4.31	0.62
1050	TW 278	TWE-B13664	B13 Rod(6,6) Pos.4	270	970	K	4.31	0.62
1051	TW 279	TWE-B13665	B13 Rod(6,6) Pos.5	270	970	K	4.31	0.62
1052	TW 280	TWE-B13666	B13 Rod(6,6) Pos.6	270	970	K	4.31	0.62
1053	TW 281	TWE-B13667	B13 Rod(6,6) Pos.7	270	970	K	4.31	0.62
1054	TW 282	TWE-B13668	B13 Rod(6,6) Pos.8	270	970	K	4.31	0.62
1055	TW 283	TWE-B13442	B13 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1056	TW 284	TWE-B13444	B13 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1057	TW 285	TWE-B13445	B13 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1058	TW 286	TWE-B13446	B13 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1059	TW 287	TWE-B13447	B13 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1060	TW 288	TWE-B13448	B13 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1061	TW 289	TWE-B14541	B14 Rod(5,4) Pos.1	270	1470	K	6.44	0.54
1062	TW 290	TWE-B14542	B14 Rod(5,4) Pos.2	270	1470	K	6.44	0.54
1063	TW 291	TWE-B14544	B14 Rod(5,4) Pos.4	270	1470	K	6.44	0.54

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1064	TW 292	TWE-B14545	B14 Rod(5,4) Pos.5	270	1470	K	6.44	0.54
1065	TW 293	TWE-B14547	B14 Rod(5,4) Pos.7	270	1470	K	6.44	0.54
1066	TW 294	TWE-B14549	B14 Rod(5,4) Pos.9	270	1470	K	6.44	0.54
1067	TW 295	TWE-B14441	B14 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1068	TW 296	TWE-B14443	B14 Rod(4,4) Pos.3	270	1470	K	6.44	0.54
1069	TW 297	TWE-B14445	B14 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1070	TW 298	TWE-B14446	B14 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1071	TW 299	TWE-B14448	B14 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1072	TW 300	TWE-B14449	B14 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1073	TW 301	TWE-B14172	B14 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1074	TW 302	TWE-B14174	B14 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1075	TW 303	TWE-B14175	B14 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1076	TW 304	TWE-B14176	B14 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1077	TW 305	TWE-B14177	B14 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1078	TW 306	TWE-B14178	B14 Rod(1,7) Pos.8	270	1470	K	6.44	0.54
1079	TW 307	TWE-B15441	B15 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1080	TW 308	TWE-B15442	B15 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1081	TW 309	TWE-B15444	B15 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1082	TW 310	TWE-B15445	B15 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1083	TW 311	TWE-B15447	B15 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1084	TW 312	TWE-B15449	B15 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1085	TW 313	TWE-B15451	B15 Rod(4,5) Pos.1	270	1470	K	6.44	0.54
1086	TW 314	TWE-B15453	B15 Rod(4,5) Pos.3	270	1470	K	6.44	0.54
1087	TW 315	TWE-B15455	B15 Rod(4,5) Pos.5	270	1470	K	6.44	0.54
1088	TW 316	TWE-B15456	B15 Rod(4,5) Pos.6	270	1470	K	6.44	0.54
1089	TW 317	TWE-B15458	B15 Rod(4,5) Pos.8	270	1470	K	6.44	0.54
1090	TW 318	TWE-B15459	B15 Rod(4,5) Pos.9	270	1470	K	6.44	0.54
1091	TW 319	TWE-B15172	B15 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1092	TW 320	TWE-B15174	B15 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1093	TW 321	TWE-B15175	B15 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1094	TW 322	TWE-B15176	B15 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1095	TW 323	TWE-B15177	B15 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1096	TW 324	TWE-B15178	B15 Rod(1,7) Pos.8	270	1470	K	6.44	0.54
1097	TW 325	TWE-B16442	B16 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1098	TW 326	TWE-B16444	B16 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1099	TW 327	TWE-B16445	B16 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1100	TW 328	TWE-B16446	B16 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1101	TW 329	TWE-B16447	B16 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1102	TW 330	TWE-B16448	B16 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1103	TW 331	TWE-B16172	B16 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1104	TW 332	TWE-B16174	B16 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1105	TW 333	TWE-B16175	B16 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1106	TW 334	TWE-B16176	B16 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1107	TW 335	TWE-B16177	B16 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1108	TW 336	TWE-B16178	B16 Roc(1,7) Pos.8	270	1470	K	6.44	0.54
1109	TW 337	TWE-B17442	B17 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1110	TW 338	TWE-B17444	B17 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1111	TW 339	TWE-B17445	B17 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1112	TW 340	TWE-B17446	B17 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1113	TW 341	TWE-B17447	B17 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1114	TW 342	TWE-B17448	B17 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1115	TW 343	TWE-B17172	B17 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1116	TW 344	TWE-B17174	B17 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1117	TW 345	TWE-B17175	B17 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1118	TW 346	TWE-B17176	B17 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1119	TW 347	TWE-B17177	B17 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1120	TW 348	TWE-B17178	B17 Rod(1,7) Pos.8	270	1470	K	6.44	0.54
1121	TW 349	TWE-B18341	B18 Rod(3,4) Pos.1	270	1470	K	6.44	0.54
1122	TW 350	TWE-B18342	B18 Rod(3,4) Pos.2	270	1470	K	6.44	0.54
1123	TW 351	TWE-B18344	B18 Rod(3,4) Pos.4	270	1470	K	6.44	0.54
1124	TW 352	TWE-B18345	B18 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
1125	TW 353	TWE-B18347	B18 Rod(3,4) Pos.7	270	1470	K	6.44	0.54
1126	TW 354	TWE-B18349	B18 Rod(3,4) Pos.9	270	1470	K	6.44	0.54
1127	TW 355	TWE-B18441	B18 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1128	TW 356	TWE-B18443	B18 Rod(4,4) Pos.3	270	1470	K	6.44	0.54
1129	TW 357	TWE-B18445	B18 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1130	TW 358	TWE-B18446	B18 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1131	TW 359	TWE-B18448	B18 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1132	TW 360	TWE-B18449	B18 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1133	TW 361	TWE-B19451	B19 Rod(4,5) Pos.1	270	1470	K	6.44	0.54
1134	TW 362	TWE-B19452	B19 Rod(4,5) Pos.2	270	1470	K	6.44	0.54
1135	TW 363	TWE-B19454	B19 Rod(4,5) Pos.4	270	1470	K	6.44	0.54
1136	TW 364	TWE-B19455	B19 Rod(4,5) Pos.5	270	1470	K	6.44	0.54
1137	TW 365	TWE-B19457	B19 Rod(4,5) Pos.7	270	1470	K	6.44	0.54
1138	TW 366	TWE-B19459	B19 Rod(4,5) Pos.9	270	1470	K	6.44	0.54
1139	TW 367	TWE-B19441	B19 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1140	TW 368	TWE-B19443	B19 Rod(4,4) Pos.3	270	1470	K	6.44	0.54
1141	TW 369	TWE-B19445	B19 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1142	TW 370	TWE-B19446	B19 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1143	TW 371	TWE-B19448	B19 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1144	TW 372	TWE-B19449	B19 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1145	TW 373	TWE-B20441	B20 Rod(4,4) Pos.1	270	1470	K	6.44	0.54

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1146	TW 374	TWE-B20442	B20 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1147	TW 375	TWE-B20444	B20 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1148	TW 376	TWE-B20445	B20 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1149	TW 377	TWE-B20447	B20 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1150	TW 378	TWE-B20449	B20 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1151	TW 379	TWE-B21441	B21 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1152	TW 380	TWE-B21442	B21 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1153	TW 381	TWE-B21444	B21 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1154	TW 382	TWE-B21445	B21 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1155	TW 383	TWE-B21447	B21 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1156	TW 384	TWE-B21449	B21 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1157	TW 385	TWE-B21541	B21 Rod(5,4) Pos.1	270	1470	K	6.44	0.54
1158	TW 386	TWE-B21543	B21 Rod(5,4) Pos.3	270	1470	K	6.44	0.54
1159	TW 387	TWE-B21545	B21 Rod(5,4) Pos.5	270	1470	K	6.44	0.54
1160	TW 388	TWE-B21546	B21 Rod(5,4) Pos.6	270	1470	K	6.44	0.54
1161	TW 389	TWE-B21548	B21 Rod(5,4) Pos.8	270	1470	K	6.44	0.54
1162	TW 390	TWE-B21549	B21 Rod(5,4) Pos.9	270	1470	K	6.44	0.54
1163	TW 391	TWE-B21662	B21 Rod(6,6) Pos.2	270	970	K	4.31	0.62
1164	TW 392	TWE-B21664	B21 Rod(6,6) Pos.4	270	970	K	4.31	0.62
1165	TW 393	TWE-B21665	B21 Rod(6,6) Pos.5	270	970	K	4.31	0.62
1166	TW 394	TWE-B21666	B21 Rod(6,6) Pos.6	270	970	K	4.31	0.62
1167	TW 395	TWE-B21667	B21 Rod(6,6) Pos.7	270	970	K	4.31	0.62
1168	TW 396	TWE-B21668	B21 Rod(6,6) Pos.8	270	970	K	4.31	0.62
1169	TW 397	TWE-B21112	B21 Rod(1,1) Pos.2	270	1470	K	6.44	0.54
1170	TW 398	TWE-B21114	B21 Rod(1,1) Pos.4	270	1470	K	6.44	0.54
1171	TW 399	TWE-B21115	B21 Rod(1,1) Pos.5	270	1470	K	6.44	0.54
1172	TW 400	TWE-B21116	B21 Rod(1,1) Pos.6	270	1470	K	6.44	0.54
1173	TW 401	TWE-B21117	B21 Rod(1,1) Pos.7	270	1470	K	6.44	0.54
1174	TW 402	TWE-B21118	B21 Rod(1,1) Pos.8	270	1470	K	6.44	0.54
1175	TW 403	TWE-B22541	B22 Rod(5,4) Pos.1	270	1470	K	6.44	0.54
1176	TW 404	TWE-B22542	B22 Rod(5,4) Pos.2	270	1470	K	6.44	0.54
1177	TW 405	TWE-B22544	B22 Rod(5,4) Pos.4	270	1470	K	6.44	0.54
1178	TW 406	TWE-B22545	B22 Rod(5,4) Pos.5	270	1470	K	6.44	0.54
1179	TW 407	TWE-B22547	B22 Rod(5,4) Pos.7	270	1470	K	6.44	0.54
1180	TW 408	TWE-B22549	B22 Rod(5,4) Pos.9	270	1470	K	6.44	0.54
1181	TW 409	TWE-B22441	B22 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1182	TW 410	TWE-B22443	B22 Rod(4,4) Pos.3	270	1470	K	6.44	0.54
1183	TW 411	TWE-B22445	B22 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1184	TW 412	TWE-B22446	B22 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1185	TW 413	TWE-B22448	B22 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1186	TW 414	TWE-B22449	B22 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1187	TW 415	TWE-B22172	B22 Rod(1,7) Pos.2	270	1470	K	6.44	0.54
1188	TW 416	TWE-B22174	B22 Rod(1,7) Pos.4	270	1470	K	6.44	0.54
1189	TW 417	TWE-B22175	B22 Rod(1,7) Pos.5	270	1470	K	6.44	0.54
1190	TW 418	TWE-B22176	B22 Rod(1,7) Pos.6	270	1470	K	6.44	0.54
1191	TW 419	TWE-B22177	B22 Rod(1,7) Pos.7	270	1470	K	6.44	0.54
1192	TW 420	TWE-B22178	B22 Rod(1,7) Pos.8	270	1470	K	6.44	0.54
1193	TW 421	TWE-B23441	B23 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1194	TW 422	TWE-B23442	B23 Rod(4,4) Pos.2	270	1470	K	6.44	0.54
1195	TW 423	TWE-B23444	B23 Rod(4,4) Pos.4	270	1470	K	6.44	0.54
1196	TW 424	TWE-B23445	B23 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1197	TW 425	TWE-B23447	B23 Rod(4,4) Pos.7	270	1470	K	6.44	0.54
1198	TW 426	TWE-B23449	B23 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1199	TW 427	TWE-B23451	B23 Rod(4,5) Pos.1	270	1470	K	6.44	0.54
1200	TW 428	TWE-B23453	B23 Rod(4,5) Pos.3	270	1470	K	6.44	0.54
1201	TW 429	TWE-B23455	B23 Rod(4,5) Pos.5	270	1470	K	6.44	0.54
1202	TW 430	TWE-B23456	B23 Rod(4,5) Pos.6	270	1470	K	6.44	0.54
1203	TW 431	TWE-B23458	B23 Rod(4,5) Pos.8	270	1470	K	6.44	0.54
1204	TW 432	TWE-B23459	B23 Rod(4,5) Pos.9	270	1470	K	6.44	0.54
1205	TW 433	TWE-B20112	B20 Rod(1,1) Pos.2	270	1470	K	6.44	0.54
1206	TW 434	TWE-B20114	B20 Rod(1,1) Pos.4	270	1470	K	6.44	0.54
1207	TW 435	TWE-B20115	B20 Rod(1,1) Pos.5	270	1470	K	6.44	0.54
1208	TW 436	TWE-B20116	B20 Rod(1,1) Pos.6	270	1470	K	6.44	0.54
1209	TW 437	TWE-B20117	B20 Rod(1,1) Pos.7	270	1470	K	6.44	0.54
1210	TW 438	TWE-B20118	B20 Rod(1,1) Pos.8	270	1470	K	6.44	0.54
1211	TW 439	TWE-B24341	B24 Rod(3,4) Pos.1	270	1470	K	6.44	0.54
1212	TW 440	TWE-B24342	B24 Rod(3,4) Pos.2	270	1470	K	6.44	0.54
1213	TW 441	TWE-B24344	B24 Rod(3,4) Pos.4	270	1470	K	6.44	0.54
1214	TW 442	TWE-B24345	B24 Rod(3,4) Pos.5	270	1470	K	6.44	0.54
1215	TW 443	TWE-B24347	B24 Rod(3,4) Pos.7	270	1470	K	6.44	0.54
1216	TW 444	TWE-B24349	B24 Rod(3,4) Pos.9	270	1470	K	6.44	0.54
1217	TW 445	TWE-B24441	B24 Rod(4,4) Pos.1	270	1470	K	6.44	0.54
1218	TW 446	TWE-B24443	B24 Rod(4,4) Pos.3	270	1470	K	6.44	0.54
1219	TW 447	TWE-B24445	B24 Rod(4,4) Pos.5	270	1470	K	6.44	0.54
1220	TW 448	TWE-B24446	B24 Rod(4,4) Pos.6	270	1470	K	6.44	0.54
1221	TW 449	TWE-B24448	B24 Rod(4,4) Pos.8	270	1470	K	6.44	0.54
1222	TW 450	TWE-B24449	B24 Rod(4,4) Pos.9	270	1470	K	6.44	0.54
1223	TW 451	TWE-B24712	B24 Rod(7,1) Pos.2	270	1470	K	6.44	0.54
1224	TW 452	TWE-B24714	B24 Rod(7,1) Pos.4	270	1470	K	6.44	0.54
1225	TW 453	TWE-B24715	B24 Rod(7,1) Pos.5	270	1470	K	6.44	0.54
1226	TW 454	TWE-B24716	B24 Rod(7,1) Pos.6	270	1470	K	6.44	0.54
1227	TW 455	TWE-B24717	B24 Rod(7,1) Pos.7	270	1470	K	6.44	0.54

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1228	TW 456	TWE-B24718	B24 Rod(7,1) Pos.8	270	1470	K	6.44	0.54
1229	TW 457	TWE-IN0641-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
1230	TW 458	TWE-IN0642-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
1231	TW 459	TWE-IN0643-SGA	SGA Inlet Plenum	270	720	K	3.31	0.74
1232	TW 463	TWE-086B-SGA	SGA Inner Wall Pos.1	270	670	K	3.11	0.78
1233	TW 464	TWE-137B-SGA	SGA Inner Wall Pos.7	270	670	K	3.11	0.78
1234	TW 465	TWE-178B-SGA	SGA Inner Wall Pos.10	270	670	K	3.11	0.78
1235	TW 466	TWE-223B-SGA	SGA Inner Wall	270	670	K	3.11	0.78
1236	TW 467	TWE-IN0861-SGA	SGA U-Tube(1,IN) Pos.1	270	720	K	3.31	0.74
1237	TW 468	TWE-EX0861-SGA	SGA U-Tube(1,EX) Pos.1	270	720	K	3.31	0.74
1238	TW 469	TWE-IN0862-SGA	SGA U-Tube(2,IN) Pos.1	270	720	K	3.31	0.74
1239	TW 470	TWE-EX0862-SGA	SGA U-Tube(2,EX) Pos.1	270	720	K	3.31	0.74
1240	TW 471	TWE-IN0863-SGA	SGA U-Tube(3,IN) Pos.1	270	720	K	3.31	0.74
1241	TW 472	TWE-EX0863-SGA	SGA U-Tube(3,EX) Pos.1	270	720	K	3.31	0.74
1242	TW 473	TWE-IN0991-SGA	SGA U-Tube(1,IN) Pos.3	270	720	K	3.31	0.74
1243	TW 474	TWE-EX0991-SGA	SGA U-Tube(1,EX) Pos.3	270	720	K	3.31	0.74
1244	TW 475	TWE-IN0992-SGA	SGA U-Tube(2,IN) Pos.3	270	720	K	3.31	0.74
1245	TW 476	TWE-EX0992-SGA	SGA U-Tube(2,EX) Pos.3	270	720	k	3.31	0.74
1246	TW 477	TWE-IN0993-SGA	SGA U-Tube(3,IN) Pos.3	270	720	K	3.31	0.74
1247	TW 478	TWE-EX0993-SGA	SGA U-Tube(3,EX) Pos.3	270	720	K	3.31	0.74
1248	TW 479	TWE-IN1121-SGA	SGA U-Tube(1,IN) Pos.5	270	720	K	3.31	0.74
1249	TW 480	TWE-EX1121-SGA	SGA U-Tube(1,EX) Pos.5	270	720	K	3.31	0.74
1250	TW 481	TWE-IN1122-SGA	SGA U-Tube(2,IN) Pos.5	270	720	K	3.31	0.74
1251	TW 482	TWE-EX1122-SGA	SGA U-Tube(2,EX) Pos.5	270	720	K	3.31	0.74
1252	TW 483	TWE-IN1123-SGA	SGA U-Tube(3,IN) Pos.5	270	720	K	3.31	0.74
1253	TW 484	TWE-EX1123-SGA	SGA U-Tube(3,EX) Pos.5	270	720	K	3.31	0.74
1254	TW 485	TWE-IN1371-SGA	SGA U-Tube(1,IN) Pos.7	270	720	K	3.31	0.74
1255	TW 486	TWE-EX1371-SGA	SGA U-Tube(1,EX) Pos.7	270	720	K	3.31	0.74
1256	TW 487	TWE-IN1372-SGA	SGA U-Tube(2,IN) Pos.7	270	720	K	3.31	0.74
1257	TW 488	TWE-EX1372-SGA	SGA U-Tube(2,EX) Pos.7	270	720	K	3.31	0.74
1258	TW 489	TWE-IN1373-SGA	SGA U-Tube(3,IN) Pos.7	270	720	K	3.31	0.74
1259	TW 490	TWE-EX1373-SGA	SGA U-Tube(3,EX) Pos.7	270	720	K	3.31	0.74
1260	TW 491	TWE-IN1632-SGA	SGA U-Tube(2,IN) Pos.9	270	720	K	3.31	0.74
1261	TW 492	TWE-EX1632-SGA	SGA U-Tube(2,EX) Pos.9	270	720	K	3.31	0.74
1262	TW 493	TWE-IN1633-SGA	SGA U-Tube(3,IN) Pos.9	270	720	K	3.31	0.74
1263	TW 494	TWE-EX1633-SGA	SGA U-Tube(3,EX) Pos.9	270	720	K	3.31	0.74
1264	TW 495	TWE-IN1701-SGA	SGA U-Tube(1,IN) Pos.10	270	720	K	3.31	0.74
1265	TW 496	TWE-IN1782-SGA	SGA U-Tube(2,IN) Pos.10	270	720	K	3.31	0.74
1266	TW 497	TWE-IN1863-SGA	SGA U-Tube(3,IN) Pos.11	270	720	K	3.31	0.74
1267	TW 498	TWE-IN0641-SGB	SGB Inlet Plenum	270	720	K	3.74	0.83
1268	TW 499	TWE-IN0642-SGB	SGB Inlet Plenum	270	720	K	3.74	0.83
1269	TW 500	TWE-IN0643-SGB	SGB Inlet Plenum	270	720	K	3.74	0.83
1270	TW 504	TWE-086B-SGB	SGB Inner Wall Pos.1	270	670	K	3.11	0.78
1271	TW 505	TWE-137B-SGB	SGB Inner Wall Pos.7	270	670	K	3.11	0.78
1272	TW 506	TWE-178B-SGB	SGB Inner Wall Pos.10	270	670	K	3.11	0.78
1273	TW 507	TWE-223B-SGB	SGB Inner Wall	270	670	K	3.11	0.78
1274	TW 508	TWE-IN0861-SGB	SGB U-Tube(1,IN) Pos.1	270	720	K	3.31	0.74
1275	TW 509	TWE-EX0861-SGB	SGB U-Tube(1,EX) Pos.1	270	720	K	3.31	0.74
1276	TW 510	TWE-IN0862-SGB	SGB U-Tube(2,IN) Pos.1	270	720	K	3.31	0.74
1277	TW 511	TWE-EX0862-SGB	SGB U-Tube(2,EX) Pos.1	270	720	K	3.31	0.74
1278	TW 512	TWE-IN0863-SGB	SGB U-Tube(3,IN) Pos.1	270	720	K	3.31	0.74
1279	TW 513	TWE-EX0863-SGB	SGB U-Tube(3,EX) Pos.1	270	720	K	3.31	0.74
1280	TW 514	TWE-IN0991-SGB	SGB U-Tube(1,IN) Pos.3	270	720	K	3.31	0.74
1281	TW 515	TWE-EX0991-SGB	SGB U-Tube(1,EX) Pos.3	270	720	K	3.31	0.74
1282	TW 516	TWE-IN0992-SGB	SGB U-Tube(2,IN) Pos.3	270	720	K	3.31	0.74
1283	TW 517	TWE-EX0992-SGB	SGB U-Tube(2,EX) Pos.3	270	720	K	3.31	0.74
1284	TW 518	TWE-IN0993-SGB	SGB U-Tube(3,IN) Pos.3	270	720	K	3.31	0.74
1285	TW 519	TWE-EX0993-SGB	SGB U-Tube(3,EX) Pos.3	270	720	K	3.31	0.74
1286	TW 520	TWE-IN1121-SGB	SGB U-Tube(1,IN) Pos.5	270	720	K	3.31	0.74
1287	TW 521	TWE-EX1121-SGB	SGB U-Tube(1,EX) Pos.5	270	720	K	3.31	0.74
1288	TW 522	TWE-IN1122-SGB	SGB U-Tube(2,IN) Pos.5	270	720	K	3.31	0.74
1289	TW 523	TWE-EX1122-SGB	SGB U-Tube(2,EX) Pos.5	270	720	K	3.31	0.74
1290	TW 524	TWE-IN1123-SGB	SGB U-Tube(3,IN) Pos.5	270	720	K	3.31	0.74
1291	TW 525	TWE-EX1123-SGB	SGB U-Tube(3,EX) Pos.5	270	720	K	3.31	0.74
1292	TW 526	TWE-IN1371-SGB	SGB U-Tube(1,IN) Pos.7	270	720	K	3.31	0.74
1293	TW 527	TWE-EX1371-SGB	SGB U-Tube(1,EX) Pos.7	270	720	K	3.31	0.74
1294	TW 528	TWE-IN1372-SGB	SGB U-Tube(2,IN) Pos.7	270	720	K	3.31	0.74
1295	TW 529	TWE-EX1372-SGB	SGB U-Tube(2,EX) Pos.7	270	720	K	3.31	0.74
1296	TW 530	TWE-IN1373-SGB	SGB U-Tube(3,IN) Pos.7	270	720	K	3.31	0.74
1297	TW 531	TWE-EX1373-SGB	SGB U-Tube(3,EX) Pos.7	270	720	K	3.31	0.74
1298	TW 532	TWE-IN1632-SGB	SGB U-Tube(2,IN) Pos.9	270	720	K	3.31	0.74
1299	TW 533	TWE-EX1632-SGB	SGB U-Tube(2,EX) Pos.9	270	720	K	3.31	0.74
1300	TW 534	TWE-IN1633-SGB	SGB U-Tube(3,IN) Pos.9	270	720	K	3.31	0.74
1301	TW 535	TWE-EX1633-SGB	SGB U-Tube(3,EX) Pos.9	270	720	K	3.31	0.74
1302	TW 536	TWE-IN1701-SGB	SGB U-Tube(1,IN) Pos.10	270	720	K	3.31	0.74
1303	TW 537	TWE-IN1782-SGB	SGB U-Tube(2,IN) Pos.10	270	720	K	3.31	0.74
1304	TW 538	TWE-IN1863-SGB	SGB U-Tube(3,IN) Pos.11	270	720	K	3.31	0.74
1305	TW 539	TWE-211A-PR	PR Outer Wall	270	720	K	3.31	0.74
1306	TW 540	TWE-211B-PR	PR Inner Wall	270	720	K	3.31	0.74
1307	TW 541	TWE-194A-PR	PR Outer Wall	270	720	K	3.31	0.74
1308	TW 542	TWE-194B-PR	PR Inner Wall	270	720	K	3.31	0.74
1309	TW 543	TWE-177A-PR	PR Outer Wall	270	720	K	3.31	0.74

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1310	TW 544	TWE-177B-PR	PR Inner Wall	270	720	K	3.31	0.74
1311	TW 545	TWE270A-PR	PR Spray Line Outer Wall	270	720	K	3.31	0.74
1312	TW 590	TWE-111D-CDP	PLR-02-1 Outer Wall	270	970	K	4.31	0.62
1313	TW 591	TWE-112D-CDP	PLR-01-2 Outer Wall	270	970	K	4.31	0.62
1314	TW 592	TWE-113D-CDP	PLR-08-3 Outer Wall	270	970	K	4.31	0.62
1315	TW 593	TWE-114D-CDP	PLR-07-4 Outer Wall	270	970	K	4.31	0.62
1316	TW 594	TWE-115D-CDP	PLR-06-5 Outer Wall	270	970	K	4.31	0.62
1317	TW 595	TWE-116D-CDP	PLR-05-6 Outer Wall	270	970	K	4.31	0.62
1318	TW 596	TWE-117D-CDP	PLR-04-7 Outer Wall	270	970	K	4.31	0.62
1319	TW 597	TWE-118D-CDP	PLR-03-8 Outer Wall	270	970	K	4.31	0.62
1320	TW 598	TWE-121D-UHDP	PLR-UH-9 Outer Wall	270	970	K	4.31	0.62
1321	TW 599	TWE-B02552	B02 Rod(5,5) Pos.2	270	1470	K	6.32	0.53
1322	TW 600	TWE-B02554	B02 Rod(5,5) Pos.4	270	1470	K	6.32	0.53
1323	TW 601	TWE-B02555	B02 Rod(5,5) Pos.5	270	1470	K	6.32	0.53
1324	TW 602	TWE-B02556	B02 Rod(5,5) Pos.6	270	1470	K	6.32	0.53
1325	TW 603	TWE-B02557	B02 Rod(5,5) Pos.7	270	1470	K	6.32	0.53
1326	TW 604	TWE-B02558	B02 Rod(5,5) Pos.8	270	1470	K	6.32	0.53
1327	TW 605	TWE-B03552	B03 Rod(5,5) Pos.2	270	1470	K	6.32	0.53
1328	TW 606	TWE-B03554	B03 Rod(5,5) Pos.4	270	1470	K	6.32	0.53
1329	TW 607	TWE-B03555	B03 Rod(5,5) Pos.5	270	1470	K	6.32	0.53
1330	TW 608	TWE-B03556	B03 Rod(5,5) Pos.6	270	1470	K	6.32	0.53
1331	TW 609	TWE-B03557	B03 Rod(5,5) Pos.7	270	1470	K	6.32	0.53
1332	TW 610	TWE-B03558	B03 Rod(5,5) Pos.8	270	1470	K	6.32	0.53
1333	TW 611	TWE-B05112	B05 Rod(1,1) Pos.2	270	1470	K	6.32	0.53
1334	TW 612	TWE-B05114	B05 Rod(1,1) Pos.4	270	1470	K	6.32	0.53
1335	TW 613	TWE-B05115	B05 Rod(1,1) Pos.5	270	1470	K	6.32	0.53
1336	TW 614	TWE-B05116	B05 Rod(1,1) Pos.6	270	1470	K	6.32	0.53
1337	TW 615	TWE-B05117	B05 Rod(1,1) Pos.7	270	1470	K	6.32	0.53
1338	TW 616	TWE-B05118	B05 Rod(1,1) Pos.8	270	1470	K	6.32	0.53
1339	TW 617	TWE-B06552	B06 Rod(5,5) Pos.2	270	1470	K	6.32	0.53
1340	TW 618	TWE-B06554	B06 Rod(5,5) Pos.4	270	1470	K	6.32	0.53
1341	TW 619	TWE-B06555	B06 Rod(5,5) Pos.5	270	1470	K	6.32	0.53
1342	TW 620	TWE-B06556	B06 Rod(5,5) Pos.6	270	1470	K	6.32	0.53
1343	TW 621	TWE-B06557	B06 Rod(5,5) Pos.7	270	1470	K	6.32	0.53
1344	TW 622	TWE-B06558	B06 Rod(5,5) Pos.8	270	1470	K	6.32	0.53
1345	TW 623	TWE-B07552	B07 Rod(5,5) Pos.2	270	1470	K	6.32	0.53
1346	TW 624	TWE-B07554	B07 Rod(5,5) Pos.4	270	1470	K	6.32	0.53
1347	TW 625	TWE-B07555	B07 Rod(5,5) Pos.5	270	1470	K	6.32	0.53
1348	TW 626	TWE-B07556	B07 Rod(5,5) Pos.6	270	1470	K	6.32	0.53
1349	TW 627	TWE-B07557	B07 Rod(5,5) Pos.7	270	1470	K	6.32	0.53
1350	TW 628	TWE-B07558	B07 Rod(5,5) Pos.8	270	1470	K	6.32	0.53
1351	TW 629	TWE-B01221	B01 Rod(2,2) Pos.1	270	970	K	4.31	0.62
1352	TW 630	TWE-B01223	B01 Rod(2,2) Pos.3	270	970	K	4.31	0.62
1353	TW 631	TWE-B01225	B01 Rod(2,2) Pos.5	270	970	K	4.31	0.62
1354	TW 632	TWE-B01226	B01 Rod(2,2) Pos.6	270	970	K	4.31	0.62
1355	TW 633	TWE-B01227	B01 Rod(2,2) Pos.7	270	970	K	4.31	0.62
1356	TW 634	TWE-B01229	B01 Rod(2,2) Pos.9	270	970	K	4.31	0.62
1357	TW 635	TWE-B04221	B04 Rod(2,2) Pos.1	270	970	K	4.31	0.62
1358	TW 636	TWE-B04223	B04 Rod(2,2) Pos.3	270	970	K	4.31	0.62
1359	TW 637	TWE-B04225	B04 Rod(2,2) Pos.5	270	970	K	4.31	0.62
1360	TW 638	TWE-B04226	B04 Rod(2,2) Pos.6	270	970	K	4.31	0.62
1361	TW 639	TWE-B04227	B04 Rod(2,2) Pos.7	270	970	K	4.31	0.62
1362	TW 640	TWE-B04229	B04 Rod(2,2) Pos.9	270	970	K	4.31	0.62
1363	TW 641	TWE-B10621	B10 Rod(6,2) Pos.1	270	970	K	4.31	0.62
1364	TW 642	TWE-B10623	B10 Rod(6,2) Pos.3	270	970	K	4.31	0.62
1365	TW 643	TWE-B10625	B10 Rod(6,2) Pos.5	270	970	K	4.31	0.62
1366	TW 644	TWE-B10626	B10 Rod(6,2) Pos.6	270	970	K	4.31	0.62
1367	TW 645	TWE-B10627	B10 Rod(6,2) Pos.7	270	970	K	4.31	0.62
1368	TW 646	TWE-B10629	B10 Rod(6,2) Pos.9	270	970	K	4.31	0.62
1369	TW 647	TWE-B11221	B11 Rod(2,2) Pos.1	270	970	K	4.31	0.62
1370	TW 648	TWE-B11223	B11 Rod(2,2) Pos.3	270	970	K	4.31	0.62
1371	TW 649	TWE-B11225	B11 Rod(2,2) Pos.5	270	970	K	4.31	0.62
1372	TW 650	TWE-B11226	B11 Rod(2,2) Pos.6	270	970	K	4.31	0.62
1373	TW 651	TWE-B11227	B11 Rod(2,2) Pos.7	270	970	K	4.31	0.62
1374	TW 652	TWE-B11229	B11 Rod(2,2) Pos.9	270	970	K	4.31	0.62
1375	TW 653	TWE-B16221	B16 Rod(2,2) Pos.1	270	970	K	4.31	0.62
1376	TW 654	TWE-B16223	B16 Rod(2,2) Pos.3	270	970	K	4.31	0.62
1377	TW 655	TWE-B16225	B16 Rod(2,2) Pos.5	270	970	K	4.31	0.62
1378	TW 656	TWE-B16226	B16 Rod(2,2) Pos.6	270	970	K	4.31	0.62
1379	TW 657	TWE-B16227	B16 Rod(2,2) Pos.7	270	970	K	4.31	0.62
1380	TW 658	TWE-B16229	B16 Rod(2,2) Pos.9	270	970	K	4.31	0.62
1381	FE 1	FE010-HLA	HLA Leakage(Positive)	0	0.4	kg/s	0.01	1.62
1382	FE 2	FE020A-LSA	Primary Loop A (High)	0	90	kg/s	1.01	1.12
1383	FE 3	FE020B-LSA	Primary Loop A (Low)	0	15.8	kg/s	0.17	1.10
1384	FE 4	FE150-HLB	HLB Leakage(Positive)	0	0.4	kg/s	0.01	1.62
1385	FE 5	FE160A-LSB	Primary Loop B (High)	0	90	kg/s	1.01	1.12
1386	FE 6	FE160B-LSB	Primary Loop B (Low)	0	15.8	kg/s	0.17	1.10
1387	FE 13	FE430-SGA	SGA Feedwater	0	4	kg/s	0.06	1.62
1388	FE 14	FE431-SGA	SGA Downcomer	0	7	kg/s	0.11	1.62
1389	FE 15	FE432-SGA	SGA Downcomer	0	7	kg/s	0.11	1.62
1390	FE 16	FE433-SGA	SGA Downcomer	0	7	kg/s	0.11	1.62

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1391	FE 17	FE434-SGA	SGA Downcomer	0	7	kg/s	0.11	1.62
1392	FE 18	FE440-SGA	SGA Steam Line	0	5	kg/s	0.11	2.29
1393	FE 19	FE450-SGA	SGA Relief Valve Line	0	4	kg/s	0.09	2.29
1394	FE 21	FE470-SGB	SGB Feedwater	0	4	kg/s	0.06	1.62
1395	FE 22	FE471-SGB	SGB Downcomer	0	7	kg/s	0.11	1.62
1396	FE 23	FE472-SGB	SGB Downcomer	0	7	kg/s	0.11	1.62
1397	FE 24	FE473-SGB	SGB Downcomer	0	7	kg/s	0.11	1.62
1398	FE 25	FE474-SGB	SGB Downcomer	0	7	kg/s	0.11	1.62
1399	FE 26	FE480-SGB	SGB Steam Line	0	5	kg/s	0.11	2.29
1400	FE 27	FE490-SGB	SGB Relief Valve Line	0	4	kg/s	0.09	2.29
1401	FE 29	FE510-SH	Steam Header	0	10	kg/s	0.23	2.29
1402	FE 33	FE570A-BU	BU NO.2 Venturi (High)	0	10	kg/s	0.11	1.12
1403	FE 34	FE570B-BU	BU NO.2 Venturi (Low)	0	2.2	kg/s	0.03	1.12
1404	FE 41	FE730-PJ	PJ Delivery(High)	0	2.2	kg/s	0.04	1.61
1405	FE 42	FE740-PJ	Charging Flow to A(High)	0	1.4	kg/s	0.02	1.62
1406	FE 44	FE760-PH	PH Delivery(High)	0	1.5	kg/s	0.02	1.61
1407	FE 45	FE770-PH	HPI Flow to Loop A	0	3	kg/s	0.05	1.62
1408	FE 55	FE781-PH	HPI Flow to HLB	0	3	kg/s	0.05	1.62
1409	FE 57	FE783-PH	HPI Flow to CLB	0	3	kg/s	0.05	1.62
1410	FE 62	FE010B-HLA	HLA Leakage(Negative)	0	0.4	kg/s	0.01	0.32
1411	FE 63	FE150B-HLB	HLB Leakage(Negative)	0	0.4	kg/s	0.01	0.32
1412	FE 65	FE440B-SGA	SGA Main Steam Line(Low)	0	1	kg/s	0.01	0.32
1413	FE 67	FE480B-SGB	SGB Main Steam Line(Low)	0	1	kg/s	0.01	0.32
1414	FE 70	FE520-PAA	Auxiliary Feedwater A(High)	0	1.5	kg/s	0.02	1.61
1415	FE 71	FE520B-PAA	Auxiliary Feedwater A(Low)	0	1	kg/s	0.02	1.62
1416	FE 72	FE530B-PAB	Auxiliary Feedwater B(Low)	0	1	kg/s	0.02	1.61
1417	FE 73	FE730B-PJ	PJ Delivery(Low)	0	1.28	kg/s	0.02	1.61
1418	FE 76	FE760B-PH	PH Delivery(Low)	0	1	kg/s	0.02	1.62
1419	FE 77	FE780B-PH	HPI Flow to Loop B(Low)	0	0.3	kg/s	0.01	1.61
1420	FE 83	FE960-CS	Oil Flow	0	2	kg/s	0.03	1.61
1421	PE 2	PE581-BU	BU No.2 Venturi	0	20	MPa	0.06	0.32
1422	PE 3	PE010-SGA	SGA Inlet Plenum	0	20	MPa	0.06	0.32
1423	PE 4	PE020-LSA	PCA Suction	0	20	MPa	0.06	0.32
1424	PE 5	PE030-CLA	PCA Delivery	0	20	MPa	0.06	0.32
1425	PE 6	PE150-SGB	SGB Inlet Plenum	0	20	MPa	0.06	0.32
1426	PE 7	PE160-LSB	PCB Suction	0	20	MPa	0.06	0.32
1427	PE 8	PE170-CLB	PCB Delivery	0	20	MPa	0.06	0.32
1428	PE 9	PE290-PV	PV Upper Head	0	20	MPa	0.06	0.32
1429	PE 10	PE280A-PV	PV Upper Plenum (High)	0	20	MPa	0.06	0.32
1430	PE 12	PE270-PV	PV Lower Plenum	0	20	MPa	0.06	0.32
1431	PE 13	PE300A-PR	PR (High Range)	0	20	MPa	0.06	0.32
1432	PE 15	PE310-PR	PR RV Venturi Upstream	0	20	MPa	0.06	0.32
1433	PE 16	PE320-PR	PR RV Venturi Downstream	0	20	MPa	0.06	0.32
1434	PE 19	PE430-SGA	SGA Steam Dome	0	10	MPa	0.03	0.32
1435	PE 20	PE440-SGA	SGA Steam Line	0	10	MPa	0.03	0.32
1436	PE 21	PE450-SGB	SGB Steam Dome	0	10	MPa	0.03	0.32
1437	PE 22	PE460-SGB	SGB Steam Line	0	10	MPa	0.03	0.32
1438	PE 23	PE470-SH	Steam Header	0	10	MPa	0.03	0.32
1439	PE 24	PE480-JC	Jet Condenser	0	10	MPa	0.01	0.32
1440	PE 25	PE610-ST	Suppression Tank	0	1	MPa	0.01	0.32
1441	PE 28	PE580-BU	BU No.2 Orifice Upstream	0	20	MPa	0.06	0.32
1442	PE 29	PE590-BU	BU No.2 Orifice Downstream	0	20	MPa	0.06	0.32
1443	PE 30	PE600-ST	Blowdown Piping	0	2	MPa	0.01	0.32
1444	PE 31	PE650-ACC	Cold Acc Tank	0	10	MPa	0.03	0.32
1445	PE 32	PE660-ACH	Hot Acc Tank	0	10	MPa	0.03	0.32
1446	PE 35	PE011-HLA	HLA S.P	0	20	MPa	0.06	0.32
1447	PE 36	PE071-CLA	CLA S.P	0	20	MPa	0.06	0.32
1448	PE 37	PE151-HLB	HLB S.P	0	20	MPa	0.06	0.32
1449	PE 38	PE211-CLB	CLB S.P	0	20	MPa	0.06	0.32
1450	PE 39	PE291-PR	PR Relief Valve S.P	0	20	MPa	0.06	0.32
1451	PE 40	PE301-PR	PR Safety Valve Line	0	20	MPa	0.06	0.32
1452	PE 41	PE311-PR	PV-PR Vent Line	0	20	MPa	0.06	0.32
1453	PE 44	PE591-BU	BU No.2 SP	0	20	MPa	0.06	0.32
1454	PE 46	PE820-RHR	PL Delivery	0	20	MPa	0.06	0.32
1455	MI 1	RE010-PCA	PCA (Rotation Speed)	0	70	Hz	0.38	0.55
1456	MI 2	RE150-PCB	PCB (Rotation Speed)	0	70	Hz	0.38	0.55
1457	MI 3	OPE270-PR	PR Spray (HCV270)	0	100	%	0.54	0.54
1458	MI 5	OPE430-SGA	SGA Feedwater (FCV430)	0	100	%	0.54	0.54
1459	MI 6	OPE470-SGB	SGB Feedwater (FCV470)	0	100	%	0.54	0.54
1460	MI 8	OPE510-SH	Steam Flow (FCV510)	0	100	%	0.54	0.54
1461	MI 11	VBE010-PCA	PCA (Vibration)	0	200	um	1.42	0.71
1462	MI 12	VBE150-PCB	PCB (Vibration)	0	200	um	1.42	0.71
1463	MI 15	AE010-PCA	PCA (Electric Current)	0	150	A	0.75	0.50
1464	MI 16	AE150-PCB	PCB (Electric Current)	0	150	A	0.75	0.50
1465	MI 17	WE270A-T	Total Core Power	0	16	MW	0.12	0.72
1466	MI 18	WE270B-M	Middle Heat Flux Region	0	2	MW	0.01	0.72
1467	MI 19	WE270C-H1	High Heat Flux Region	0	4	MW	0.03	0.72
1468	MI 20	WE270D-H2	High Heat Flux Region	0	3	MW	0.02	0.72
1469	MI 21	WE270E-L1	Low Heat Flux Region	0	2	MW	0.01	0.72
1470	MI 22	WE270F-L2	Low Heat Flux Region	0	2	MW	0.01	0.72
1471	MI 23	WE270G-L3	Low Heat Flux Region	0	2	MW	0.01	0.72

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1472	MI 24	WE280A-PR	PR Proportional Heater	0	10	kW	0.15	1.50
1473	MI 25	WE280B-PR	PR Base Heater	0	150	kW	2.25	1.50
1474	MI 26	WE010-PCA	PCA	0	30	kW	0.45	1.50
1475	MI 27	WE150-PCB	PCB	0	30	kW	0.45	1.50
1476	MI 29	WE020-HLA	HLA	0	5	kW	0.08	1.50
1477	MI 30	WE030-LSA	LSA	0	7.5	kW	0.11	1.50
1478	MI 31	WE040-CLA	CLA	0	2	kW	0.03	1.50
1479	MI 32	WE160-HLB	HLB	0	5	kW	0.08	1.50
1480	MI 33	WE170-LSB	LSB	0	7.5	kW	0.11	1.50
1481	MI 34	WE180-CLB	CLB	0	2	kW	0.03	1.50
1482	MI 35	WE271A-PV	PV	0	15	kW	0.23	1.50
1483	MI 36	WE271B-PV	PV	0	15	kW	0.23	1.50
1484	MI 37	WE271C-PV	PV	0	15	kW	0.23	1.50
1485	MI 38	WE271D-PV	PV	0	15	kW	0.23	1.50
1486	MI 39	WE430A-SGA	SGA	0	4	kW	0.06	1.50
1487	MI 40	WE430B-SGA	SGA	0	4	kW	0.06	1.50
1488	MI 41	WE430C-SGA	SGA	0	4	kW	0.06	1.50
1489	MI 42	WE430D-SGA	SGA	0	4	kW	0.06	1.50
1490	MI 43	WE440A-SGA	SGA Downcomer	0	2	kW	0.03	1.50
1491	MI 44	WE440B-SGA	SGA Downcomer	0	2	kW	0.03	1.50
1492	MI 45	WE440C-SGA	SGA Downcomer	0	2	kW	0.03	1.50
1493	MI 46	WE440D-SGA	SGA Downcomer	0	2	kW	0.03	1.50
1494	MI 47	WE290-PR	PR Surge Line	0	4	kW	0.06	1.50
1495	MI 48	WE300-PR	PR Spray Line	0	7.5	kW	0.11	1.50
1496	MI 49	WE450A-SGB	SGB	0	4	kW	0.06	1.50
1497	MI 50	WE450B-SGB	SGB	0	4	kW	0.06	1.50
1498	MI 51	WE450C-SGB	SGB	0	4	kW	0.06	1.50
1499	MI 52	WE450D-SGB	SGB	0	4	kW	0.06	1.50
1500	MI 53	WE460A-SGB	SGB Downcomer	0	2	kW	0.03	1.50
1501	MI 54	WE460B-SGB	SGB Downcomer	0	2	kW	0.03	1.50
1502	MI 55	WE460C-SGB	SGB Downcomer	0	2	kW	0.03	1.50
1503	MI 56	WE460D-SGB	SGB Downcomer	0	2	kW	0.03	1.50
1504	LE 1	LE270-PV	PV	0	11	m	0.04	0.32
1505	LE 2	LE280-PR	PR	0	5	m	0.02	0.32
1506	LE 3	LE430-SGA	SGA Wide Range	0	17	m	0.05	0.32
1507	LE 4	LE440-SGA	SGA Narrow Range	0	6	m	0.02	0.32
1508	LE 5	LE441-SGA	SGA Boiling Section	0	11	m	0.04	0.32
1509	LE 6	LE450-SGB	SGB Wide Range	0	17	m	0.05	0.32
1510	LE 7	LE460-SGB	SGB Narrow Range	0	6	m	0.02	0.32
1511	LE 8	LE461-SGB	SGB Boiling Section	0	11	m	0.04	0.32
1512	LE 9	LE470-JC	JC	0	6	m	0.02	0.32
1513	LE 10	LE560-ST	ST Wide Range	0	12	m	0.04	0.32
1514	LE 12	LE580-ST	ST Middle Level	0	4	m	0.01	0.32
1515	LE 14	LE650-ACC	Cold Acc Tank	0	5	m	0.02	0.32
1516	LE 15	LE660-ACH	Hot Acc Tank	0	5	m	0.02	0.32
1517	LE 17	LE830-RWST	RWST	0	10	m	0.03	0.32
1518	LE 18	LE442-SGA	SGA Downcomer	0	12	m	0.04	0.32
1519	LE 19	LE462-SGB	SGB Downcomer	0	12	m	0.04	0.32
1520	LE 20	DLE270-PV	PV	0	108	kPa	0.38	0.35
1521	LE 21	DLE280-PR	PR	0	39	kPa	0.22	0.56
1522	LE 22	DLE430-SGA	SGA Wide Range	0	166	kPa	0.59	0.35
1523	LE 23	DLE440-SGA	SGA Narrow Range	0	59	kPa	0.21	0.35
1524	LE 24	DLE441-SGA	SGA Boiling Section	0	108	kPa	0.38	0.35
1525	LE 25	DLE442-SGA	SGA Downcomer	0	111	kPa	0.39	0.35
1526	LE 26	DLE450-SGB	SGB Wide Range	0	166	kPa	0.59	0.35
1527	LE 27	DLE460-SGB	SGB Narrow Range	0	59	kPa	0.21	0.35
1528	LE 28	DLE461-SGB	SGB Boiling Section	0	108	kPa	0.38	0.35
1529	LE 29	DLE462-SGB	SGB Downcomer	0	111	kPa	0.39	0.35
1530	LE 30	DLE470-JC	JC	0	54	kPa	0.19	0.35
1531	LE 31	DLE560-ST	ST Wide Range	0	117	kPa	0.42	0.35
1532	LE 32	DLE570-ST	ST Low Level	0	39	kPa	0.14	0.35
1533	LE 33	DLE580-ST	ST Middle Level	0	39	kPa	0.14	0.35
1534	LE 34	DLE590-ST	ST High Level	0	39	kPa	0.14	0.35
1535	LE 35	DLE650-ACC	Cold Acc Tank	0	49	kPa	0.27	0.56
1536	LE 36	DLE660-ACH	Hot Acc Tank	0	49	kPa	0.27	0.56
1537	LE 38	DLE830-RWST	RWST	0	98	kPa	0.35	0.35
1538	DP 1	DPE010-HLA	Upper Plenum - HLA Nozzle	-40	40	kPa	0.26	0.32
1539	DP 2	DPE020-HLA	HLA Nozzle - HLA Break	-40	40	kPa	0.26	0.32
1540	DP 4	DPE040-HLA	HLA Break - SGA Inlet	-40	40	kPa	0.26	0.32
1541	DP 5	DPE050A-SGA	SGA Inlet - Tube 3 Top	-150	50	kPa	0.64	0.32
1542	DP 6	DPE050B-SGA	SGA Inlet - Tube 2 Top	-150	50	kPa	0.64	0.32
1543	DP 7	DPE050C-SGA	SGA Inlet - Tube 1 Top	-150	50	kPa	0.64	0.32
1544	DP 8	DPE050D-SGA	SGA Inlet - Tube 4 Top	-150	50	kPa	0.64	0.32
1545	DP 9	DPE050E-SGA	SGA Inlet - Tube 5 Top	-150	50	kPa	0.64	0.32
1546	DP 10	DPE050F-SGA	SGA Inlet - Tube 6 Top	-150	50	kPa	0.64	0.32
1547	DP 11	DPE060A-SGA	SGA Outlet - Tube 3 Top	-150	50	kPa	0.64	0.32
1548	DP 12	DPE060B-SGA	SGA Outlet - Tube 2 Top	-150	50	kPa	0.64	0.32
1549	DP 13	DPE060C-SGA	SGA Outlet - Tube 1 Top	-150	50	kPa	0.64	0.32
1550	DP 14	DPE060D-SGA	SGA Outlet - Tube 4 Top	-150	50	kPa	0.64	0.32
1551	DP 15	DPE060E-SGA	SGA Outlet - Tube 5 Top	-150	50	kPa	0.64	0.32

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1552	DP 16	DPE060F-SGA	SGA Outlet - Tube 6 Top	-150	50	kPa	0.64	0.32
1553	DP 17	DPE070-LSA	SGA Outlet - LSA Bottom	-50	50	kPa	0.32	0.32
1554	DP 18	DPE080-LSA	LSA Bottom - PCA Suction	-50	50	kPa	0.32	0.32
1555	DP 19	DPE090-PCA	PCA Suction - Delivery	-50	50	kPa	0.32	0.32
1556	DP 20	DPE100-CLA	PR Spray Line	-200	200	kPa	1.28	0.32
1557	DP 21	DPE110-CLA	PCA Delivery - CLA Break	-50	50	kPa	0.32	0.32
1558	DP 22	DPE120-CLA	CLA Break - CLA Nozzle	-50	50	kPa	0.32	0.32
1559	DP 23	DPE130-CLA	CLA Nozzle - Downcomer	-50	50	kPa	0.32	0.32
1560	DP 24	DPE140-HLA	Upper Plenum - Downcomer	-20	20	kPa	0.13	0.32
1561	DP 25	DPE150-HLB	Upper Plenum - HLB Nozzle	-30	30	kPa	0.19	0.32
1562	DP 26	DPE160-HLB	HLB Nozzle - HLB Break	-30	30	kPa	0.19	0.32
1563	DP 28	DPE180-HLB	SGB Break - SGB Inlet	-30	30	kPa	0.19	0.32
1564	DP 29	DPE190A-SGB	SGB Inlet - Tube 3 Top	-150	50	kPa	0.64	0.32
1565	DP 30	DPE190B-SGB	SGB Inlet - Tube 2 Top	-150	50	kPa	0.64	0.32
1566	DP 31	DPE190C-SGB	SGB Inlet - Tube 1 Top	-150	50	kPa	0.64	0.32
1567	DP 32	DPE190D-SGB	SGB Inlet - Tube 4 Top	-150	50	kPa	0.64	0.32
1568	DP 33	DPE190E-SGB	SGB Inlet - Tube 5 Top	-150	50	kPa	0.64	0.32
1569	DP 34	DPE190F-SGB	SGB Inlet - Tube 6 Top	-150	50	kPa	0.64	0.32
1570	DP 35	DPE200A-SGB	SGB Outlet - Tube 3 Top	-150	50	kPa	0.64	0.32
1571	DP 36	DPE200B-SGB	SGB Outlet - Tube 2 Top	-150	50	kPa	0.64	0.32
1572	DP 37	DPE200C-SGB	SGB Outlet - Tube 1 Top	-150	50	kPa	0.64	0.32
1573	DP 38	DPE200D-SGB	SGB Outlet - Tube 4 Top	-150	50	kPa	0.64	0.32
1574	DP 39	DPE200E-SGB	SGB Outlet - Tube 5 Top	-150	50	kPa	0.64	0.32
1575	DP 40	DPE200F-SGB	SGB Outlet - Tube 6 Top	-150	50	kPa	0.64	0.32
1576	DP 41	DPE210-LSB	SGB Outlet - LSB Bottom	-50	50	kPa	0.32	0.32
1577	DP 42	DPE220-LSB	LSB Bottom - PCB Suction	-50	50	kPa	0.32	0.32
1578	DP 43	DPE230-PCB	PCB Suction - Delivery	-50	50	kPa	0.32	0.32
1579	DP 47	DPE270-PV	PV Bottom - Top	-100	400	kPa	1.60	0.32
1580	DP 48	DPE280-PV	PV Lower Plenum	-50	100	kPa	0.48	0.32
1581	DP 50	DPE300-PV	Core(Elevation -35 - 3945)	-50	100	kPa	0.48	0.32
1582	DP 51	DPE320-PV	Upper Plenum	-50	100	kPa	0.48	0.32
1583	DP 52	DPE330-PV	Upper Head	-50	100	kPa	0.48	0.32
1584	DP 54	DPE350A-PV	Guide Tube Top Orifice	-100	100	kPa	0.64	0.32
1585	DP 55	DPE350B-PV	Guide Tube Top Orifice	-100	100	kPa	0.64	0.32
1586	DP 56	DPE360-PV	PV Downcomer	-100	300	kPa	1.28	0.32
1587	DP 57	DPE370-PV	Lower Downcomer	-50	150	kPa	0.64	0.32
1588	DP 58	DPE380-PV	Upper Downcomer	-50	150	kPa	0.64	0.32
1589	DP 62	DPE332-PV	Upper Head - Downcomer	-100	100	kPa	0.64	0.32
1590	DP 63	DPE331-PV	Upper Head	-100	100	kPa	0.64	0.32
1591	DP 69	DPE590-BU	BU No.2 Venturi	0	500	kPa	1.60	0.32
1592	DP 70	DPE030B-HLA	PR Surge Line (Low)	-300	300	kPa	1.92	0.32
1593	DP 71	DPE072-LSA	LSA (SG Side)	-10	10	kPa	0.06	0.32
1594	DP 72	DPE073-LSA	LSA (SG Side)	-10	10	kPa	0.06	0.32
1595	DP 73	DPE074-LSA	LSA (SG Side)	-10	10	kPa	0.06	0.32
1596	DP 74	DPE075-LSA	LSA (SG Side)	-10	10	kPa	0.06	0.32
1597	DP 75	DPE076-LSA	LSA (SG Side)	-10	10	kPa	0.06	0.32
1598	DP 76	DPE212-LSB	LSB (SG Side)	-10	10	kPa	0.06	0.32
1599	DP 77	DPE213-LSB	LSB (SG Side)	-10	10	kPa	0.06	0.32
1600	DP 78	DPE214-LSB	LSB (SG Side)	-10	10	kPa	0.06	0.32
1601	DP 79	DPE215-LSB	LSB (SG Side)	-10	10	kPa	0.06	0.32
1602	DP 80	DPE216-LSB	LSB (SG Side)	-10	10	kPa	0.06	0.32
1603	DP 81	DPE430-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1604	DP 82	DPE431-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1605	DP 83	DPE432-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1606	DP 84	DPE433-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1607	DP 85	DPE434-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1608	DP 86	DPE435-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1609	DP 87	DPE436-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1610	DP 88	DPE437-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1611	DP 89	DPE438-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1612	DP 90	DPE439-SGA	SGA Boiling Section	-30	0	kPa	0.17	0.56
1613	DP 91	DPE440-SGA	SGA Boiling Section	-40	0	kPa	0.22	0.56
1614	DP 92	DPE450-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1615	DP 93	DPE451-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1616	DP 94	DPE452-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1617	DP 95	DPE453-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1618	DP 96	DPE454-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1619	DP 97	DPE455-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1620	DP 98	DPE456-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1621	DP 99	DPE457-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1622	DP 100	DPE458-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1623	DP 101	DPE459-SGB	SGB Boiling Section	-30	0	kPa	0.17	0.56
1624	DP 102	DPE460-SGB	SGB Boiling Section	-40	0	kPa	0.22	0.56
1625	DP 103	DPE011-HLA	HLA S.P	-10	10	kPa	0.06	0.32
1626	DP 104	DPE071-CLA	CLA S.P	-10	10	kPa	0.06	0.32
1627	DP 105	DPE151-HLB	HLB S.P	-10	10	kPa	0.06	0.32
1628	DP 106	DPE211-CLB	CLB S.P	-10	10	kPa	0.06	0.32
1629	DP 108	DPE591-BU	BU No.2 Spool Piece	-100	100	kPa	0.02	0.32
1630	DP 109	DPE041-PR	PR Diff. Press.	0	6	kPa	0.02	0.32
1631	DP 110	DPE042-PR	PR Diff. Press.	0	7	kPa	0.02	0.32
1632	DP 111	DPE043-PR	PR Diff. Press.	0	4	kPa	0.01	0.32
1633	DP 112	DPE044-PR	PR Diff. Press.	0	3.6	kPa	0.01	0.32

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1634	DP 113	DPE045-PR	PR Diff. Press.	0	11	kPa	0.04	0.32
1635	DP 114	DPE046-PR	PR Diff. Press.	0	7	kPa	0.02	0.32
1636	DP 115	DPE101-PR	PR-CLB Diff. Press.	-200	200	kPa	1.28	0.32
1637	DP 116	DPE055A-SGA	SGA I.P-O.P (High)	-30	30	kPa	0.19	0.32
1638	DP 117	DPE055B-SGA	SGA I.P-O.P (Low)	-3	3	kPa	0.02	0.32
1639	DP 118	DPE195A-SGB	SGB I.P-O.P (High)	-30	30	kPa	0.19	0.32
1640	DP 119	DPE195B-SGB	SGB I.P-O.P (Low)	-3	3	kPa	0.02	0.32
1641	DP 120	DPE056-SGA	SGA Plenum Diff.Press.	-40	40	kpa	0.26	0.32
1642	DP 122	DPE196-SGB	SGB Plenum Diff.Press.	-40	40	kpa	0.26	0.32
1643	DP 124	DPE301-PV	Core(Elevation-35-+409)	-5	10	kPa	0.04	0.28
1644	DP 125	DPE302-PV	Core(Elevation+409-+815)	-5	5	kPa	0.03	0.28
1645	DP 126	DPE303-PV	Core(Elevation+815-+1221)	-5	5	kPa	0.03	0.28
1646	DP 127	DPE304-PV	Core(Elevation+1221-+1627)	-5	5	KPa	0.03	0.28
1647	DP 128	DPE305-PV	Core(Elevation+1627-+2033)	-5	5	kPa	0.03	0.28
1648	DP 129	DPE306-PV	Core(Elevation+2033-+2439)	-5	5	kPa	0.03	0.28
1649	DP 130	DPE307-PV	Core(Elevation+2439-+2845)	-5	5	kPa	0.03	0.28
1650	DP 131	DPE308-PV	Core(Elevation+2845-+3251)	-5	5	kPa	0.03	0.28
1651	DP 132	DPE309-PV	Core(Elevation+3251-+3945)	-30	0	kPa	0.08	0.28
1652	DP 133	DPE333-PV	UpperH(Elevation6634-8860)	-35	0	kPa	0.23	0.67
1653	DE 1	DE011A-HLA	HLA S.P Beam A	-10	10	V		
1654	DE 2	DE011B-HLA	HLA S.P Beam B	-10	10	V		
1655	DE 3	DE011C-HLA	HLA S.P Beam C	-10	10	V		
1656	DE 4	DE051A-LSA	LSA S.P Beam A	-10	10	V		
1657	DE 5	DE051B-LSA	LSA S.P Beam B	-10	10	V		
1658	DE 6	DE051C-LSA	LSA S.P Beam C	-10	10	V		
1659	DE 7	DE071A-CLA	CLA S.P Beam A	-10	10	V		
1660	DE 8	DE071B-CLA	CLA S.P Beam B	-10	10	V		
1661	DE 9	DE071C-CLA	CLA S.P Beam C	-10	10	V		
1662	DE 10	DE151A-HLB	HLB S.P Beam A	-10	10	V		
1663	DE 11	DE151B-HLB	HLB S.P Beam B	-10	10	V		
1664	DE 12	DE151C-HLB	HLB S.P Beam C	-10	10	V		
1665	DE 13	DE191A-LSB	LSB S.P Beam A	-10	10	V		
1666	DE 14	DE191B-LSB	LSB S.P Beam B	-10	10	V		
1667	DE 15	DE191C-LSB	LSB S.P Beam C	-10	10	V		
1668	DE 16	DE211A-CLB	CLB S.P Beam A	-10	10	V		
1669	DE 17	DE211B-CLB	CLB S.P Beam B	-10	10	V		
1670	DE 18	DE211C-CLB	CLB S.P Beam C	-10	10	V		
1671	DE 19	DE052-LSA	LSA Bottom	-10	10	V		
1672	DE 20	DE192-LSB	PCB Suction	-10	10	V		
1673	DE 21	DE281-PR	PR Surge Line	-10	10	V		
1674	DE 25	DE431-SGA	SGA Downcomer	-10	10	V		
1675	DE 26	DE471-SGB	SGB Downcomer	-10	10	V		
1676	DE 33	DE591A-BU	BU S.P Beam A	0	10	V		
1677	DE 34	DE591B-BU	BU S.P Beam B	0	10	V		
1678	DE 35	DE591C-BU	BU S.P Beam C	0	10	V		
1679	RC 31	DE011A-HLA-EU	HLA S.P Beam A			kg/m3		
1680	RC 32	DE011B-HLA-EU	HLA S.P Beam B			kg/m3		
1681	RC 33	DE011C-HLA-EU	HLA S.P Beam C			kg/m3		
1682	RC 34	DE151A-HLB-EU	HLB S.P Beam A			kg/m3		
1683	RC 35	DE151B-HLB-EU	HLB S.P Beam B			kg/m3		
1684	RC 36	DE151C-HLB-EU	HLB S.P Beam C			kg/m3		
1685	RC 37	DE071A-CLA-EU	CLA S.P Beam A			kg/m3		
1686	RC 38	DE071B-CLA-EU	CLA S.P Beam B			kg/m3		
1687	RC 39	DE071C-CLA-EU	CLA S.P Beam C			kg/m3		
1688	RC 40	DE211A-CLB-EU	CLB S.P Beam A			kg/m3		
1689	RC 41	DE211B-CLB-EU	CLB S.P Beam B			kg/m3		
1690	RC 42	DE211C-CLB-EU	CLB S.P Beam C			kg/m3		
1691	RC 47	DAE-011-HLA	Hot Leg A Flow Density			kg/m3		
1692	RC 49	DAE-151-HLB	Hot Leg B Average Density			kg/m3		
1693	RC 50	FRE-071-CLA	Cold Leg A FLow Rate			kg/s		
1694	RC 51	FRE-211-CLB	Cold Leg B Flow Rate			kg/s		
1695	RC 52	DAE-071-CLA	Cold Leg A Average Density			kg/m3		
1696	RC 53	DAE-211-CLB	Cold Leg B Average Density			kg/m3		
1697	RC 56	DE051A-LSA-EU	LSA S.P Beam A			kg/m3		
1698	RC 57	DE051B-LSA-EU	LSA S.P Beam B			kg/m3		
1699	RC 58	DE051C-LSA-EU	LSA S.P Beam C			kg/m3		
1700	RC 59	DE191A-LSB-EU	LSB S.P Beam A			kg/m3		
1701	RC 60	DE191B-LSB-EU	LSB S.P Beam B			kg/m3		
1702	RC 61	DE191C-LSB-EU	LSB S.P Beam C			kg/m3		
1703	RC 62	DE052-LSA-EU	LSA Bottom			kg/m3		
1704	RC 63	DE192-LSB-EU	PCB Suction			kg/m3		
1705	RC 65	DE291-PR-EU	PR Relief Valve Line			kg/m3		
1706	RC 68	DE431-SGA-EU	SGA Downcomer			kg/m3		
1707	RC 69	DE471-SGB-EU	SGB Downcomer			kg/m3		
1708	RC 73	DE591A-BU-EU	BU S.P Beam A			kg/m3		
1709	RC 74	DE591B-BU-EU	BU S.P Beam B			kg/m3		
1710	RC 75	DE591C-BU-EU	BU S.P Beam C			kg/m3		
1711	RC 107	FRE590-ST	Break Flow (St Tank)			kg/s		
1712	RC 112	DAE-051-LSA	Crossover Leg A Average Density			kg/m3		
1713	RC 113	DAE-051-LSB	Crossover Leg B Average Density			kg/m3		

Table A-1 (Cont'd)

SEQ No.	Function ID.	Tagname	Location	Range		Unit	Uncertainty	
				LO	HI		±ABS.	±%FR
1714	RC 120	DAE-051-LSA-TY	Crossover Leg A Average Density			kg/m3		
1715	RC 121	DAE-191-LSB-TY	Crossover Leg B Average Density			kg/m3		
1716	RC 133	TWE-PCT	Peak Cladding Temp			K		
1717	RC 139	CL-CORE	Core (EL.-35 - 3945)			m		
1718	RC 140	CL-UP	Upper Plenum (EL.4060 - 6135)			m		
1719	RC 141	CL-UH	Upper Head (EL.7834 - 9653)			m		
1720	RC 142	CL-DC	Downcomer			m		
1721	RC 143	CL-HLA-SGA	HLA Riser Part			m		
1722	RC 144	CL-TUA-U3	SGA Tube 3 Inlet - Top			m		
1723	RC 145	CL-TUA-U2	SGA Tube 2 Inlet - Top			m		
1724	RC 146	CL-TUA-U1	SGA Tube 1 Inlet - Top			m		
1725	RC 147	CL-TUA-U4	SGA Tube 4 Inlet - Top			m		
1726	RC 148	CL-TUA-U5	SGA Tube 5 Inlet - Top			m		
1727	RC 149	CL-TUA-U6	SGA Tube 6 Inlet - Top			m		
1728	RC 150	CL-TUA-D3	SGA Tube 3 Outlet - Top			m		
1729	RC 151	CL-TUA-D2	SGA Tube 2 Outlet - Top			m		
1730	RC 152	CL-TUA-D1	SGA Tube 1 Outlet - Top			m		
1731	RC 153	CL-TUA-D4	SGA Tube 4 Outlet - Top			m		
1732	RC 154	CL-TUA-D5	SGA Tube 5 Outlet - Top			m		
1733	RC 155	CL-TUA-D6	SGA Tube 6 Outlet - Top			m		
1734	RC 156	CL-LSA-D	SGA Out.Plenum - LSA Bottom			m		
1735	RC 157	CL-LSA-U	LSA Bottom - PCA Suction			m		
1736	RC 158	CL-SGA-IPL	SGA Inlet Plenum			m		
1737	RC 159	CL-HLB-SGB	HLB Riser Part			m		
1738	RC 160	CL-TUB-U3	SGB Tube 3 Inlet - Top			m		
1739	RC 161	CL-TUB-U2	SGB Tube 2 Inlet - Top			m		
1740	RC 162	CL-TUB-U1	SGB Tube 1 Inlet - Top			m		
1741	RC 163	CL-TUB-U4	SGB Tube 4 Inlet - Top			m		
1742	RC 164	CL-TUB-U5	SGB Tube 5 Inlet - Top			m		
1743	RC 165	CL-TUB-U6	SGB Tube 6 Inlet - Top			m		
1744	RC 166	CL-TUB-D3	SGB Tube 3 Outlet - Top			m		
1745	RC 167	CL-TUB-D2	SGB Tube 2 Outlet - Top			m		
1746	RC 168	CL-TUB-D1	SGB Tube 1 Outlet - Top			m		
1747	RC 169	CL-TUB-D4	SGB Tube 4 Outlet - Top			m		
1748	RC 170	CL-TUB-D5	SGB Tube 5 Outlet - Top			m		
1749	RC 171	CL-TUB-D6	SGB Tube 6 Outlet - Top			m		
1750	RC 172	CL-LSB-D	SGB Out.Plenum - LSB Bottom			m		
1751	RC 173	CL-LSB-U	LSB Bottom - PCB Suction			m		
1752	RC 174	CL-SGB-IPL	SGB Inlet Plenum			m		
1753	RC 191	MS-ST	Break Flow Supp. Tank			kg		
1754	RC 196	LG-HLA	HLA Water Level			m		
1755	RC 197	LG-CLA	CLA Water Level			m		
1756	RC 198	LG-HLB	HLB Water Level			m		
1757	RC 199	LG-CLB	CLB Water Level			m		
1758	RC 200	TS-UP	Upper Plenum			K		
1759	RC 202	TS-SGA	Steam Generator-A			K		
1760	RC 203	TS-SGB	Steam Generator-B			K		
1761	RC 297	RE010-PCA-R	PCA (Rotation Speed)			rpm		
1762	RC 298	RE150-PCB-R	PCB (Rotation Speed)			rpm		

国際単位系（SI）

表１．SI 基本単位

基本量	SI 基本単位	
	名称	記号
長さ	メートル	m
質量	キログラム	kg
時間	秒	s
電流	アンペア	A
熱力学温度	ケルビン	K
物質量	モル	mol
光度	カンデラ	cd

表２．基本単位を用いて表されるSI組立単位の例

組立量	SI 組立単位	
	名称	記号
面積	平方メートル	m^2
体積	立方メートル	m^3
速さ，速度	メートル毎秒	m/s
加速度	メートル毎秒毎秒	m/s^2
波数	毎メートル	m^{-1}
密度，質量密度	キログラム毎立方メートル	kg/m^3
面積密度	キログラム毎平方メートル	kg/m^2
比体積	立方メートル毎キログラム	m^3/kg
電流密度	アンペア毎平方メートル	A/m^2
磁界の強さ	アンペア毎メートル	A/m
量濃度(a)，濃度	モル毎立方メートル	mol/m^3
質量濃度	キログラム毎立方メートル	kg/m^3
輝度	カンデラ毎平方メートル	cd/m^2
屈折率(b)	（数字の） 1	1
比透磁率(b)	（数字の） 1	1

(a) 量濃度（amount concentration）は臨床化学の分野では物質濃度（substance concentration）ともよばれる。
(b) これらは無次元量あるいは次元１をもつ量であるが、そのことを表す単位記号である数字の１は通常は表記しない。

表３．固有の名称と記号で表されるSI組立単位

組立量	SI 組立単位			
	名称	記号	他のSI単位による表し方	SI基本単位による表し方
平面角	ラジアン(b)	rad	1 (b)	m/m
立体角	ステラジアン(b)	sr(c)	1 (b)	m^2/m^2
周波数	ヘルツ(d)	Hz		s^{-1}
力	ニュートン	N		$m\ kg\ s^{-2}$
圧力，応力	パスカル	Pa	N/m^2	$m^{-1}\ kg\ s^{-2}$
エネルギー，仕事，熱量	ジュール	J	N m	$m^2\ kg\ s^{-2}$
仕事率，工率，放射束	ワット	W	J/s	$m^2\ kg\ s^{-3}$
電荷，電気量	クーロン	C		s A
電位差（電圧），起電力	ボルト	V	W/A	$m^2\ kg\ s^{-3}\ A^{-1}$
静電容量	ファラド	F	C/V	$m^{-2}\ kg^{-1}\ s^4\ A^2$
電気抵抗	オーム	Ω	V/A	$m^2\ kg\ s^{-3}\ A^{-2}$
コンダクタンス	ジーメンス	S	A/V	$m^{-2}\ kg^{-1}\ s^3\ A^2$
磁束	ウエーバ	Wb	Vs	$m^2\ kg\ s^{-2}\ A^{-1}$
磁束密度	テスラ	T	Wb/m^2	$kg\ s^{-2}\ A^{-1}$
インダクタンス	ヘンリー	H	Wb/A	$m^2\ kg\ s^{-2}\ A^{-2}$
セルシウス温度	セルシウス度(e)	℃		K
光束	ルーメン	lm	cd sr(c)	cd
照度	ルクス	lx	lm/m^2	m^{-2} cd
放射性核種の放射能(f)	ベクレル(d)	Bq		s^{-1}
吸収線量，比エネルギー分与，カーマ	グレイ	Gy	J/kg	$m^2\ s^{-2}$
線量当量，周辺線量当量，方向性線量当量，個人線量当量	シーベルト(g)	Sv	J/kg	$m^2\ s^{-2}$
酸素活性	カタール	kat		s^{-1} mol

(a)SI接頭語は固有の名称と記号を持つ組立単位と組み合わせても使用できる。しかし接頭語を付した単位はもはやコヒーレントではない。
(b)ラジアンとステラジアンは数字の１に対する単位の特別な名称で、量についての情報をつたえるために使われる。実際には、使用する時には記号radおよびsrが用いられるが、習慣として組立単位としての記号である数字の１は明示されない。
(c)測光学ではステラジアンという名称と記号srを単位の表し方の中に、そのまま維持している。
(d)ヘルツは周期現象についてのみ、ベクレルは放射性核種の統計的過程についてのみ使用される。
(e)セルシウス度はケルビンの特別な名称で、セルシウス温度を表すために使用される。セルシウス度とケルビンの単位の大きさは同一である。したがって、温度差や温度間隔を表す数値はどちらの単位で表しても同じである。
(f)放射性核種の放射能（activity referred to a radionuclide）は、しばしば誤った用語で"radioactivity"と記される。
(g)単位シーベルト（PV,2002,70,205）についてはCIPM勧告2（CI-2002）を参照。

表４．単位の中に固有の名称と記号を含むSI組立単位の例

組立量	SI 組立単位		
	名称	記号	SI 基本単位による表し方
粘度	パスカル秒	Pa s	$m^{-1}\ kg\ s^{-1}$
力のモーメント	ニュートンメートル	N m	$m^2\ kg\ s^{-2}$
表面張力	ニュートン毎メートル	N/m	$kg\ s^{-2}$
角速度	ラジアン毎秒	rad/s	$m\ m^{-1}\ s^{-1}=s^{-1}$
角加速度	ラジアン毎秒毎秒	rad/s^2	$m\ m^{-1}\ s^{-2}=s^{-2}$
熱流密度，放射照度	ワット毎平方メートル	W/m^2	$kg\ s^{-3}$
熱容量，エントロピー	ジュール毎ケルビン	J/K	$m^2\ kg\ s^{-2}\ K^{-1}$
比熱容量，比エントロピー	ジュール毎キログラム毎ケルビン	J/(kg K)	$m^2\ s^{-2}\ K^{-1}$
比エネルギー	ジュール毎キログラム	J/kg	$m^2\ s^{-2}$
熱伝導率	ワット毎メートル毎ケルビン	W/(m K)	$m\ kg\ s^{-3}\ K^{-1}$
体積エネルギー	ジュール毎立方メートル	J/m^3	$m^{-1}\ kg\ s^{-2}$
電界の強さ	ボルト毎メートル	V/m	$m\ kg\ s^{-3}\ A^{-1}$
電荷密度	クーロン毎立方メートル	C/m^3	m^{-3} s A
表面電荷	クーロン毎平方メートル	C/m^2	m^{-2} s A
電束密度，電気変位	クーロン毎平方メートル	C/m^2	m^{-2} s A
誘電率	ファラド毎メートル	F/m	$m^{-3}\ kg^{-1}\ s^4\ A^2$
透磁率	ヘンリー毎メートル	H/m	$m\ kg\ s^{-2}\ A^{-2}$
モルエネルギー	ジュール毎モル	J/mol	$m^2\ kg\ s^{-2}\ mol^{-1}$
モルエントロピー，モル熱容量	ジュール毎モル毎ケルビン	J/(mol K)	$m^2\ kg\ s^{-2}\ K^{-1}\ mol^{-1}$
照射線量（X線及びγ線）	クーロン毎キログラム	C/kg	kg^{-1} s A
吸収線量率	グレイ毎秒	Gy/s	$m^2\ s^{-3}$
放射強度	ワット毎ステラジアン	W/sr	$m^4\ m^{-2}\ kg\ s^{-3}=m^2\ kg\ s^{-3}$
放射輝度	ワット毎平方メートル毎ステラジアン	$W/(m^2\ sr)$	$m^2\ m^{-2}\ kg\ s^{-3}=kg\ s^{-3}$
酵素活性濃度	カタール毎立方メートル	kat/m^3	$m^{-3}\ s^{-1}$ mol

表５．SI 接頭語

乗数	名称	記号	乗数	名称	記号
10^{24}	ヨタ	Y	10^{-1}	デシ	d
10^{21}	ゼタ	Z	10^{-2}	センチ	c
10^{18}	エクサ	E	10^{-3}	ミリ	m
10^{15}	ペタ	P	10^{-6}	マイクロ	μ
10^{12}	テラ	T	10^{-9}	ナノ	n
10^9	ギガ	G	10^{-12}	ピコ	p
10^6	メガ	M	10^{-15}	フェムト	f
10^3	キロ	k	10^{-18}	アト	a
10^2	ヘクト	h	10^{-21}	ゼプト	z
10^1	デカ	da	10^{-24}	ヨクト	y

表６．SIに属さないが、SIと併用される単位

名称	記号	SI 単位による値
分	min	1 min=60 s
時	h	1 h =60 min=3600 s
日	d	1 d=24 h=86 400 s
度	°	1°=(π/180) rad
分	’	1’=(1/60)°=(π/10 800) rad
秒	”	1”=(1/60)’=(π/648 000) rad
ヘクタール	ha	1 ha=1 $hm^2=10^4m^2$
リットル	L, l	1 L=1 l=1 $dm^3=10^3cm^3=10^{-3}m^3$
トン	t	1 t=10^3 kg

表７．SIに属さないが、SIと併用される単位で、SI単位で表される数値が実験的に得られるもの

名称	記号	SI 単位で表される数値
電子ボルト	eV	1 eV=1.602 176 53(14)×10^{-19}J
ダルトン	Da	1 Da=1.660 538 86(28)×10^{-27}kg
統一原子質量単位	u	1 u=1 Da
天文単位	ua	1 ua=1.495 978 706 91(6)×10^{11}m

表８．SIに属さないが、SIと併用されるその他の単位

名称	記号	SI 単位で表される数値
バール	bar	1 bar=0.1MPa=100 kPa=10^5Pa
水銀柱ミリメートル	mmHg	1 mmHg≈133.322Pa
オングストローム	Å	1 Å=0.1nm=100pm=10^{-10}m
海里	M	1 M=1852m
バーン	b	1 b=100fm^2=$(10^{-12}cm)^2$=$10^{-28}m^2$
ノット	kn	1 kn=(1852/3600)m/s
ネーパ	Np	SI単位との数値的な関係は、対数量の定義に依存。
ベル	B	
デシベル	dB	

表９．固有の名称をもつCGS組立単位

名称	記号	SI 単位で表される数値
エルグ	erg	1 erg=10^{-7} J
ダイン	dyn	1 dyn=10^{-5}N
ポアズ	P	1 P=1 dyn s cm^{-2}=0.1Pa s
ストークス	St	1 St =1$cm^2\ s^{-1}$=$10^{-4}m^2\ s^{-1}$
スチルブ	sb	1 sb =1cd cm^{-2}=10^4cd m^{-2}
フォト	ph	1 ph=1cd sr cm^{-2} =10^4lx
ガル	Gal	1 Gal =1cm s^{-2}=$10^{-2}ms^{-2}$
マクスウエル	Mx	1 Mx = 1G cm^2=10^{-8}Wb
ガウス	G	1 G =1Mx cm^{-2} =10^{-4}T
エルステッド(a)	Oe	1 Oe ≙ $(10^3/4\pi)$A m^{-1}

(a) ３元系のCGS単位系とSIでは直接比較できないため、等号「 ≙ 」は対応関係を示すものである。

表10．SIに属さないその他の単位の例

名称	記号	SI 単位で表される数値
キュリー	Ci	1 Ci=3.7×10^{10}Bq
レントゲン	R	1 R = 2.58×10^{-4}C/kg
ラド	rad	1 rad=1cGy=10^{-2}Gy
レム	rem	1 rem=1 cSv=10^{-2}Sv
ガンマ	γ	1 γ=1 nT=10^{-9}T
フェルミ		1 フェルミ=1 fm=10^{-15}m
メートル系カラット		1 メートル系カラット= 0.2 g = 2×10^{-4}kg
トル	Torr	1 Torr = (101 325/760) Pa
標準大気圧	atm	1 atm = 101 325 Pa
カロリー	cal	1 cal=4.1858J（「15℃」カロリー），4.1868J（「IT」カロリー），4.184J（「熱化学」カロリー）
ミクロン	μ	1 μ =1μm=10^{-6}m

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