

| | | | | | |
|---|-----------------------|-------------------------------------|---|--------------------------------------|--|
| SIET S.p.A. Società Informazioni Esperienze Termoidrauliche Piacenza - Milano (ITALY) | | | EMITTENTE: issued by: SEZIONE REATTORI INNOVATIVI | | |
| CLIENTE: ENEA client: | | COMMESSA: ENSC03 Job N°: | | DISCO: disk: / | PAGINA: page: 1 |
| IDENTIFICATIVO: document N°: 00394 RA 95 | | CL. ris.: class: / | | ALLEGATI: enclosed: / | |
| TITOLO: PANTHERS-PCC DATA ANALYSIS REPORT title: | | | | | |
| REDATTORI: R. SILVERII prepared by: | | | | | |
| | | | | | |
| 3 | | | | | |
| 2 | | | | | |
| 1 | | | | | |
| 0 | 20/6/1995 | EMISSIONE | R. SILVERII <i>R. Silverii</i> | G. CATTADORI <i>G. Cattadori</i> | |
| REV.: rev.: | DATA: date: | DESCRIZIONE: description: | REDAZIONE: prepared by: | APPROVAZIONE: approved by: | AUTORIZZAZIONE: authorization: |
| <p>Informazioni strettamente riservate di proprietà SIET S.p.A. Da non utilizzare per scopi diversi da quelli per cui sono state fornite. Confidential information property of SIET S.p.A. Not be used for any purpose other than for which it is supplied.</p> | | | | | |

| | | | | |
|-----------------------------|-----------|-----|------|----|
| SIET | Document | Rev | Page | of |
| Sezione Reattori Innovativi | 00394RA95 | 0 | 2 | |

LIST OF CONTENTS

1. INTRODUCTION
2. OBJECTIVES
 - 2.1 General Objectives
 - 2.2 Specific Objectives
3. TEST ANALYSIS
 - 3.1 Steady-State Tests
 - 3.1.1 Saturated Steam Tests (Group P1)
 - 3.1.1.1 Test Conditions
 - 3.1.2 Superheated Steam Tests (Group P2)
 - 3.1.2.1 Test Conditions
 - 3.1.3 Saturated Steam-Air Tests at 5 kg/s Steam Flowrate (Group P3)
 - 3.1.3.1 Test Conditions
 - 3.1.4 Saturated Steam-Air Tests at Extreme and Intermediate Ranges (Group P4)
 - 3.1.4.1 Test Conditions
 - 3.1.5 Superheated Steam-Air Tests (Group P5)
 - 3.1.5.1 Test Conditions
 - 3.1.6 Low Priority Saturated Steam-Air Tests (Group P6)
 - 3.1.6.1 Test Conditions
 - 3.2 Transient Tests
 - 3.2.1 Noncondensable Gas Buildup Tests (Group P7)

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 3 | |

3.2.1.1 Test Conditions

3.2.2 Pool Water Level Effect Test (Group P8)

3.2.2.1 Test Conditions

REFERENCES

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 4 | |

LIST OF TABLES

- Table 3.1 - PANTHERS-PCC Steady-State Performance Matrix. Saturated Steam Only Tests
- Table 3.2 - PANTHERS-PCC Steady-State Performance Matrix. Superheated Steam Only Tests
- Table 3.3 - Superheating in the PCC Steam Feed Line
- Table 3.4 - PANTHERS-PCC Steady-State Performance Matrix. Saturated Steam - Air Mixture Tests
- Table 3.5 - PANTHERS-PCC Steady-State Performance Matrix. Saturated Steam - Air Mixture Tests. Extreme and Intermediate Ranges
- Table 3.6 - PANTHERS-PCC Steady-State Performance Matrix. Superheated Steam - Air Tests
- Table 3.7 - PANTHERS-PCC Steady-State Performance Matrix. Low Priority Saturated Steam - Air Mixture Tests
- Table 3.8 - PANTHERS-PCC Noncondensable Gas Buildup Test Matrix
- Table 3.9 - Steam and Air Partial Pressure for Test T51
- Table 3.10 - Steam and Helium Partial Pressure for Test T76
- Table 3.11 - Steam and Helium Partial Pressure for Test T75
- Table 3.12 - Pool Water Level Effects Test Matrix

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 5 | |

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 6 | |

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 7 | |

1 INTRODUCTION

As part of the Simplified Water Reactor (SBWR) design and U.S. certification program, a prototype heat exchanger for the Passive Containment Cooling System (PCCS) was tested in Italy. A four-party effort by GE and the Italian companies ANSALDO, ENEA, and ENEL sponsors the program. The Passive Containment Condenser (PCC) was designed, and a full-scale prototype was manufactured by ANSALDO. The tests were conducted by SIET at the Performance ANalysis and Testing of Heat Removal Systems (PANTHERS) test facility. PANTHERS-PCC is the designation of the program applicable to the PCC prototype. These tests measure both the thermal-hydraulic and structural performance of the heat exchanger at various conditions the unit might experience during and after a postulated LOCA. The tests are part of an extensive experimental program to study the performance of passive systems for SBWR certification /1/.

PANTHERS-PCC test program was conducted accordingly to PANTHERS-PCC TP&P /2/ and was completed in December 1995. The thermal hydraulic results are reported in the Thermal-Hydraulic Data Report of PANTHERS-PCC Tests /3/.

This report contains an analysis of some main thermal-hydraulic aspects of the PCC performance emerging from PANTHERS-PCC test data.

This report together with the Thermal-Hydraulic Data Report, constitute the Final Thermal-Hydraulic Test Reports of PANTHERS-PCC tests.

2. OBJECTIVES

2.1 General Objectives

The thermal-hydraulic general objectives of the full scale PCC tests are /1/:

- 1) Demonstrate that the prototype PCC heat exchanger is capable of meeting its design requirements for heat rejection. (*Component Performance*)
- 2) Provide a sufficient database to confirm the adequacy of TRACG to predict the quasi-steady-heat rejection performance of a prototype PCC heat exchanger, over a range of noncondensable gas flow rates, steam flow rates, operating pressures, and superheat conditions, that span and bound the SBWR range. (*Steady-State Separate Effects*)
- 3) Determine and quantify any differences in the effects of noncondensable buildup in the PCC heat exchanger tubes between lighter-than-steam and heavier-than-steam gases. (*Concept Demonstration*)

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 8 | 1 |

2.2 Specific Objectives

The thermal hydraulic specific objectives are /2/:

- a) measure the steady-state heat removal capability over the expected range of SBWR conditions:
 - inlet pressure
 - concentration of noncondensable gases
 - PCC differential pressure
 - pool-side bulk average water temperature
 - pool-side water level
- b) confirm that when a mixture of steam and noncondensable gases flows into the PCC, the uncondensed gases will be discharged from the vent line and the condensate will be discharged from the drain line;
- c) confirm that tube-side heat transfer and flow rates are stable and without large fluctuations;
- d) confirm that there is no condensation water hammer during the expected start-up, shutdown and operating modes of the PCC;
- e) measure the inside and outside wall temperature at typical tube locations to:
 - i) provide diagnostic information for investigation of unexpected condenser performance
 - ii) provide information useful to confirm the understanding of tube side performance
 - iii) provide a fundamental data base for confirmation of TRACG simulation of PCC performance.

The conclusions to the Thermal-Hydraulic Data Report /3/ discusses how these objectives are met.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 9 | |

3. TEST ANALYSIS

3.1 Steady-State Tests

The majority of the PANTHERS-PCC testing concerns steady-state performance tests. For these tests, the facility is placed in a condition where steam or air-steam mixtures are supplied to the PCC, and the condensed vapor and vented gases are collected. All inlet and outlet flows are measured.

The condensate after cooling is collected in a storage tank and the vented gas is released to the atmosphere. Once steady-state conditions are established, data are recorded for a period of at least 15 minutes. The time average data are reported and analyzed.

The tests are classified into 6 groups as defined in Section 6 of the PANTHERS-PCC Thermal-Hydraulic Data Report /3/

3.1.1 Saturated Steam Tests (Group P1)

3.1.1.1 Test Conditions

Table 3.1 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Saturated-Steam Only Tests.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 10 | — |

3.1.2 Superheated Steam Tests (Group P2)

3.1.2.1 Test Conditions

Table 3.2 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Superheated-Steam Only Tests.

The tests can be divided into two sets; low steam flow (approximately 1.4 kg/s) and high steam flow (approximately 5 kg/s near PCC rated conditions). Within each set, three superheat conditions were tested (approximately 10, 20 and 30 °C superheating).

3.1.3 Saturated Steam-Air Tests at 5 kg/s Steam Flowrate (Group P3)

3.1.3.1 Test Conditions

Table 3.4 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Saturated-Steam-Air Tests at 5 kg/s Steam Flowrate.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 11 | 11 |

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 12 | |

3.1.4 Saturated Steam-Air Tests at Extreme and Intermediate Ranges (Group P4)

3.1.4.1 Test Conditions

Table 3.5 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Saturated-Steam-Air Tests at Extreme and Intermediate Ranges.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 13 | - |

3.1.5 Superheated Steam-Air Tests (Group P5)

3.1.5.1 Test Conditions

Table 3.6 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Superheated-
Steam-Air Tests.

3.1.6 Low Priority Saturated Steam-Air Tests (Group P6)

3.1.6.1 Test Conditions

Table 3.7 shows the PANTHERS-PCC Steady-State Performance Test Matrix for Low Priority
Saturated Steam-Air Tests.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 14 | |

3.2 Transient Tests

Two types of thermal-hydraulic transient tests were performed in the PANTHERS-PCC test program:

- noncondensable gas buildup tests (8 tests)
- pool water level effect tests (3 tests)

These tests are not intended to be system transient tests. Their purpose was to measure the thermal-hydraulic and structural performance of the condenser under varying conditions.

3.2.1 Noncondensable Gas Buildup Tests (Group P7)

3.2.1.1 Test Conditions

Table 3.8 shows the PANTHERS-PCC Non Condensable Gas Buildup Tests Matrix.

Steam was supplied to the PCC at a constant rate, and steady-state conditions were established and held for a ten minutes period. Then air, helium or air/helium mixture were injected at low flowrate with the vent line closed. These tests can be divided in two groups: T50, T52, T75, T77 (at 1.4 kg/s steam flowrate) and T51, T53, T76, T78 (at 5 kg/s steam flowrate). In each group the first two tests are with air buildup (saturated steam and superheated steam), the third test is

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori innovativi | 00394RA95 | 0 | 15 | |

saturated steam with helium buildup and the fourth test is saturated steam with air/helium mixture buildup.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 16 | |

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori innovativi | 00394RA95 | 0 | 17 | - |

3.2.2 Pool Water Level Effect Test (Group P8)

3.2.2.1 Test Conditions

Table 3.12 shows the PANTHERS-PCC Pool Water Level Effect Tests matrix. Three tests were run. Test T54 was run with steam only and with the vent line closed. Tests T55 and T56 were run with a steam-air mixture, the vent line open and the position of the vent tank flow control valve remained fixed. Tests were started with the pool at normal water level.

Once steady-state conditions were established and held for at least ten minutes, the pool water level was allowed to drop by boiloff and draining till the IC pool water level reached 1.3 m. Then the water level was increased till normal water level was re-established.

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 18 | — |

| SIET | Document | Rev | Page | of |
|-----------------------------|-----------|-----|------|----|
| Sezione Reattori Innovativi | 00394RA95 | 0 | 19 | |

REFERENCES

- /1/ GE Nuclear Energy NEDC-32391 rev.B "SBWR Test and Analysis Program Description"
- /2/ PANTHERS-PCC TP & P, SIET 00098PP91
- /3/ THERMAL-HYDRAULIC DATA REPORT OF PANTHERS-PCC TESTS, SIET 00393RP95

Table 3.1 - PANTHERS-PCC Steady-State Performance Matrix - Saturated Steam Only Tests

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat [°C (°F)] |
|-------------------|-----------------------|---------------------------|-------------------------|---------------------|
| P1 | 37 | 0.45 (1.0) | 0 (0) | < 10 (18) |
| P1 | 38 | 1.4 (3.0) | 0 (0) | < 10 (18) |
| P1 | 39 | 2.5 (5.5) | 0 (0) | < 10 (18) |
| P1 | 40 | 3.6 (8.0) | 0 (0) | < 10 (18) |
| P1 | 41 | 5.0 (11.0) | 0 (0) | < 10 (18) |
| P1 | 42 | 5.7 (12.5) | 0 (0) | < 10 (18) |
| P1 | 43 | 6.6 (14.5) | 0 (0) | < 10 (18) |

* Nominal value

Table 3.2 - PANTHERS-PCC Steady-State Performance Matrix - Superheated Steam Only Tests

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat [°C (°F)] |
|-------------------|-----------------------|---------------------------|-------------------------|---------------------|
| P2 | 44 | 1.4 (3.0) | 0 (0) | 15 (27)* |
| P2 | 45 | 1.4 (3.0) | 0 (0) | 20 (36)* |
| P2 | 46 | 1.4 (3.0) | 0 (0) | 30 (54)* |
| P2 | 47 | 5.0 (11.0) | 0 (0) | 15 (27)* |
| P2 | 48 | 5.0 (11.0) | 0 (0) | 20 (36)* |
| P2 | 49 | 5.0 (11.0) | 0 (0) | 30 (54)* |

* Nominal value

| | | | | |
|-----------------------------|-----------|-----|------|----|
| SIET | Document | Rev | Page | of |
| Sezione Reattori Innovativi | 00394RA95 | 0 | 21 | |

Table 3.3 - Superheating in the PCC steam feed line

| Test Number | Superheating at PCC Inlet section (°C) | Superheating below PCC steam distributor (°C) |
|-------------|--|---|
| T44 | 15.8 | 0.0 |
| T45 | 20.7 | 0.4 |
| T46 | 30.2 | 1.0 |
| T47 | 14.8 | 0.0 |
| T48 | 18.9 | 0.8 |
| T49 | 28.4 | 13.2 |

Table 3.4 - PANTHERS-PCC Steady-State Performance Matrix . Saturated Steam - Air Mixture Tests

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|---------------------------|-------------------------|-----------------------|
| P3 | 9 | 5.0 (11.0) | 0.076 (0.17) | < 10 (18) |
| P3 | 15 | 5.0 (11.0) | 0.16 (0.35) | < 10 (18) |
| P3 | 18 | 5.0 (11.0) | 0.41 (0.90) | < 10 (18) |
| P3 | 23 | 5.0 (11.0) | 0.86 (1.9) | < 10 (18) |

* Nominal value

** Superheat conditions are relative to the steam partial pressure.

Table 3.5 - PANTHERS-PCC Steady-State
Performance Matrix. Saturated Steam - Air Mixture Tests.
Extreme and Intermediate Ranges

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|------------------------------|----------------------------|--------------------------|
| P4 | 2 | 1.4 (3.0) | 0.014 (0.030) | < 10 (18) |
| P4 | 13 | 2.5 (5.5) | 0.16 (0.35) | < 10 (18) |
| P4 | 16 | 6.6 (14.5) | 0.16 (0.35) | < 10 (18) |
| P4 | 17 | 2.5 (5.5) | 0.41 (0.90) | < 10 (18) |
| P4 | 19 | 5.7 (12.5) | 0.41 (0.90) | < 10 (18) |
| P4 | 22 | 1.4 (3.0) | 0.86 (1.9) | < 10 (18) |
| P4 | 25 | 6.6 (14.5) | 0.86 (1.9) | < 10 (18) |

* Nominal value

** Superheat conditions are relative to the steam partial pressure.

Table 3.6 - PANTHERS-PCC Steady-State
Performance Matrix. Superheated Steam - Air Mixture Tests

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|------------------------------|----------------------------|--------------------------|
| P5 | 35 | 5.0 (11.0) | 0.86 (1.9) | 20(36)* |
| P5 | 36 | 5.0 (11.0) | 0.86 (1.9) | 30(54)* |

* Nominal value

** Superheat conditions are relative to the steam partial pressure.

Table 3.7 - PANTHERS-PCC Steady-State
Performance Matrix. Low Priority Saturated Steam - Air Mixture Tests

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|---------------------------|-------------------------|-----------------------|
| P6 | 1 | 0.45 (1.0) | 0.014 (0.030) | < 10 (18) |
| P6 | 3 | 2.5 (5.5) | 0.027 (0.060) | < 10 (18) |
| P6 | 4 | 3.6 (8.0) | 0.027 (0.060) | < 10 (18) |
| P6 | 5 | 5.0 (11.0) | 0.027 (0.060) | < 10 (18) |
| P6 | 6 | 5.7 (12.5) | 0.027 (0.060) | < 10 (18) |
| P6 | 7 | 6.6 (14.5) | 0.027 (0.060) | < 10 (18) |
| P6 | 8 | 1.4 (3.0) | 0.076 (0.17) | < 10 (18) |
| P6 | 10 | 5.7 (12.5) | 0.076 (0.17) | < 10 (18) |
| P6 | 11 | 6.6 (14.5) | 0.076 (0.17) | < 10 (18) |
| P6 | 12 | 0.45 (1.0) | 0.16 (0.35) | < 10 (18) |
| P6 | 14 | 3.6 (8.0) | 0.16 (0.35) | < 10 (18) |
| P6 | 20 | 5.0 (11.0) | 0.59 (1.29) | < 10 (18) |
| P6 | 21 | 6.6 (14.5) | 0.59 (1.29) | < 10 (18) |
| P6 | 24 | 5.7 (12.5) | 0.86 (1.9) | < 10 (18) |

* Nominal value

** Superheat conditions are relative to the steam partial pressure.

Table 3.8 - PANTHERS-PCC Noncondensable Gas - Buildup Test Matrix

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Helium Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|---------------------------|----------------------------|-------------------------|-----------------------|
| P7 | 50 | 1.4 (3.0) | 0 (0) | low | < 10 (18) |
| P7 | 51 | 5.0 (11.0) | 0 (0) | low | < 10 (18) |
| P7 | 52 | 1.4 (3.0) | 0 (0) | low | 20 (36)* |
| P7 | 53 | 5.0 (11.0) | 0 (0) | low | 30 (54)* |
| P7 | 75 | 1.4 (3.0) | low | 0 (0) | < 10 (18) |
| P7 | 76 | 5.0 (11.0) | low | 0 (0) | < 10 (18) |
| P7 | 77 | 1.4 (3.0) | low | 3.4 x He | < 10 (18) |
| P7 | 78 | 5.0 (11.0) | low | 3.4 x He | < 10 (18) |

* Nominal value

** Superheat referenced to steam partial pressure.

Table 3.9 - Steam and Air Partial Pressure for Test T51

| Total Pressure (kPa) | Partial Pressure (kPa) | | | |
|-------------------------|---------------------------------------|--------------------------------|-------|---------------------------------------|
| | PCC Upper Header (P-A001 Location) | VENT LINE (P-6001 Location) | | PCC Upper Header (P-A001 Location) |
| Mixture | Steam | Air | Steam | Air |
| 347 | 349 | 0 | 341 | 6 |
| 535 | 346 | 189 | 527 | 8 |
| 700 | 222 | 478 | 685 | 15 |
| 782 | 169 | 613 | 766 | 16 |

Table 3.10 - Steam and Helium Partial Pressure for Test T76

| Total Pressure (kPa) | Partial Pressure (kPa) | | | | | |
|-------------------------|---------------------------------------|--------------------------------|-------|---------------------------------------|---------------------------------------|--------|
| | PCC Upper Header (P-A001 Location) | VENT LINE (P-6001 Location) | | PCC Upper Header (P-A001 Location) | PCC Lower Header (P-C001 Location) | |
| Mixture | Steam | Helium | Steam | Helium | Steam | Helium |
| 356 | 358 | 0 | 377 | 0 | 346 | 10 |
| 488 | 458 | 30 | 492 | 0 | 420 | 68 |
| 665 | 529 | 136 | 624 | 41 | 479 | 186 |
| 795 | 558 | 237 | 720 | 75 | 493 | 302 |

| | | | | |
|-----------------------------|-----------|-----|------|----|
| SIET | Document | Rev | Page | of |
| Sezione Reattori Innovativi | 00394RA95 | 0 | 25 | |

Table 3.11 - Steam and Helium Partial Pressure for Test T75

| Total Pressure (kPa) | Partial Pressure (kPa) | | | | | | | |
|-------------------------|--------------------------------|--------|---------------------------------|--------|---------------------------------------|--------|---------------------------------------|--------|
| | VENT LINE (P-6001 Location) | | Drain line (P-5001 Location) | | PCC Upper Header (P-A001 Location) | | PCC Upper Header (P-A002 Location) | |
| | Steam | Helium | Steam | Helium | Steam | Helium | Steam | Helium |
| 190 | 190 | 0 | 190 | 0 | -- | -- | -- | -- |
| 262 | 232 | 30 | 218 | 44 | -- | -- | -- | -- |
| 325 | 239 | 86 | 239 | 86 | 304 | 20 | 287 | 38 |
| 500 | 270 | 230 | 286 | 214 | 415 | 85 | 286 | 214 |
| 600 | 278 | 322 | 290 | 310 | 439 | 161 | 262 | 338 |
| 700 | 286 | 414 | 304 | 396 | 382 | 318 | 300 | 400 |
| 800 | 295 | 505 | 313 | 487 | 361 | 439 | 295 | 505 |

Table 3.12 - PANTHERS-PCC Pool Water Level Effects - Test Matrix

| Test Group Number | Test Condition Number | Steam Flow* [kg/s (lb/s)] | Air Flow* [kg/s (lb/s)] | Superheat** [°C (°F)] |
|-------------------|-----------------------|------------------------------|----------------------------|--------------------------|
| P8 | 54 | 5.0 (11.0) | 0 (0) | < 10 (18) |
| P8 | 55 | 5.0 (11.0) | 0.14 (0.31) | < 10 (18) |
| P8 | 56 | 6.6 (14.5) | 0.83 | < 10 (18) |

* Nominal value

** Superheat referenced to steam partial pressure.