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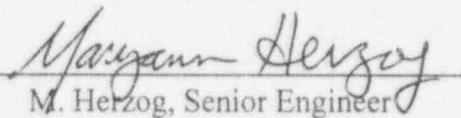
GIRAFFE TEST

Apparent Test Results Report (ATR)

Helium Series Tests (H)

H-3 & H-4 Tests

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CONTENTS OF THIS REPORT
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ABBREVIATIONS AND ACRONYMS

D/W	Drywell
GE	General Electric
GIRAFFE	Gravity-Driven Integral Full-Height Test for Passive Heat Removal
LOCA	Loss-of-Coolant Accident
PCC	Passive Containment Cooling (System)
SBWR	Simplified Boiling Water Reactor
S/C	Suppression Chamber
TOGE	Toshiba/GE
W/W	Wetwell

1.0 TEST SUMMARY

The objectives of tests H-3 and H-4 are to demonstrate the operation of a passive containment cooling system with the presence of a high concentration of lighter-than-steam non-condensable gas and to provide a database for computer codes used to predict SBWR containment system performance in the presence of a lighter-than-steam non-condensable gas.

Test H-3 and H-4 initial conditions are provided in Reference 1. The test procedures and instrument locations are proprietary information.

Test H-3 started with a mixture of nitrogen, helium and steam in the drywell. Helium is used to simulate the hydrogen that could be generated as the result of a fuel-clad metal water reaction. The total initial drywell pressure and all other initial test conditions for test H-3 were the same as those for the base case, test H-1.

Test H-4 started with the same initial test conditions as those for the base case, test H-1. Helium was injected into the drywell at a constant rate for the first hour of the test. The mass of helium injected for test H-4 was equal to the initial mass of helium in the drywell for test H-3.

2.0 CONCLUSION

For both tests H-3 and H-4, the D/W peak pressures were confirmed to be well below the design limit. These tests demonstrated the successful operation of the PCCS with the presence of a heavier-than-steam and a high concentration of a lighter-than-steam non-condensable gas.

3.0 MAJOR TEST RESULTS

3.1 Test H-3 Results

The test results provided in Figures 1 through 6 are proprietary information.

The figure 1 plots of the measured D/W and W/W pressures are proprietary information.

The figure 2 plots of the measured water levels in the non-condensable gas vent line and the LOCA vent line are proprietary information. The figure 5B locations of the differential pressure measurement locations are proprietary information.

The figure 3 plots of the measured D/W temperatures at the seven thermocouple locations are proprietary information.

The figure 4 plots of the measured PCC tube bulk fluid temperatures are proprietary information.

3.1 Test H-3 Results (Continued)

The figure 5A plot of the measured suppression pool surface temperature is proprietary information.

The figure 6 plot of the preliminary measured PCC inlet flow rate is proprietary information.

3.2 Test H-4 Results

The test results provided in Figures 7 through 12 are proprietary information.

The figure 7 plots of the measured D/W and W/W pressures are proprietary information.

The figure 8 plots of the measured water levels in the non-condensable gas vent line and the LOCA vent line are proprietary information.

The figure 9 plots of the measured D/W temperatures at the seven thermocouple locations are proprietary information.

The figure 10 plots of the measured PCC tube bulk fluid temperatures are proprietary information.

The figure 11 plot of the measured suppression pool surface temperature is proprietary information.

The figure 12 plot of the preliminary measured PCC inlet flow rate is proprietary information.

4.0 TEST ANOMALIES and FAILED INSTRUMENTS

There were no test anomalies or failed instruments

5.0 REFERENCES

1. GIRAFFE Helium Test Specification, General Electric Company Specification 25A5677, rev. 1, May 1995

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FIGURE 1 TEST H-3 D/W and W/W PRESSURES

FIGURE 2 TEST H-3 NON-CONDENSABLE GAS VENT and LOCA VENT WATER LEVELS

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FIGURE 3 TEST H-3 D/W TEMPERATURE

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FIGURE 4 TEST H-3 PCC TUBE BULK FLUID TEMPERATURE

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FIGURE 5A TEST H-3 SUPPRESSION POOL SURFACE TEMPERATURE

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FIGURE 5B DIFFERENTIAL PRESSURE MEASUREMENT LOCATIONS IN S/C

FIGURE 6 TEST H-3 PCC INLET FLOW RATE

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FIGURE 7 TEST H-4 D/W and W/W PRESSURES

FIGURE 8 TEST H-4 NON-CONDENSABLE GAS VENT and LOCA VENT WATER LEVELS

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FIGURE 9 TEST H-4 D/W TEMPERATURE

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FIGURE 10 TEST H-4 PCC TUBE BULK FLUID TEMPERATURE

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FIGURE 11 TEST H-4 SUPPRESSION POOL SURFACE TEMPERATURE

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FIGURE 12 TEST H-4 PCC INLET FLOW RATE