North Atlantic

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The Northeast Utilities System

September 8, 2000

Docket No. 50-443

NYN-00080

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Seabrook Station
"Response to Request for Additional Information Pertaining to
the 2nd Ten-Year Interval Inservice Test Program Relief Request PR-1"

On March 21, 2000, North Atlantic Energy Service Corporation (North Atlantic) forwarded the 2nd Ten-Year Interval Inservice Test (IST) Program Plan and associated relief requests to the Nuclear Regulatory Commission (NRC) for review. As a result of this submittal, North Atlantic received a request for additional information regarding relief requests PG-1, PR-1, PR-2, PR-3, VG-1 and VG-2 by letter dated August 9, 2000. The North Atlantic responses to the requested information were provided to the NRC by letter (NYN-00070) dated August 18, 2000.

As a result of a telephone conference held on August 30, 2000, North Atlantic was requested to provide additional information regarding difficulties associated with performing CBS pump testing at conditions other than the pump reference conditions. Additionally, North Atlantic was requested to provide the available IST program performance data for the Containment Building Spray (CBS) pumps. This information is contained in Enclosure 1. A copy of the CBS pump test data has been provided in Enclosure 2. A copy of the piping and instrument diagram associated with the CBS system has been provided in Enclosure to 3 to assist your review.

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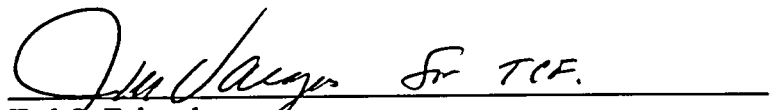
Should you have any questions regarding this letter, please contact Mr. James M. Peschel, Manager - Regulatory Programs, at (603) 773-7194.

Very truly yours,

NORTH ATLANTIC ENERGY SERVICE CORP.



Ted C. Feigenbaum
Executive Vice President
and Chief Nuclear Officer

cc: H. J. Miller, NRC Regional Administrator
R.M. Pulsifer, NRC Project Manager, Project Directorate I-2
R. K. Lorson, NRC Senior Resident Inspector

# Enclosure 1 to NYN-00080

CBS Pump Testing Issues:

The Containment Building Spray (CBS) pumps (CBS-P-9A and CBS-P-9B) and associated piping and valves are shown on North Atlantic Piping & Instrumentation Diagram (1-CBS-D20233). A copy of 1CBS-D20233 has been provided in Enclosure 3 for your information.

The CBS pumps are required to be inservice tested in accordance with Subsection ISTB of the 1995 Edition, (including the 1996 Addenda) of American Society of Mechanical Engineers (ASME) Code for the Operation and Maintenance of Nuclear Power Plants (OM Code). Subsections ISTB 4.3(e)(1) and 5.2.1of the OM Code require that comprehensive tests of pumps be performed on a biennial (2-year) frequency at reference conditions within ± 20% of pump design flow.

The flow path used to perform both the biennial comprehensive pump test and the quarterly Group B test are the same. The CBS pumps take a suction from the Refueling Water Storage Tank (RWST) through a series of manual valves and a suction check valve and discharge water back to the RWST. The pump discharge flow path contains a piping run to a heat exchanger (CBS-E 16A or CBS-E-16B) and then continues to the containment spray ring header penetration(s) (X-14 and X-15). Upstream of this penetration is the return line to the RWST. In the return line, there is an air-operated valve (AOV) (open/close type) specific to each train (CBS-V31 and CBS-V32) with no remote throttling capability. The return lines for each train tie together into a common line that utilizes a similar type AOV (CBS-V33). This common line then connects to the RWST, which is located downstream. The Safety Injection pumps also utilize this common return line to the RWST.

CBS pump flow is measured utilizing a flow indicator (FI-2340) located in the common return line to the RWST. Due to the design of the valves, there is no practical method to vary the resistance of test path to adjust flow. IST testing is performed at this fixed reference condition.

During the pre-operational test period, a test (PT-12.1) was performed to verify CBS system performance. PT 12.1 was performed utilizing a temporary manual throttle valve installed in a spool piece (for a temporary strainer) in the common RWST return line. This spool piece still exists as a bolted joint but the manual valves and strainer have been removed. Installation of a similar temporary throttle valve with the plant on-line to achieve additional flow points for the subject pumps is impractical due to the use of this line by other pumps such as the Safety Injection pumps. Installation of a temporary manual throttle valve during shutdown periods would be a substantial burden.

Alternative means to vary system resistance in order to provide additional test data were evaluated. The local manual throttling of either CBS-V31, CBS-V32 or CBS-V33 was eliminated as an option due to the potential for valve damage since these valves incorporate a soft seat type design. These valves were recently overhauled during the last refueling outage to correct minor seat leakage issues, so it is not preferable to utilize these valves as throttle valves.

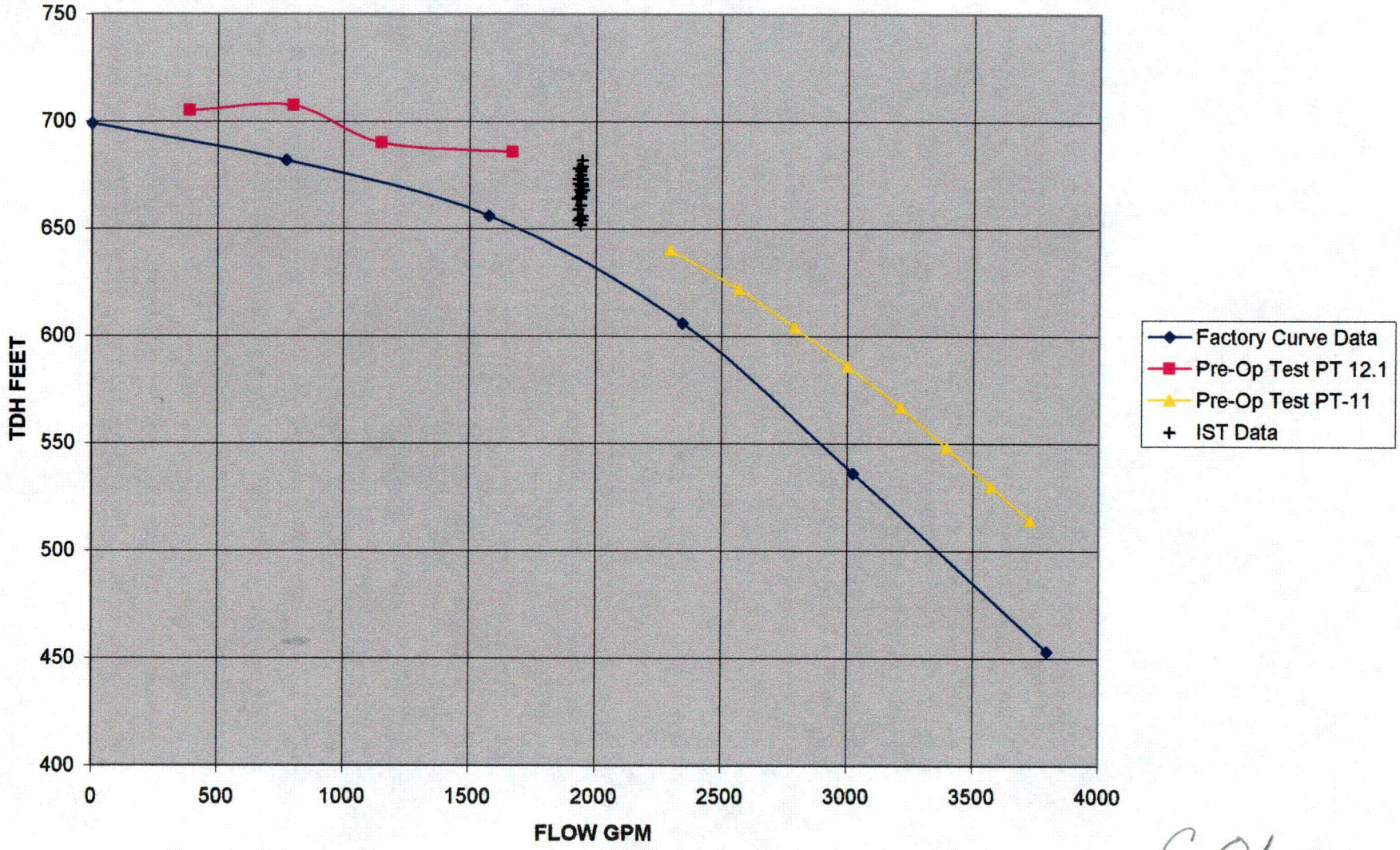
Additionally, local manipulation of these valves at power would over ride the automatic signals that these valves receive to close to protect the containment spray flow path to containment.

The potential to vary system resistance utilizing a manual valve located in the pump suction lines was also evaluated. This option was eliminated to due to the potential to cavitate the pumps and reduce net positive suction head (NPSH) margin for the pumps.

The CBS pumps are typically used for test purposes or to recirculate the contents of the RWST. Typical run times per year are less than 50 hours. To demonstrate that IST data is fairly consistent, IST data has been provided in Enclosure 2 in a graphical form and in a short table format. Even though this data is only at one flow point, it has been very consistent since the pre-operational test data was taken.

# Enclosure 2 to NYN-00080

## CBS Pump 9A Performance Curves

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## CBS Pump 9A Performance Curves

| Factory Curve Data | | Pre-op Test PT-12.1 | | Pre-op Test PT-11 | | IST Data | |
|---|---|---|---|---|---|---|---|
| Flow | Head | Flow | Head | Flow | Head | Flow | Head |
| 0 | 699 | 390 | 704.9 | 2296 | 640 | 1930 | 678 |
| 772 | 682 | 800 | 707.4 | 2569 | 622 | 1930 | 678 |
| 1579 | 656 | 1150 | 690 | 2792 | 604 | 1935 | 678 |
| 2346 | 606 | 1670 | 685.7 | 3000 | 586 | 1930 | 659 |
| 3025 | 536 | | | 3211 | 567 | 1935 | 654 |
| 3796 | 453 | | | 3393 | 548 | 1940 | 652 |
| | | | | 3573 | 530 | 1940 | 661 |
| | | | | 3726 | 514 | 1940 | 664 |
| | | | | | | 1940 | 654 |
| | | | | | | 1940 | 652 |
| | | | | | | 1945 | 656 |
| | | | | | | 1925 | 664 |
| | | | | | | 1935 | 654 |
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| | | | | | | 1930 | 654 |
| | | | | | | 1935 | 655 |
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| | | | | | | 1945 | 671 |
| | | | | | | 1940 | 667 |
| | | | | | | 1940 | 678 |
| | | | | | | 1945 | 668 |
| | | | | | | 1940 | 671 |
| | | | | | | 1942 | 667 |
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| | | | | | | 1930 | 673 |
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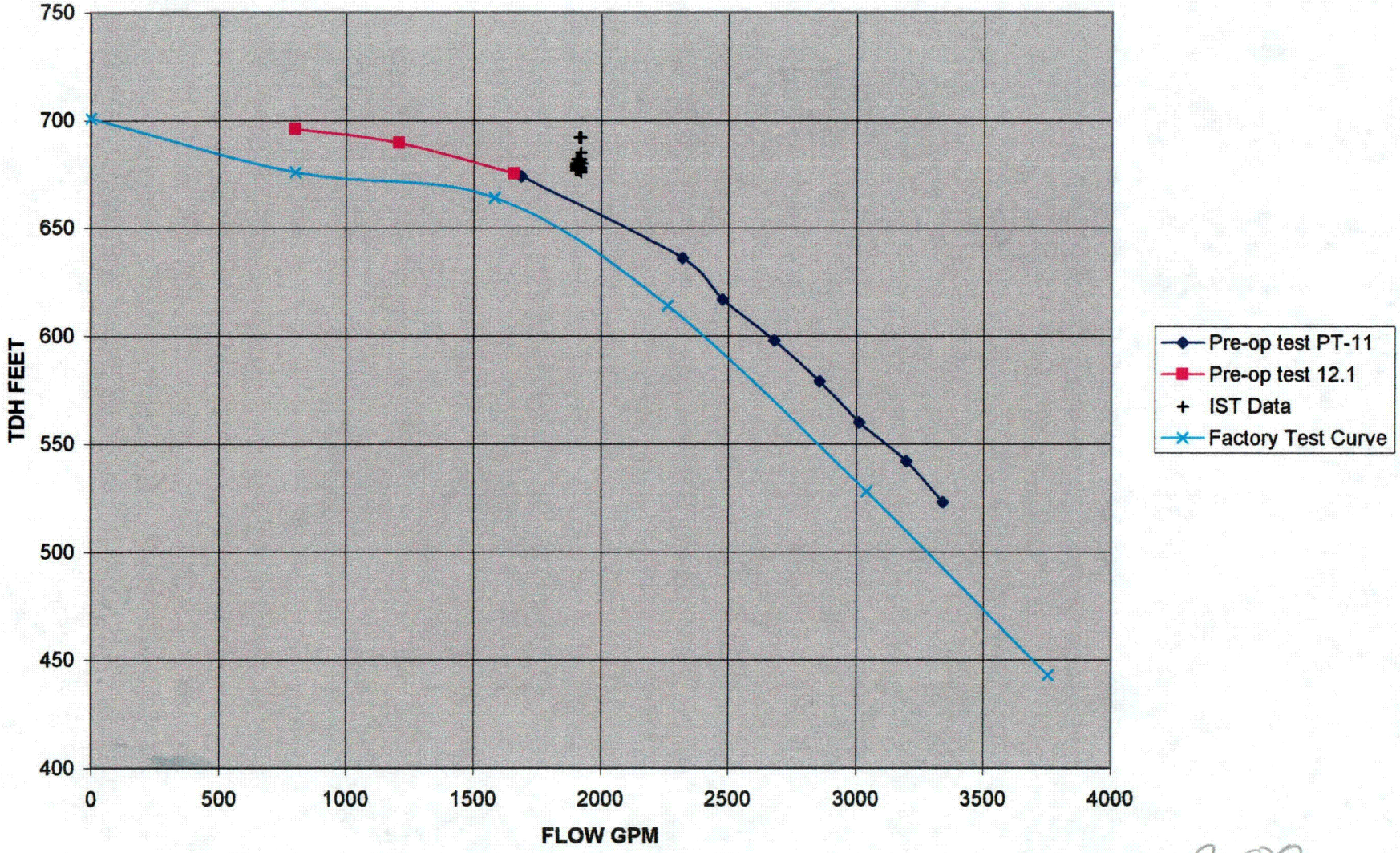
| | | | | | | 1935 | 668 |
| | | | | | | 1935 | 665 |
| | | | | | | 1940 | 668 |
| | | | | | | 1945 | 679 |
| | | | | | | 1940 | 673 |
| | | | | | | 1940 | 670 |
| | | | | | | 1940 | 678 |
| | | | | | | 1930 | 671 |
| | | | | | | 1930 | 671 |
| | | | | | | 1945 | 682 |
| | | | | | | 1940 | 675 |
| | | | | | | 1945 | 670 |
| | | | | | | 1945 | 673 |

## CBS Pump 9B Performance Curves

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## CBS Pump 9B Performance Curves

| Factory Curve Data | | Pre-op Test PT-12.1 | | Pre-op Test PT-11 | | IST Data | |
|---|---|---|---|---|---|---|---|
| Flow | Head | Flow | Head | Flow | Head | Flow | Head |
| 0 | 701 | 800 | 695.8 | 1688 | 674 | 1910 | 677 |
| 801 | 676 | 1210 | 689.6 | 2320 | 636 | 1900 | 679 |
| 1581 | 664 | 1660 | 675.17 | 2478 | 617 | 1905 | 678 |
| 2260 | 614 | | | 2679 | 598 | 1920 | 678 |
| 3040 | 528 | | | 2856 | 579 | 1900 | 678 |
| 3753 | 443 | | | 3012 | 560 | 1910 | 678 |
| | | | | 3197 | 542 | 1910 | 682 |
| | | | | 3340 | 523 | 1910 | 677 |
| | | | | | | 1910 | 679 |
| | | | | | | 1920 | 677 |
| | | | | | | 1900 | 677 |
| | | | | | | 1910 | 679 |
| | | | | | | 1920 | 676 |
| | | | | | | 1910 | 678 |
| | | | | | | 1920 | 678 |
| | | | | | | 1915 | 681 |
| | | | | | | 1905 | 682 |
| | | | | | | 1910 | 679 |
| | | | | | | 1915 | 692 |
| | | | | | | 1920 | 680 |
| | | | | | | 1915 | 680 |
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| | | | | | | 1920 | 680 |
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| | | | | | | 1920 | 680 |
| | | | | | | 1920 | 692 |
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| | | | | | | 1915 | 680 |
| | | | | | | 1910 | 680 |
| | | | | | | 1920 | 680 |

# Enclosure 3 to NYN-00080

# THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

## THAT CAN BE VIEWED AT THE RECORD TITLED: PID-1-CBS-D20233, REV.19 CONTAINMENT SPRAY SYSTEM

## WITHIN THIS PACKAGE...OR, BY SEARCHING USING THE DRAWING NUMBER: PID-1-CBS-D20233, REV.19

NOTE: Because of this page's large file size, it may be more convenient to copy the file to a local drive and use the Imaging (Wang) viewer, which can be accessed from the Programs/Accessories menu.