February 6, 2004

L-MT-04-002
10 CFR Part 50.55a(a)

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Monticello Nuclear Generating Plant
Docket 50-263
License No. DPR-22

Inservice Testing Program Fourth Ten-Year Interval Relief Request PR-07

Pursuant to the provisions of 10 CFR 50.55a(f)(5)(iii), Nuclear Management Company, LLC (NMC) hereby requests that the NRC grant relief and impose alternative requirements for the Fourth Ten-Year Interval of the Inservice Testing Program in the following manner.

The Emergency Filtration Train-Emergency Service Water (EFT-ESW) pumps can provide a flow that is much larger than the capacity of the system to deliver. American Society of Mechanical Engineers (ASME) OM Code 1995 Edition with 1996 Addenda, Section ISTB 4.3(e)(1) requires that reference values be established within ± 20% of pump design flow rate for the Comprehensive Test. To achieve the required design flow a major modification to the ESW pumps and/or system would be required. NMC has determined this to be impractical. Therefore, the NMC proposes to perform the comprehensive testing on the ESW pumps in accordance with the design flow requirements of ISTB 4.3(e)(2) and NUREG/CP-0152. In addition, NMC proposes to perform vibration testing and other more frequent pump performance trending improvements to provide assurance that the ESW pumps are satisfactorily monitored.

The details of the request are enclosed. This letter contains no new commitments and no revisions to existing commitments.

NMC requests approval by December 2004, based on the requirement to perform a Comprehensive Test of the ESW pumps by June 1, 2005.

Thomas J. Palmisano
Site Vice President, Monticello Nuclear Generating Plant
Nuclear Management Company, LLC

Enclosure

A047

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC
State of Minnesota Boiler Inspector
Hartford Insurance

ENCLOSURE 1

MONTICELLO NUCLEAR GENERATING PLANT
INSERVICE TESTING PROGRAM FOURTH TEN-YEAR INTERVAL
RELIEF REQUEST PR-07

1. ASME Code Component(s) Affected

   Two, American Society of Mechanical Engineers (ASME) Code Class 3, Emergency Filtration Train Emergency Service Water (EFT-ESW) Pumps are affected. These pumps are identified as P-111C and P-111D.

   The function of the pumps is to provide cooling water to the condensers of the EFT air conditioning units, Emergency Core Cooling System (ECCS) pump motor oil coolers and ECCS room coolers under loss of off-site power and accident conditions. The EFT-ESW System consists of two redundant and completely segregated loops, each of which have a separate vertical line shaft pump.

2. Applicable Code Edition and Addenda

   ASME OM Code, 1995 edition with 1996 Addenda.

3. Applicable Code Requirement

   Subsection ISTB 4.3(e)(1): Reference Values shall be established within ± 20% of pump design flow rate for the Comprehensive Test.

4. Impracticality of Compliance

   The ASME OM Code of Record for Inservice Testing of Pumps does not define the term pump design flow. In NUREG/CP-0152 Vol. 4 (Reference 1), the NRC states, *"The Code does not define pump design flow, so the actual intent of the reference testing point is unclear. However, there is anecdotal evidence that licensees are interpreting this requirement as the best efficiency point (BEP) of the pump."* Further, based upon ISTB 4.3(e)(2), it can be deduced that pump design flow rate may not be defined only as system-required or normal system flow rate. Nuclear Management Company, LLC (NMC), in accordance with the Monticello Nuclear Generating Plant (MNGP) Inservice Testing (IST) Program, has determined the IST Design Flow rate for pumps P-111C and P-111D is 200 gpm, which is not within 20% of the pump BEP, as defined in Table 1.

   Prior to entering the Fourth Ten-Year IST Interval, both EFT-ESW pumps were tested and evaluated to determine the highest flow rate that could consistently and reliably be attained. The highest repeatable practical flow rate for the subject pumps (the current IST Reference Flow Point) is noted in Table 1.

Table 1

Pump	BEP (gpm)	IST Design Flow (gpm)	ISTB 4.3(e)(1) Min Test Flow (gpm)	Highest Repeatable Flow (gpm)	Minimum System Flow Requirement (gpm)	Highest Repeatable Test Flow to Minimum System Flow Requirement Margin (%)
P-111C	≈280	200	160	143	97	≈47
P-111D	≈280	200	160	126	93	≈35

The highest repeatable test flow rates are below the minimum allowable inservice testing flow for the Comprehensive Test as specified by ISTB 4.3(e)(1). Pumps P-111C and P-111D are classified as Group B pumps per ISTB 1.3. NMC is currently performing the ISTB Group B Quarterly pump test for both pumps at the highest practicable flow rate.

Attaining a repeatable inservice testing pump flow rate of $\geq$ 160 gpm is impractical due to the high system resistance for both pumps. The pumps are installed in systems that have numerous cooling coils and other components that contribute to a high system resistance for both affected system trains.

In order to attain the Code required comprehensive pump flow rate, NMC would have to perform a major plant modification involving the subject pumps and/or both divisions of the EFT-ESW systems. Therefore, NMC considers this Code requirement to be impractical to meet.

5. Burden Caused by Compliance

NMC considers complying with the requirements of ISTB 4.3(e)(1) to be impractical and a burden. The EFT-ESW pumps would be required to achieve a minimum of 160 gpm for the duration of the Comprehensive Test, which cannot be reliably achieved. NMC would have to perform a major plant modification to either install bypass flow testing lines for each pump at the existing design flow rates, or replace the subject pumps with those with a different design flow capacity.

6. Proposed Alternative and Basis for Use

On the vendor supplied pump curve for P-111C and P-111D (Figures A and B) the attainable reference flow points as discussed above are in a flat portion of the curves, which is not an optimum area for trending and monitoring pump degradation. However, performing the Quarterly and Comprehensive Test at the highest repeatable practical flow rate will provide satisfactory operating margin for both EFT train systems.

NMC proposes the following alternative to performing the comprehensive pump test in accordance with ISTB 4.3(e)(1) for Pumps P-111C and P-111D:

a. Use ISTB 4.3(e)(2) for the biennial Comprehensive Test and Pre-Service testing, if required.

For the biennial Comprehensive Test, this provision would allow use of the current flow reference point for the Comprehensive Test. For the Pre-Service test, if required, this provision would allow reestablishment of the pump reference values at the highest repeatable practical flow rate. Additionally, it would be allowed to use the highest repeatable practical flow rate, if required, for establishment of additional sets of reference values per ISTB 4.5.

This is acceptable because the current testing flow reference points for both pumps are greater than the minimum allowable system flows for operability. A comparison of EFT-ESW system requirements and operating margin using the current reference flow points is noted in Table 1. The current reference flow testing points provide significant margin over the minimum flow requirements for system operability. The tolerance used for both pump reference flow points during inservice testing is ± 2 gpm.

Figures C and D provide the pre-operational curves and the Third Ten-Year Interval IST test data for pumps P-111C and P-111D, respectively. The test points of both pumps have the normal data scatter characteristic of empirically derived data. Figure C test data for pump P-111C does not show the normal data scatter symmetrically above and below the pre-operational curve. The cause of this is not known, but it could be the result of the reading of one or more instruments; the deviation is small in magnitude and is not considered significant. Both pumps have acceptable performance and have continued to demonstrate that during Fourth Ten-Year IST Interval testing.

Figures E and F provide the differential pressure test data over time from the time of installation (January 2000) through October 2003 for pumps P-111C and P-111D, respectively. The data does not find any overall negative trend since pump installation and any variability is well within the acceptance criteria established for the Third and Fourth Ten-Year IST Intervals.

b. Perform vibration testing during the Group B Quarterly test. Comply with the acceptance criteria established for the Comprehensive Test in Table ISTB 5.2.1-1. As part of the pump monitoring strategy, vibration data acquisition and evaluation will provide additional insight into pump performance and early indications of potential future failure. Vibration monitoring was a requirement for all pump testing prior to the start of the current IST Code Interval. This test is not required per the current IST Program. Prior to entering the Fourth Ten-Year IST Interval, vibration performance for both pumps was satisfactory and within the established limits.

c. Comply with the pump stabilization time requirements of ISTB 5.6.1, "Group A" test, when performing the Group B quarterly test.

This additional measure will improve pump performance trending data repeatability, and ensure a stable baseline for measuring pump performance.

d. Include an Alert Level for differential pressure for the Quarterly Test that complies with the Group A pump hydraulic Acceptance Criteria per Table ISTB 5.2.1-2 in lieu of using ISTB Group B Table 5.2.2-1 for the Quarterly test.

To ensure heightened monitoring and evaluation of degraded pump performance, a hydraulic alert level will be established for the Group B Quarterly Test. Since replacement in year 2000, pump hydraulic performance has continued to be satisfactory and within the acceptable range limits.

7. Duration of Proposed Alternative

This relief request is requested by NMC for the Monticello Nuclear Generating Plant during the Fourth Ten-Year IST Interval, ending May 31, 2012.

8. Precedents

Precedents are established in NUREG/CP-0152 (Reference 1). Reference 1 contains examples of previously approved Relief Requests for Seabrook Nuclear Power Station and North Anna Power Station.

NMC concludes that granting of the relief is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

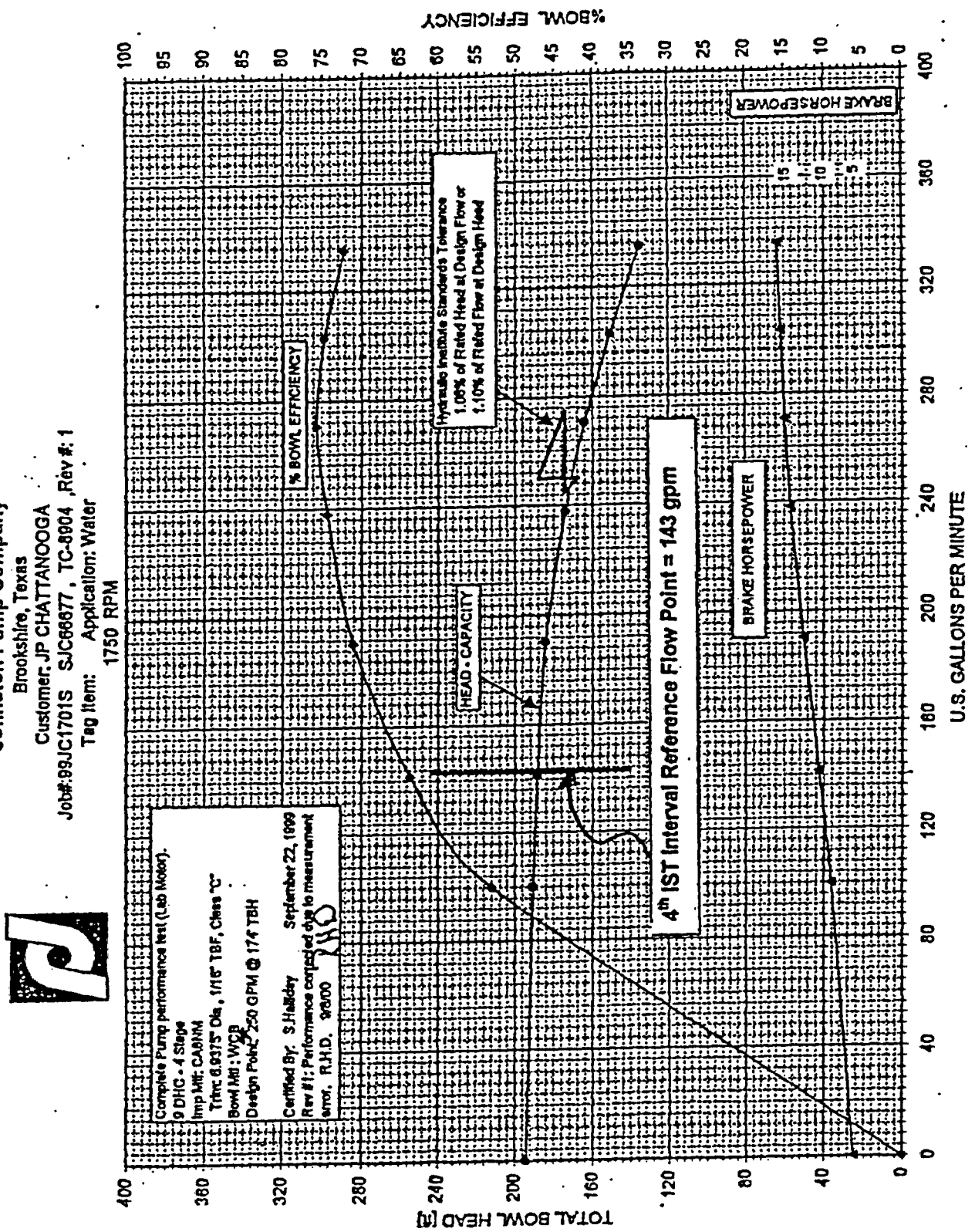
9. References

1) NUREG/CP-0152, Vol. 4, "Proceeding of the Seventh NRC/ASME Symposium on Valve and Pump Testing", Session 3(a): Pumps II, Topic 4, "Comprehensive Pump Testing Based on ASME OM Code Requirements and its Alternatives and Related Relief Requests."

Attachments

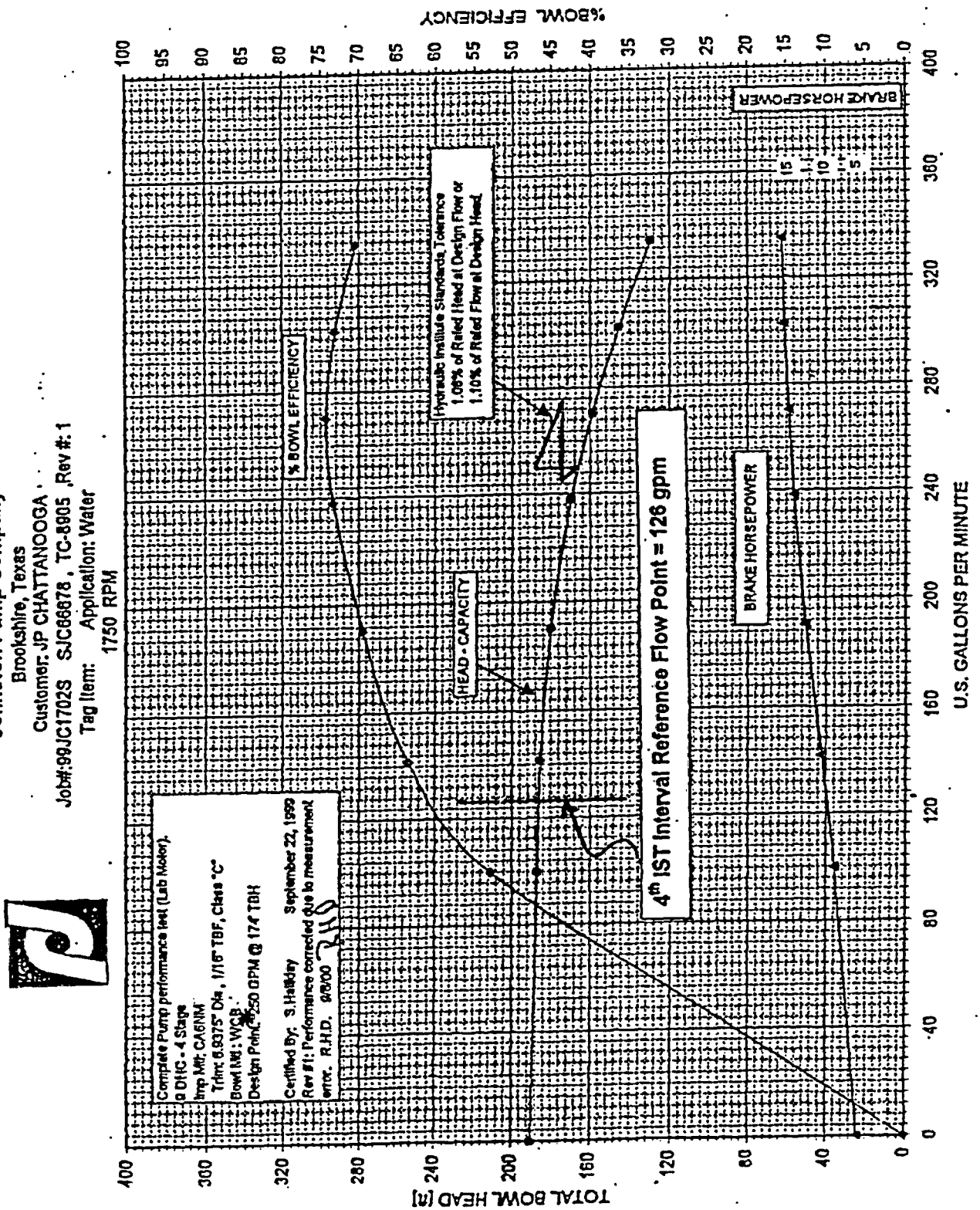
Figure A: P-111C Vendor Pump Curve
Figure B: P-111D Vendor Pump Curve
Figure C: EFT-ESW Pump P-111C Pre-Operational Performance Curve and Third IST Interval Test Data
Figure D: EFT-ESW Pump P-111D Pre-Operational Performance Curve and Third IST Interval Test Data
Figure E: EFT - ESW Pump P-111C Differential Pressure
Figure F: EFT - ESW Pump P-111D Differential Pressure

Figure A
P-111C Vendor Pump Curve



*NOTE: Pump Design Flow was specified as "200 or 250" gpm

Figure B
P-111D Vendor Pump Curve



*NOTE: Pump Design Flow was specified as "200 or 250" gpm

Figure C

EFT-ESW Pump P-111C Pre-Operational Performance Curve and Third IST Interval Test Data

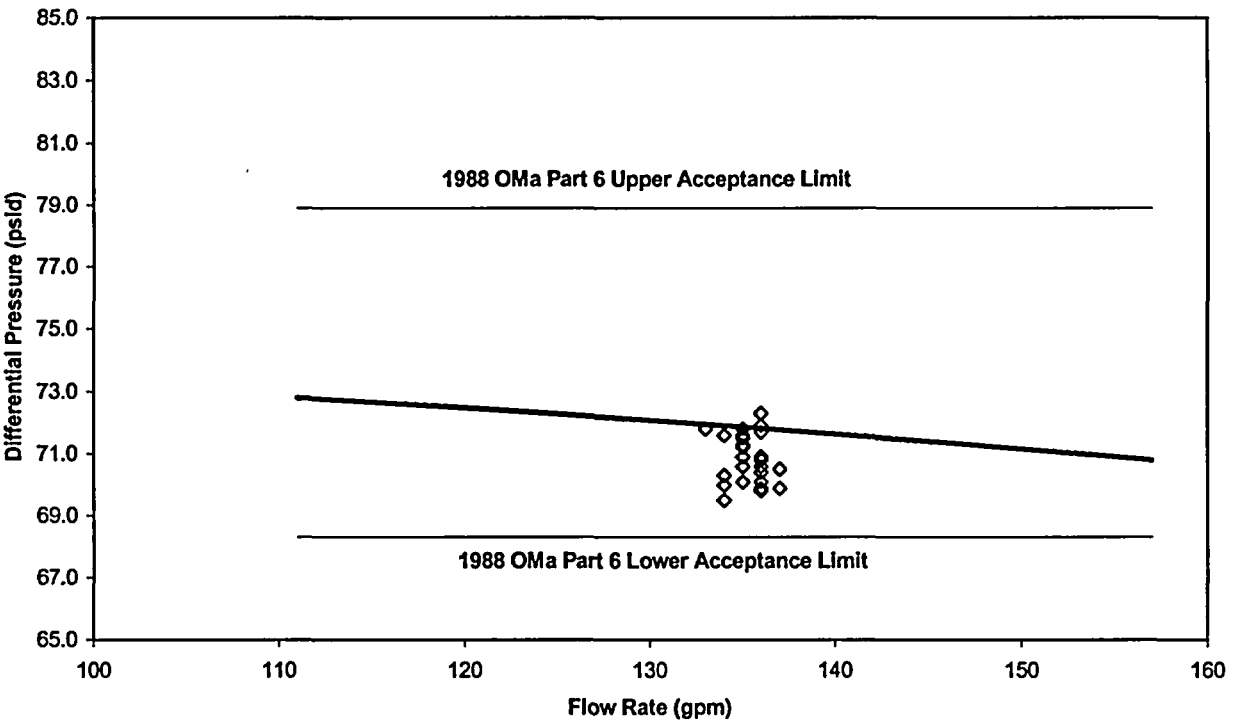


Figure D

EFT-ESW Pump P-111D Pre-Operational Performance Curve and Third IST Interval Test Data

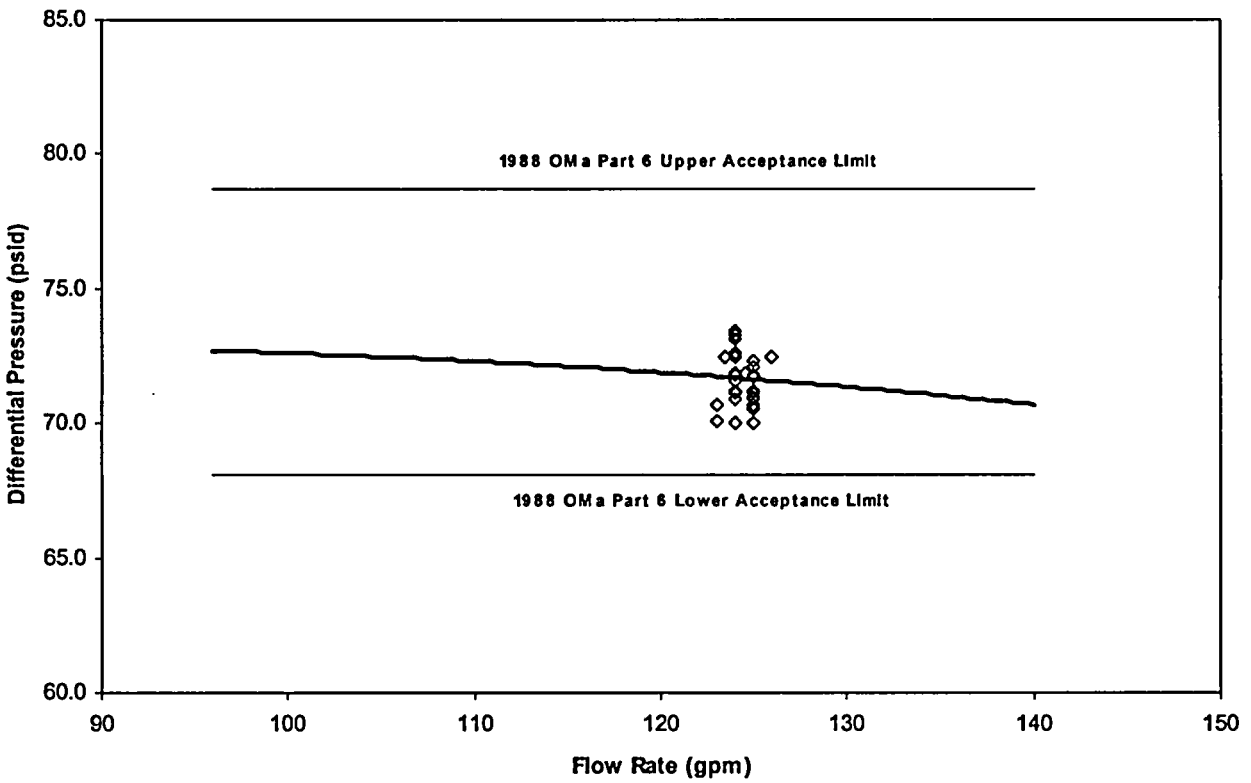


Figure E

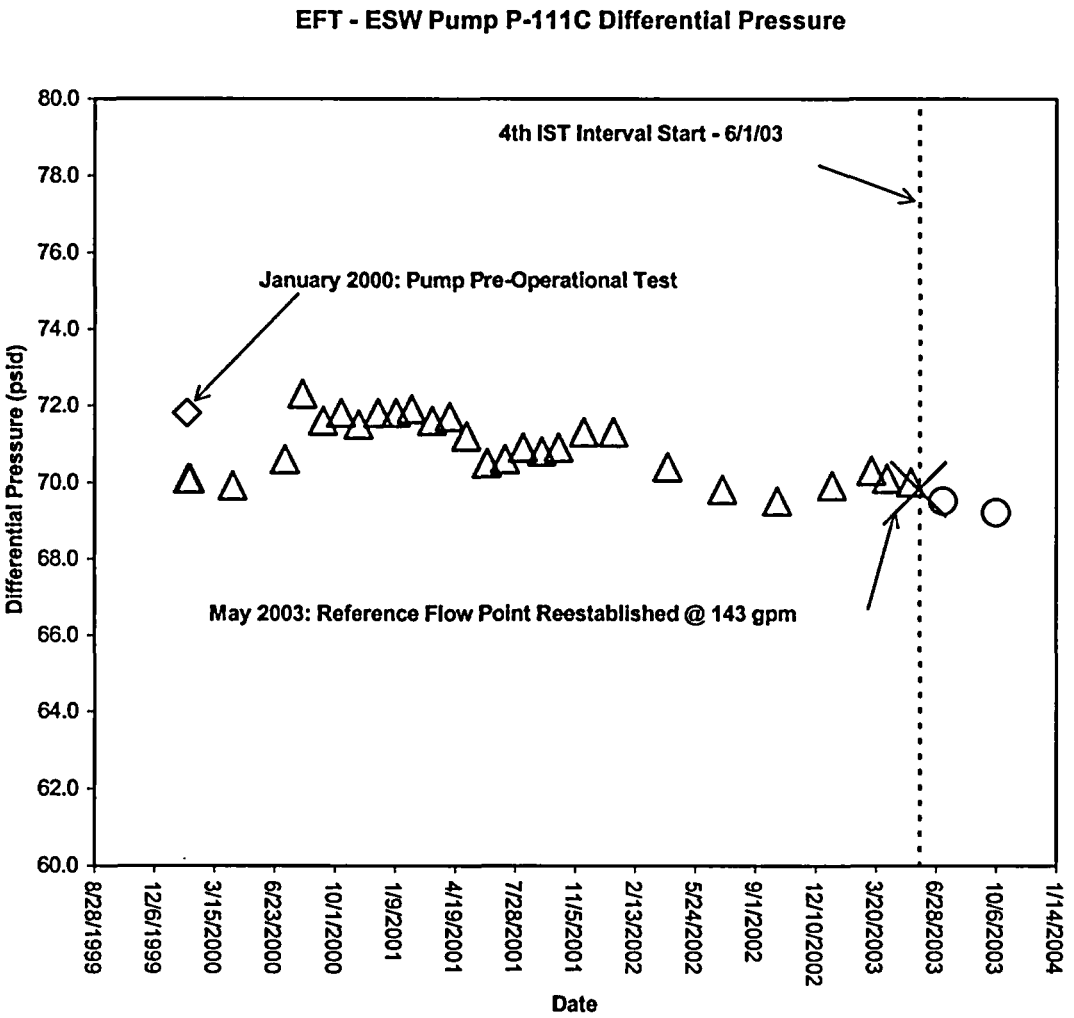
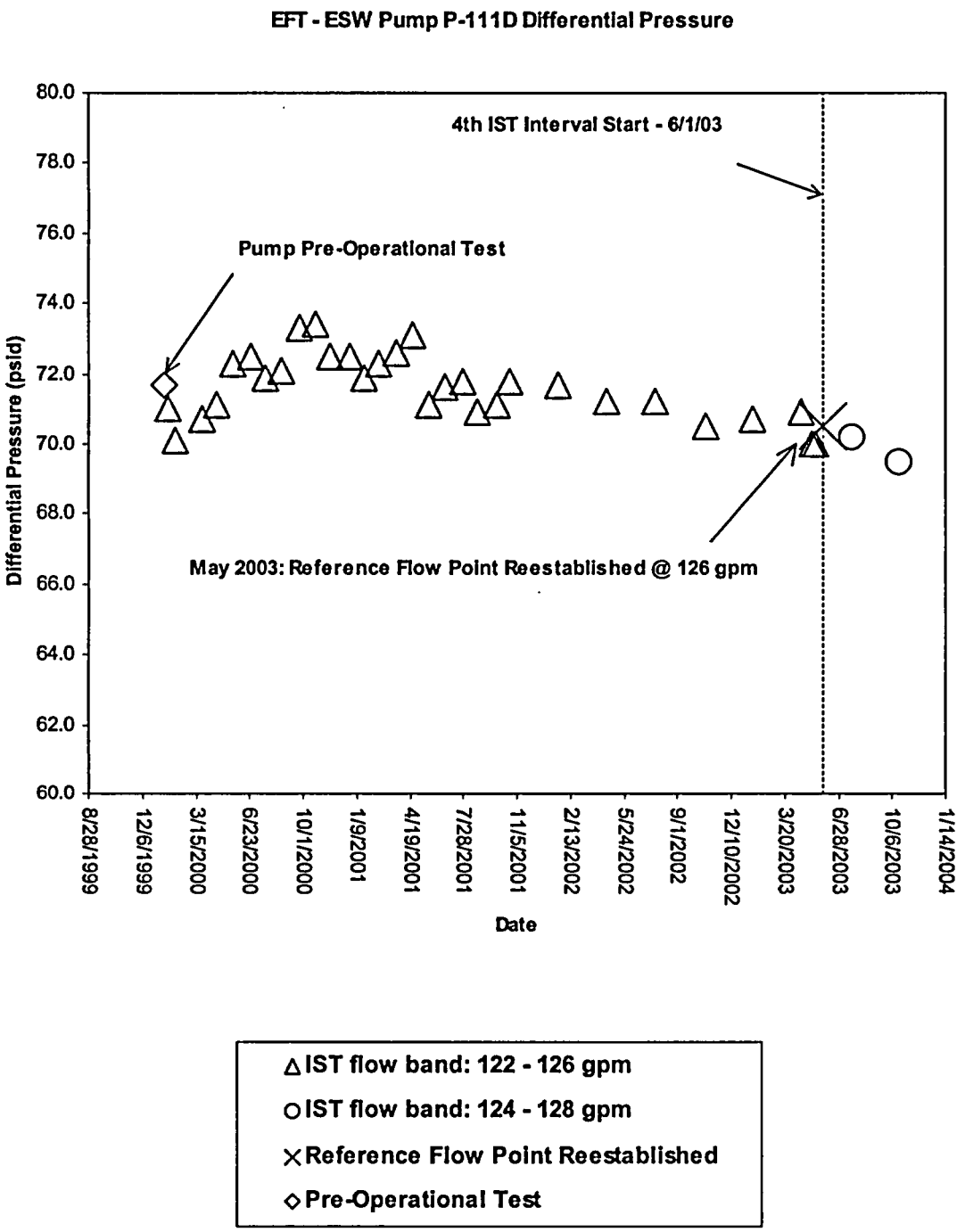

EFT - ESW Pump P-111C Differential Pressure
4th IST Interval Start - 6/1/03
January 2000: Pump Pre-Operational Test
May 2003: Reference Flow Point Reestablished @ 143 gpm
Differential Pressure (psid)
80.0
78.0
76.0
74.0
72.0
70.0
68.0
66.0
64.0
62.0
60.0
8/28/1999
12/6/1999
3/15/2000
6/23/2000
10/1/2000
1/9/2001
4/19/2001
7/28/2001
11/5/2001
2/13/2002
5/24/2002
9/1/2002
12/10/2002
3/20/2003
6/28/2003
10/6/2003
1/14/2004
Date
△ IST flow band: 133 - 137 gpm
○ IST flow band: 141 - 145 gpm
× Reference Flow Point Reestablished
◇ Pre-Operational Test

Figure F


EFT - ESW Pump P-111D Differential Pressure
4th IST Interval Start - 6/1/03
Pump Pre-Operational Test
May 2003: Reference Flow Point Reestablished @ 126 gpm
Differential Pressure (psid)
80.0
78.0
76.0
74.0
72.0
70.0
68.0
66.0
64.0
62.0
60.0
8/28/1999
12/6/1999
3/15/2000
6/23/2000
10/1/2000
1/9/2001
4/19/2001
7/28/2001
11/5/2001
2/13/2002
5/24/2002
9/1/2002
12/10/2002
3/20/2003
6/28/2003
10/6/2003
1/14/2004
Date
△IST flow band: 122 - 126 gpm
○IST flow band: 124 - 128 gpm
×Reference Flow Point Reestablished
◇Pre-Operational Test