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FINAL REPORT FOR THE FLOW EXCURSION FOLLOW-ON TESTING (U)

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To

C. A. NASH - WESTINGHOUSE SAVANNAH RIVER COMPANY

From

T. W. WALTERS - NUCLEAR STEAM SYSTEMS & COMPONENTS SECTION, ARC

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This letter to cover one customer and one subject only

SUMMARY

The purpose of the Mark 22 Flow Excursion Follow-On testing was to investigate the theory that approximately 15% of the flow bypassed the primary flow channels in previous testing, whereas the design called for only a 3% bypass. The results of the follow-on tests clearly confirmed this theory. The testing was performed in two phases. During the first phase, characterization tests performed during the earlier test program were repeated.

The data were in good agreement with earlier tests, thereby establishing a common baseline. The model fuel assembly was then partially disassembled, inspected, and fitted with plugs to prevent flow through the bypass channels. The inspection showed a larger gap size in the outer target extension than previously estimated. This area is suspected of being the primary leak path that permitted the bypass in earlier tests. The characterization tests were repeated once again, and results compared to the baseline. All pressure drop and flow data clearly indicated that the fuel assembly with bypass channel plugs installed had an increased flow through the primary flow channels relative to the total supplied flow. Analysis indicates the increased flow was approximately 15%. The flow and pressure data were provided to WSRC. The data can be used to assess the impact of the bypass flow on previous test results.

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INTRODUCTION

The Flow Excursion tests were performed in 1989 and documented in the Reference 1 final report. The test program investigated the behavior of a Mark 22 nuclear fuel assembly model under various simulated accident conditions. The model was an electrically heated fuel assembly mockup, which simulated the heating profile in an actual Mark 22 nuclear fuel assembly. Details on the design of the model fuel assembly are given in Reference 1.

An independent, subsequent test program used the spare fuel assembly from the Flow Excursion testing (Reference 2). The spare fuel assembly was of the same design as the former, however it was tested with coolant flowing in the upward direction, rather than the downward direction as in the Flow Excursion test.

Because the two fuel assemblies were of the same design, it would be expected that the frictional pressure drop should be similar at similar flow rates. However, the data from the Upflow and Downflow Test Programs indicated a significant difference, with the Flow Excursion (downflow) fuel assembly appearing to have a lower frictional pressure drop. It was theorized that the Flow Excursion fuel assembly had a leakage that permitted 15% of the coolant supply to bypass the heated, primary channels. Other data was also offered in support of this theory (Reference 3).

At this time, it was suspected that differences in fabrication of the outer target extension were primarily responsible for the different bypass characteristics. This part consists of two halves cut from a single machined part. The process of cutting the two halves results in some loss of material, which further results in a gap between the two halves when installed. However, the spare fuel assembly used for NPR upflow had one of the halves destroyed during the fabrication process. The replacement half was cut to achieve a better fit with the existing half, which greatly reduced the gap size on the spare assembly. The larger gaps in the downflow outer target extension provided a large leak path for the primary flow.

Further analysis was performed which made use of the pitot tube measurements installed in the three primary flow channels. The dynamic pressure measured by the pitots was converted to an approximate flow rate, and compared against the venturi flowmeter flow rates. Good agreement (within 1%) was demonstrated for the NPR upflow test data, but an approximate 15% discrepancy existed in the Flow Excursion downflow data (Reference 4).

A decision was made to go back to the Flow Excursion test loop and to physically plug the bypass channels, and repeat the unheated pressure drop characterization tests. If the theory was correct, then the pressure data should change in a manner consistent with a 15% increase in flow through the primary channels.

BASELINE TESTING

In order to establish a common reference point, a pressure drop test was run on June 3, 1992. This test followed the Reference 5 technical procedure. This procedure characterizes the pressure drop behavior of the fuel assembly. The June 3rd test was then compared to characterization test results from the 1989 Flow Excursion tests to confirm that the fuel assembly characteristics have not changed.

The Flow Excursion downflow test fuel assembly measurements are shown schematically in Figures 1-9, taken from Reference 1, Volume 2. Most of the temperature measurements shown in these figures were not activated for the unheated follow-on tests and can thus be ignored.

The Flow Excursion loop has redundant flow rate measurements: a turbine flowmeter and three venturi flowmeters in parallel. The turbine meter (WSTM01 in gpm/WSTM20 in lbm/hr) and the sum of the three venturis (IPVN20 in lbm/hr) differed by 1-3% during the follow-on tests. This disagreement was also observed during 1989 tests. After the baseline test it was concluded that the flow rate as measured by the turbine flowmeter was less reliable for the following reasons:

1) Disagreement between the venturi flow rate and the turbine meter flow rate ranged from 1 to 3%, with the turbine meter reading higher. The pressure data was repeatable when plotted against the venturi measured flow rate, while it was not repeatable when plotted against the turbine meter flow rate.

2) The same calibrations of the venturi flowmeters were used for both tests, while the turbine meter used different calibrations.

3) The turbine meter also read higher by 2 to 3% on the previous Flow Excursion tests.

All results presented in this report are plotted against the venturi based flow rate converted to gpm.

Test 827_25 was the final pressure drop characterization test performed in 1989. It is documented in Reference 1. The baseline follow-on test (827_31) was performed on June 3, 1992. Each of these tests followed the Reference 5 technical procedure, which specified data acquisition at 8 flow rate plateaus, with 2 repeat tests for a total of 10 tests.

Comparisons between the two tests are made in Figures 10-14. The pressure drop data is shown in Figures 10-12. No significant differences are apparent. Figure 13 compares the pitot data in the channels, while Figure 14 shows the flow splits as determined from the pitot data. It appears in Figures 13 and 14 that the flow splits are slightly different, but this is not considered significant. The data in numerical form are given in Table 1. The frictional pressure drop is given in Table 2.

It was concluded that a successful baseline had been established, and so disassembly for inspection and plug installation was commenced.

PLUGGED BYPASS TESTING

The test with the plugged bypass was performed in two parts. Test 827_32 addressed the first 9 flow rate plateaus. An equipment problem in the facility flow supply necessitated terminating Test 827_32 and performing the tenth flow rate plateau in Test 827_33. These results are combined together and reported numerically in Table 3. The frictional pressure drop is given in Table 4.

A deviation from the Reference 5 technical procedure was made in Test 827_32. The deviation involved skipping over the first high flow rate plateau and postponing it to the end. This decision was made because it appeared that the pitot pressure measurement C2DP02 would over-range at the higher flow rates. This pitot was a 10 psi range unit. Since this was a critical measurement, it was decided to alter the test procedure in order to obtain good data at all lower flow rate plateaus before risking over-ranging C2DP02. When the high flow rate plateau was reached, C2DP02 did over-range at times, but its averaged value was 10.0 psi. In addition, measurement BFAP02 was set to NOREAD for the plugged bypass tests (Table 3). This was done because the outer channel (channel 1) plug installation at the bottom fitting was greatly simplified by covering the BFAP02 pressure tap. The BFAP02 tap was not used for any other pressure measurements (Figure 9), and was not considered of primary importance in the test.

The data for Tests 827_32 and 33 are plotted against the 827_31 baseline test in Figures 15-20. It is clear from the figures that the pressure drop increased significantly in the primary flow channels, as expected. Figure 15 shows the overall assembly pressure drops. The increased pressure drop is apparent. Figure 16 shows the individual channel pressure drops, while Figure 17 shows pressure drops across various parts of the loop. Again, all pressure drops which include the channels show an increase.

The pitot data, which reflect the quantity of flow in the channels, increased in all channels as shown in Figure 18. The channel frictional pressure drops also increased in Figure 19. The flow split, shown in Figure 20, did change slightly.

It is of interest to plot the results of the plugged tests (827_32,33) against those of Test 827_31 with the assumption of 15% increased flow. With 15% increased flow through all the channels, it would be expected that the channel frictional pressure drops would increase by the square of the increased flow. That is, the predicted frictional pressure drop for the plugged test should increase by a factor of $1.15^2 = 1.32$.

By applying this factor to the 827_31 baseline test frictional pressure drops, the other relevant pressure measurements can be back-calculated. The results presented in Figures 21-25 are obtained. The overall pressure drop shown in Figure 21 (IPAP01 - RTAP01), was in very good agreement with the prediction. Examination of the channel pressure drops, Figure 22, shows that channel 4 exceeded the prediction, while channel 2 fell below. Channel 3 was well predicted. These results are consistent with the altered flow split discussed previously.

The results shown in Figures 21-25 show that the plugged bypass test results increased in a manner consistent with the 15% bypass theory.

Included in Appendices A and B are copies of the test log book and the instrument calibrations.

PITOT DATA ANALYSIS

The Reference 4 analysis technique was applied to the follow-on data in order to give further insight into the results. As discussed previously, the analysis computes channel flow rates from the pitot data, and compares the sum of the three channels to IPVN20, the flow rate as determined by the venturis.

Figures 26 and 27 show the results for the 827_31 baseline test. These figures indicate that a 14-15% discrepancy existed between the pitots and the venturis. This agrees with the 15% bypass theory. Figures 28-31 show results for the 827_32, 33 plugged bypass tests. The agreement between pitots and venturis was within 1%.

DOWNFLOW/UPFLOW COMPARISON

A comparison of the frictional pressure drops in the Flow Excursion fuel assembly and the Reference 2 upflow fuel assembly can be made because they are of the same design. Frictional pressure drop data are plotted in Figure 32. Comparisons of individual channel pressure drops are complicated by flow split differences and quadrant to quadrant differences resulting from imperfect concentricity of the cylindrical channels.

A better comparison would be the overall pressure drop over the assembly, but this is complicated by differences in the inlet and outlet geometries of the two assemblies. The individual channel pressure drops are thus the best indicators available. For completeness, a plot of the overall pressure drop in the tests is shown in Figure 33.

INSPECTION AND PLUG INSTALLATION

The inspection involved partially disassembling the model fuel assembly. At the top fitting (see Figure 1), the top extension spool was raised about 8 inches (Figure 34). The outer target top extension was photographed and videotaped while in place. Unfortunately, the photographs of this part were of poor quality and are not shown. A sketch of this part is shown in Figure 35. The gaps on each split line of the outer target extension were suspected of being a primary source of potential leakage (Reference 4). In Reference 4, the best estimate for the width of these gaps was 0.020 to 0.030 inches. However, the inspection showed the gaps to be 0.078 (North side) and 0.050 inches (South side), thus providing a larger path for the leakage. All other parts, including teflon gaskets, were in place and intact. No other bypass paths were visible.

The analysis summarized in Reference 4 is detailed in Reference 6. The Reference 6 analysis was modified in light of the inspection results. The results indicate that about 80% of the bypass flow can now be accounted for. No further work along these lines was pursued.

Bypass flow through the fuel assembly was possible through both channels 1 and 5. To simulate the operation of an actual Mark 22 fuel assembly, a 3-4% bypass was designed to flow through these channels. In order to eliminate flow through the split line gap and from other sources reaching the outer bypass channel (channel 1) at the top of the channel length, a teflon gasket was placed over the orificed flange connecting the assembly inlet flow to channel 1 (Figure 36). To eliminate flow through the center channel (channel 5), the orifice screw at the top of the channel length was removed and replaced with a solid screw.

To ensure complete bypass blockage, the outlets of channels 1 and 5 were also plugged. New parts were fabricated to perform this task. The inner channel (#5) was plugged with a metal plug, with a machined groove included to hold a rubber O-ring. This part is shown at the right of Figure 37, along with the bottom fitting insert. The plug is shown installed in Figure 38.

The outer channel (#1) seal included a base ring with 4 extension bars that hold a seal support ring in place (Figure 39). The seal support ring had a rubber seal glued to the top surface (Figure 40, to the left of the center channel plug). This surface, when installed, blocks flow from exiting the outer channel. This part can also be seen installed in Figure 38.

The bottom fitting insert, with plugs in place and ready for installation, is shown in Figure 41.

CONCLUSIONS

Test results for the Flow Excursion Follow-On Program showed that approximately 15% of the flow to the fuel assembly mockup bypassed the heated channels during the original (Reference 1) Flow Excursion test program. These results confirm the 15% bypass theory discussed in References 3 and 4. Based on inspections, it is suspected that most of the bypass flow was the result of a larger than designed split line in the downflow fuel assembly outer target extension. However, identification of the specific site for the bypass flow (Channel 1 vs. 5) was not within the scope of this test.

REFERENCES

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5. "SRP Characterization test - Fuel Assembly Pressure Drop at Steady-State," B&W Alliance Research Center Technical Procedure ARC-TP-827, Revision 2, December 13, 1989.

6. "Blake's Estimate on Leakage," B&W Alliance Research Center Memorandum, SRP-1366, November 20, 1991.

Table 1. Average and 2-sigma Data for Follow-on Flow Excursion Test 827_31

IPVN20 GPM	(PSIA) BFAP01	(PSIA) BFAP02	(PSID) BFDP01	(PSID) BFDP02	(F) BFRT01	(PSIA) C2AP01	(PSIA) C2AP02	(PSIA) C2AP03	(PSIA) C2AP04	(PSIA) C2AP05	(PSIA) C2AP06	(PSIA) C2AP07	(PSIA) C2AP08
184.0	33.29	33.24	-1.454	-1.659	77.91	33.2	33.22	33.81	33.7	34.33	34.32	32.06	32.17
	0.34	0.39	0.19	0.15	0.56	0.36	0.37	0.35	0.35	0.34	0.35	0.37	0.38
218.2	35.51	35.41	-2.022	-2.358	82.12	36.96	36.97	37.35	37.21	37.63	37.61	35.92	36.12
	0.78	0.75	0.25	0.24	0.12	1	1	0.98	1	0.95	0.97	1	1.1
254.0	38.19	38.02	-3.001	-3.209	79.78	41.39	41.4	41.52	41.34	41.51	41.5	40.46	40.7
	0.62	0.62	0.26	0.27	0.39	0.78	0.79	0.75	0.75	0.72	0.74	0.81	0.81
281.4	40.37	40.14	-3.616	-3.921	82.23	45.18	45.18	45.09	44.89	44.84	44.8	44.37	44.7
	1.2	1.1	0.42	0.39	0.27	1.7	1.7	1.6	1.7	1.5	1.5	1.8	1.8
313.6	43.75	43.41	-4.585	-4.837	78.67	50.54	50.54	50.18	49.97	49.62	49.57	49.91	50.27
	0.52	0.58	0.37	0.4	0.3	0.83	0.79	0.74	0.8	0.7	0.71	0.86	0.85
327.0	45.09	44.75	-5.15	-5.268	81.42	52.74	52.74	52.25	52.01	51.55	51.51	52.14	52.51
	0.55	0.7	0.4	0.41	0.27	0.69	0.7	0.67	0.67	0.65	0.65	0.72	0.71
338.4	46.72	46.38	-5.411	-5.711	77.52	55.31	55.26	54.66	54.43	53.83	53.76	54.8	55.2
	0.68	0.74	0.45	0.46	0.14	0.93	0.95	0.89	0.89	0.85	0.87	0.94	0.98
341.4	47.01	46.63	-5.659	-5.813	81.76	55.69	55.64	55.06	54.79	54.19	54.15	55.14	55.55
	0.67	0.73	0.45	0.39	0.16	0.85	0.83	0.85	0.86	0.82	0.78	0.85	0.85
355.4	48.63	48.16	-5.888	-6.214	75.62	58.44	58.39	57.62	57.36	56.58	56.53	58.03	58.5
	1	1.1	0.45	0.55	0.2	0.89	0.89	0.91	0.9	0.92	0.92	0.88	0.89
366.8	49.96	49.5	-6.427	-6.652	82.31	60.51	60.46	59.63	59.32	58.48	58.41	60.12	60.59
	0.91	0.99	0.42	0.54	0.14	0.93	0.98	0.9	0.92	0.89	0.93	0.95	0.98

IPVN20 GPM	(PSIA) C2AP09	(PSIA) C2AP10	(PSID) C2DP01	(PSID) C2DP02	(PSID) C2DP03	(PSIA) C3AP01	(PSIA) C3AP02	(PSIA) C3AP03	(PSID) C3DP01	(PSID) C3DP02	(PSIA) C4AP01	(PSIA) C4AP02	(PSIA) C4AP03
184.0	33.99	34.1	2.071	1.173	1.989	33.4	33.52	33.41	0.2854	1.054	32.14	33.3	33.48
	0.34	0.37	0.21	0.12	0.14	0.38	0.34	0.35	0.26	0.027	0.37	0.37	0.34
218.2	36.67	36.78	0.856	1.686	0.7078	37.69	35.98	35.86	-1.608	1.482	36.04	35.62	35.87
	0.86	0.86	0.28	0.31	0.27	1.2	0.81	0.8	0.44	0.084	1.1	0.78	0.79
254.0	39.91	39.97	-0.3889	2.215	-0.6735	42.82	38.95	38.83	-3.723	1.988	40.52	38.44	38.73
	0.7	0.66	0.32	0.24	0.32	0.88	0.64	0.66	0.41	0.067	0.81	0.63	0.63
281.4	42.61	42.65	-1.611	2.794	-2	47.13	41.4	41.29	-5.593	2.439	44.43	40.74	41.06
	1.4	1.4	0.49	0.28	0.45	1.9	1.3	1.3	0.7	0.16	1.7	1.2	1.2
313.6	46.64	46.63	-3.102	3.432	-3.626	53.24	45.12	44.99	-8.044	3.024	49.75	44.25	44.63
	0.62	0.58	0.46	0.3	0.4	0.94	0.57	0.58	0.49	0.09	0.86	0.55	0.55
327.0	48.23	48.24	-3.754	3.695	-4.252	55.7	46.59	46.46	-9.009	3.265	52.07	45.68	46.04
	0.6	0.6	0.39	0.27	0.32	0.74	0.57	0.59	0.38	0.049	0.7	0.57	0.56
338.4	50.18	50.11	-4.46	3.99	-5.066	58.56	48.34	48.23	-10.12	3.529	54.64	47.34	47.75
	0.8	0.76	0.47	0.21	0.48	1.1	0.72	0.74	0.57	0.093	0.95	0.69	0.7
341.4	50.45	50.46	-4.52	4.048	-5.082	59	48.68	48.52	-10.26	3.562	55.05	47.66	48.04
	0.74	0.72	0.39	0.34	0.3	0.9	0.71	0.69	0.4	0.052	0.84	0.71	0.69
355.4	52.44	52.39	-5.452	4.327	-6.08	62.14	50.44	50.3	-11.64	3.866	57.8	49.33	49.76
	0.96	0.99	0.46	0.42	0.39	0.85	0.98	0.98	0.44	0.038	0.9	1.1	1
366.8	54	53.99	-5.978	4.655	-6.614	64.42	51.92	51.77	-12.48	4.098	59.93	50.74	51.14
	0.96	0.94	0.45	0.41	0.45	0.98	0.93	0.95	0.6	0.083	0.99	0.97	0.93

IPVN20 GPM	(PSID) C4DP01	(PSID) C4DP02	(PSIA) IPAP01	(F) IPRT01	(PPH) IPVN20	(F) MSTC02	(PSIA) RTAP01	(PSIA) TFAP01	(PSID) TFDP01	(PSID) TFDP02	(GPM) WSTM01	(PPH) WSTM20
184.0	1.051	1.687	33.85	77.83	91990	76.49	28.36	32.99	-0.8397	-0.6657	187.6	93610
	0.18	0.042	0.41	0.64	1300	0.14	0.36	0.38	0.084	0.32	7.5	3700
218.2	-0.5481	2.468	39.34	81.94	109100	76.52	28.36	37.35	-1.945	-3.969	211.7	105600
	0.34	0.14	1.4	0.11	3200	0.16	0.45	1.2	0.22	0.65	7.4	3700
254.0	-2.158	3.231	45.86	79.59	127000	76.39	28.2	42.53	-3.302	-7.762	255.5	127500
	0.31	0.11	1	0.38	2400	0.16	0.37	0.89	0.18	0.59	5.9	3000
281.4	-3.796	4.075	51.43	82.05	140700	76.47	28.02	46.89	-4.48	-11.15	286.4	142900
	0.53	0.26	2.4	0.21	4800	0.14	0.36	1.9	0.44	1.2	16	7900
313.6	-5.617	4.975	59.1	78.46	156800	75.6	28.3	53.15	-5.972	-15.45	316.2	157900
	0.45	0.15	1.2	0.24	2600	0.14	0.23	0.93	0.29	0.92	9.1	4600
327.0	-6.476	5.404	62.28	81.19	163500	76.55	28.06	55.56	-6.661	-17.26	333.4	166400
	0.4	0.081	0.91	0.24	1700	0.15	0.3	0.75	0.2	0.62	6.6	3300
338.4	-7.402	5.863	65.79	77.35	169200	75.86	28.5	58.54	-7.273	-19.22	344.2	171900
	0.53	0.16	1.3	0.13	2700	0.24	0.39	1.1	0.29	0.83	15	7300
341.4	-7.445	5.938	66.41	81.52	170700	76.67	28.4	58.9	-7.457	-19.5	345	172200
	0.38	0.085	1	0.14	1500	0.16	0.43	0.89	0.19	0.6	5.6	2800
355.4	-8.55	6.428	70.35	75.42	177700	76.37	28.52	62.14	-8.209	-21.86	368	183800
	0.42	0.067	0.79	0.19	1500	0.16	1.2	0.85	0.19	0.64	7.6	3800
366.8	-9.263	6.878	73.34	82.04	183400	76.46	28.41	64.39	-8.877	-23.47	371.2	185200
	0.48	0.15	1.1	0.13	2000	0.16	0.95	0.98	0.27	0.78	6.5	3200

Table 2. Frictional Pressure Drop Data Across Fuel Assembly Test 827_31

IPVN20 GPM	(PSID) C2DP01*	(PSID) C2DP03*	(PSID) C3DP01*	(PSID) C4DP01*	(PSID) TFDP01*	(PSID) TFDP02*	(PSID) TFDP02* -TFDP01*
184.0	-3.27	-3.35	-5.05	-4.29	-2.69	-8.64	-5.95
218.2	-4.48	-4.63	-6.94	-5.88	-3.79	-11.94	-8.15
254.0	-5.73	-6.01	-9.06	-7.49	-5.15	-15.73	-10.59
281.4	-6.95	-7.34	-10.93	-9.13	-6.33	-19.12	-12.80
313.6	-8.44	-8.96	-13.38	-10.95	-7.82	-23.42	-15.60
327.0	-9.09	-9.59	-14.35	-11.81	-8.51	-25.23	-16.72
338.4	-9.80	-10.40	-15.46	-12.74	-9.12	-27.19	-18.07
341.4	-9.86	-10.42	-15.60	-12.78	-9.30	-27.47	-18.17
355.4	-10.79	-11.42	-16.98	-13.89	-10.05	-29.83	-19.78
366.8	-11.31	-11.95	-17.82	-14.60	-10.72	-31.44	-20.72

* DPfriction[psid] = DPmeasured[psid] - (Density[lbm/ft3]*Htap-to-tap[ft])/144

where: Density = 62.22 lbm/ft3
H (C2DP01) = 12.35 ft
H (C2DP03) = 12.35 ft
H (C3DP01) = 12.35 ft
H (C42DP01) = 12.35 ft
H (TFDP01) = 4.271 ft
H (TFDP02) = 18.448 ft

Table 3. Average and 2-sigma Data for Follow-on Flow Excursion Test 827_32,33

IPVN20 GPM	(PSIA) BFAP01	(PSIA) BFAP02	(PSID) BFDP01	(PSID) BFDP02	(F) BFRT01	(PSIA) C2AP01	(PSIA) C2AP02	(PSIA) C2AP03	(PSIA) C2AP04	(PSIA) C2AP05	(PSIA) C2AP06	(PSIA) C2AP07	(PSIA) C2AP08
185.3	32.85	0	-1.402	-1.63	76.29	34.82	34.84	35.39	35.24	35.85	35.82	33.81	34.01
	0.14	0	0.14	0.13	0.26	0.12	0.13	0.11	0.12	0.11	0.13	0.13	0.13
220.4	34.97	0	-2.081	-2.319	76.9	39.26	39.28	39.55	39.4	39.73	39.69	38.47	38.79
	0.22	0	0.19	0.18	0.12	0.21	0.22	0.2	0.22	0.2	0.22	0.21	0.22
254.4	37.5	0	-2.941	-3.051	77.04	44.33	44.33	44.4	44.19	44.32	44.24	43.66	44.05
	0.26	0	0.23	0.2	0.14	0.25	0.27	0.23	0.25	0.23	0.26	0.26	0.25
281.0	39.88	0	-3.591	-3.723	76.99	49	49.02	48.81	48.58	48.45	48.35	48.58	49.1
	0.34	0	0.27	0.28	0.11	0.34	0.35	0.33	0.36	0.33	0.35	0.35	0.35
313.3	42.87	0	-4.557	-4.679	76.96	55	55.01	54.49	54.22	53.77	53.65	54.87	55.54
	0.38	0	0.35	0.35	0.16	0.43	0.45	0.41	0.46	0.41	0.42	0.44	0.44
326.8	44	0	-5.019	-4.982	77.23	57.44	57.44	56.85	56.57	56.04	55.9	57.29	57.97
	0.32	0	0.41	0.33	0.1	0.36	0.38	0.31	0.4	0.3	0.36	0.39	0.39
340.3	45.37	0	-5.455	-5.42	77.15	60.23	60.24	59.49	59.19	58.51	58.36	60.22	60.99
	0.37	0	0.4	0.38	0.21	0.4	0.43	0.38	0.45	0.37	0.41	0.4	0.43
344.1	45.99	0	-5.556	-5.635	76.9	61.23	61.22	60.41	60.06	59.32	59.18	61.37	62.19
	0.44	0	0.4	0.34	0.11	0.45	0.48	0.43	0.48	0.41	0.46	0.47	0.47
356.3	47.19	0	-6.039	-6.03	76.61	63.74	63.74	62.77	62.43	61.51	61.38	64.03	64.94
	0.91	0	0.35	0.44	0.2	0.76	0.81	0.77	0.77	0.78	0.8	0.78	0.77
364.2	48.18	0	-6.28	-6.307	77.68	65.71	65.69	64.71	64.36	63.4	63.27	65.99	66.88
	1.2	0	0.51	0.49	0.32	1.2	1.2	1.1	1.2	1.2	1.2	1.1	1.2

IPVN20 GPM	(PSIA) C2AP09	(PSIA) C2AP10	(PSID) C2DP01	(PSID) C2DP02	(PSID) C2DP03	(PSIA) C3AP01	(PSIA) C3AP02	(PSIA) C3AP03	(PSID) C3DP01	(PSID) C3DP02	(PSIA) C4AP01	(PSIA) C4AP02	(PSIA) C4AP03
185.3	34.87	35.08	1.363	1.607	1.134	34.83	33.23	33.25	-1.257	1.433	33.54	33.01	33.34
	0.14	0.15	0.14	0.013	0.21	0.14	0.14	0.14	0.17	0.012	0.13	0.16	0.13
220.4	37.95	38.13	-0.2217	2.172	-0.6284	39.8	35.64	35.69	-3.793	2.042	37.96	35.27	35.64
	0.22	0.23	0.16	0.011	0.25	0.22	0.21	0.22	0.21	0.014	0.21	0.25	0.21
254.4	41.66	41.83	-1.685	3.072	-2.185	45.38	38.45	38.65	-6.427	2.68	43	37.94	38.4
	0.28	0.28	0.22	0.021	0.33	0.28	0.26	0.27	0.24	0.024	0.27	0.31	0.26
281.0	45	45.14	-3.257	3.519	-3.945	50.58	41.11	41.36	-8.907	3.297	47.62	40.48	40.94
	0.36	0.36	0.25	0.024	0.39	0.36	0.35	0.34	0.31	0.022	0.35	0.41	0.33
313.3	49.3	49.43	-5.246	4.312	-6.086	57.28	44.52	44.82	-12.16	4.112	53.6	43.64	44.17
	0.46	0.44	0.26	0.036	0.45	0.45	0.39	0.43	0.33	0.032	0.44	0.49	0.39
326.8	51.09	51.24	-5.872	4.885	-6.674	59.85	45.69	46.18	-13.38	4.41	55.9	44.83	45.4
	0.34	0.35	0.32	0.11	0.46	0.42	0.31	0.32	0.38	0.034	0.37	0.4	0.3
340.3	53.08	53.19	-6.821	5.15	-7.763	62.95	47.25	47.77	-14.91	4.789	58.66	46.33	46.89
	0.41	0.38	0.31	0.035	0.46	0.44	0.37	0.39	0.39	0.031	0.4	0.42	0.35
344.1	53.79	53.89	-7.239	5.153	-8.326	64.16	48.01	48.43	-15.44	4.943	59.75	46.93	47.52
	0.48	0.46	0.33	0.047	0.48	0.49	0.43	0.47	0.4	0.04	0.47	0.53	0.42
356.3	55.58	55.67	-8.123	5.654	-9.263	66.99	49.39	49.82	-16.89	5.307	62.24	48.2	48.78
	0.85	0.84	0.42	0.061	0.56	0.79	0.88	0.88	0.56	0.054	0.79	0.92	0.89
364.2	56.93	57.17	-8.636	6.182	-9.748	69.03	50.52	50.8	-17.85	5.48	64.08	49.34	49.97
	1.2	1.2	0.45	0.12	0.58	1.1	1.2	1.3	0.58	0.075	1.2	1.3	1.2

IPVN20 GPM	(PSID) C4DP01	(PSID) C4DP02	(PSIA) IPAP01	(F) IPRT01	(PPH) IPVN20	(F) MSTC02	(PSIA) RTAP01	(PSIA) TFAP01	(PSID) TFDP01	(PSID) TFDP02	(GPM) WSTM01	(PPH) WSTM20
185.3	-0.5227	2.559	35.71	76.16	92540	64.42	28.3	34.78	-0.8985	-2.825	185.3	92520
	0.17	0.021	0.14	0.22	660	0.15	0.12	0.13	0.04	0.2	4.7	2300
220.4	-2.706	3.654	42.06	76.71	110100	64.98	28.2	39.97	-2.035	-7.098	213.4	106600
	0.24	0.025	0.22	0.13	680	0.23	0.16	0.21	0.051	0.26	5.6	2800
254.4	-5.041	4.837	49.13	76.82	127000	64.47	28.28	45.75	-3.323	-11.58	258.2	128900
	0.26	0.039	0.27	0.14	750	0.15	0.21	0.26	0.068	0.36	7.4	3700
281.0	-7.158	5.936	55.72	76.83	140300	64.86	28.4	51.18	-4.474	-15.79	287.8	143700
	0.29	0.032	0.37	0.1	790	0.19	0.28	0.35	0.094	0.33	11	5400
313.3	-9.961	7.389	64.2	76.73	156500	65.04	28.36	58.15	-5.996	-21.29	319.7	159700
	0.43	0.054	0.47	0.15	1100	0.17	0.33	0.43	0.11	0.46	11	5500
326.8	-11.06	7.985	67.58	77.01	163200	64.65	28.27	60.82	-6.707	-23.51	334.6	167100
	0.42	0.046	0.44	0.11	1100	0.17	0.17	0.39	0.11	0.54	9.2	4600
340.3	-12.31	8.661	71.52	76.91	170000	64.72	28.21	64.06	-7.413	-26.1	347.9	173800
	0.42	0.056	0.51	0.17	1000	0.15	0.2	0.44	0.14	0.55	9.6	4800
344.1	-12.82	8.912	72.98	76.64	171800	65.1	28.31	65.33	-7.61	-26.94	356.7	178100
	0.47	0.071	0.52	0.11	960	0.14	0.36	0.47	0.14	0.56	4.7	2300
356.3	-14.03	9.582	76.64	76.37	178000	65.24	28.14	68.28	-8.311	-29.4	366.7	183200
	0.53	0.12	0.75	0.19	1600	0.16	1	0.77	0.18	0.72	8.3	4100
364.2	-14.73	9.96	79.14	77.45	181800	67.72	28.34	70.32	-8.756	-30.94	376.6	188000
	0.67	0.14	1.1	0.29	1700	0.16	1.4	1.1	0.21	0.83	6	3000

Table 4. Frictional Pressure Drop Data Across Fuel Assembly Test 827_32,33

IPVN20 GPM	(PSID) C2DP01*	(PSID) C2DP03*	(PSID) C3DP01*	(PSID) C4DP01*	(PSID) TFDP01*	(PSID) TFDP02*	(PSID) TFDP02* -TFDP01*
185.3	-3.97	-4.20	-6.59	-5.86	-2.74	-10.80	-8.05
220.4	-5.56	-5.96	-9.13	-8.04	-3.88	-15.07	-11.19
254.4	-7.02	-7.52	-11.76	-10.38	-5.17	-19.55	-14.38
281.0	-8.59	-9.28	-14.24	-12.49	-6.32	-23.76	-17.44
313.3	-10.58	-11.42	-17.50	-15.30	-7.84	-29.26	-21.42
326.8	-11.21	-12.01	-18.72	-16.40	-8.55	-31.48	-22.93
340.3	-12.16	-13.10	-20.25	-17.65	-9.26	-34.07	-24.81
344.1	-12.58	-13.66	-20.78	-18.16	-9.46	-34.91	-25.46
356.3	-13.46	-14.60	-22.23	-19.37	-10.16	-37.37	-27.21
364.2	-13.97	-15.08	-23.19	-20.07	-10.60	-38.91	-28.31

* DPfriction[psid] = DPmeasured[psid] - (Density[lbm/ft3]*Htap-to-tap[ft])/144

where: Density = 62.22 lbm/ft3
H (C2DP01) = 12.35 ft
H (C2DP03) = 12.35 ft
H (C3DP01) = 12.35 ft
H (C4DP01) = 12.35 ft
H (TFDP01) = 4.271 ft
H (TFDP02) = 18.448 ft

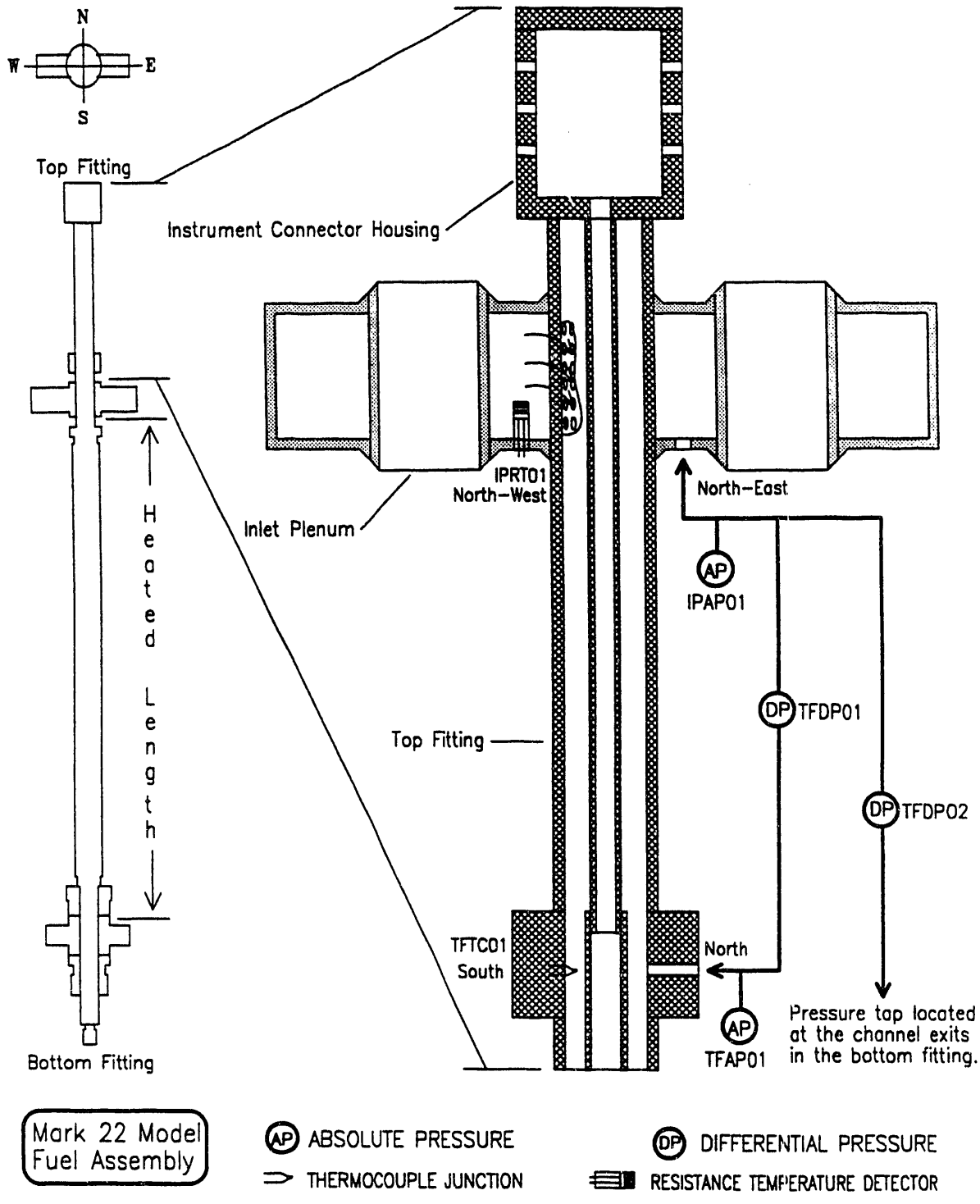


Figure 1. Fuel Assembly Top Fitting Instruments

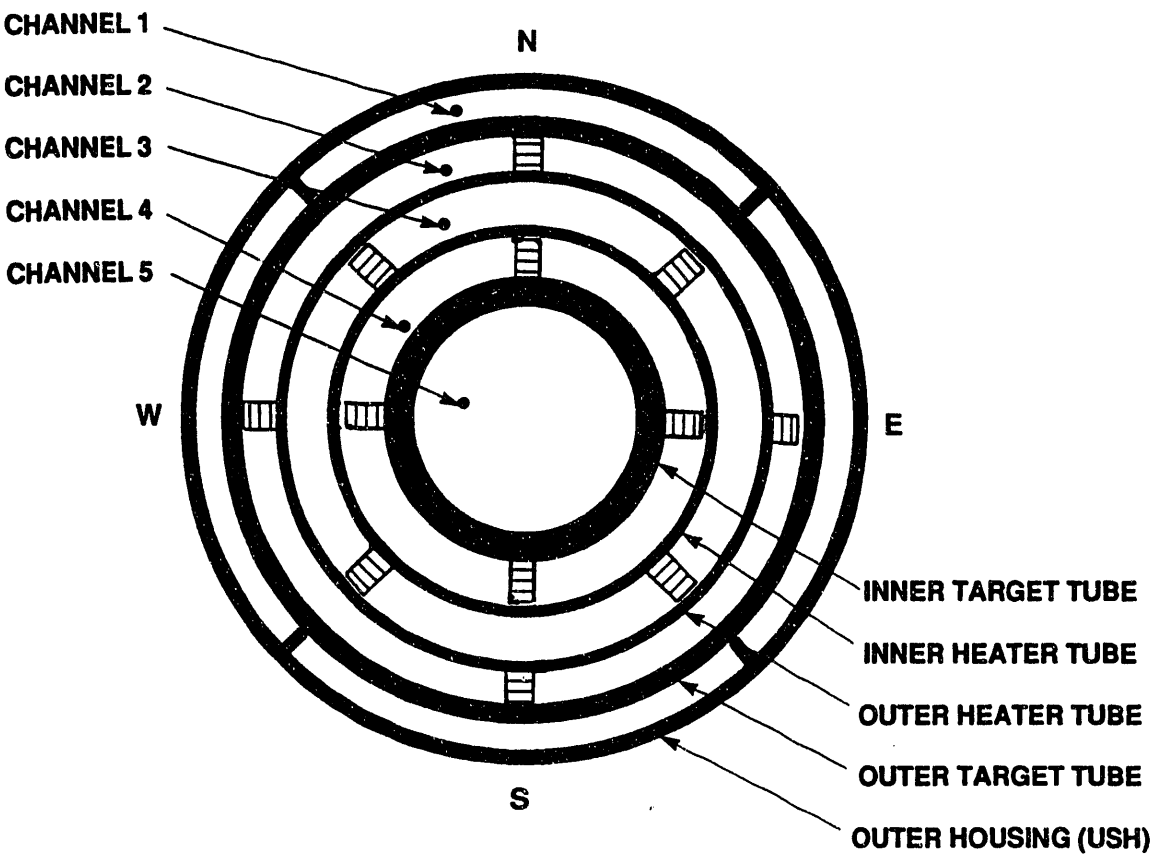


Figure 2. Cross-Section View of Model Fuel Assembly

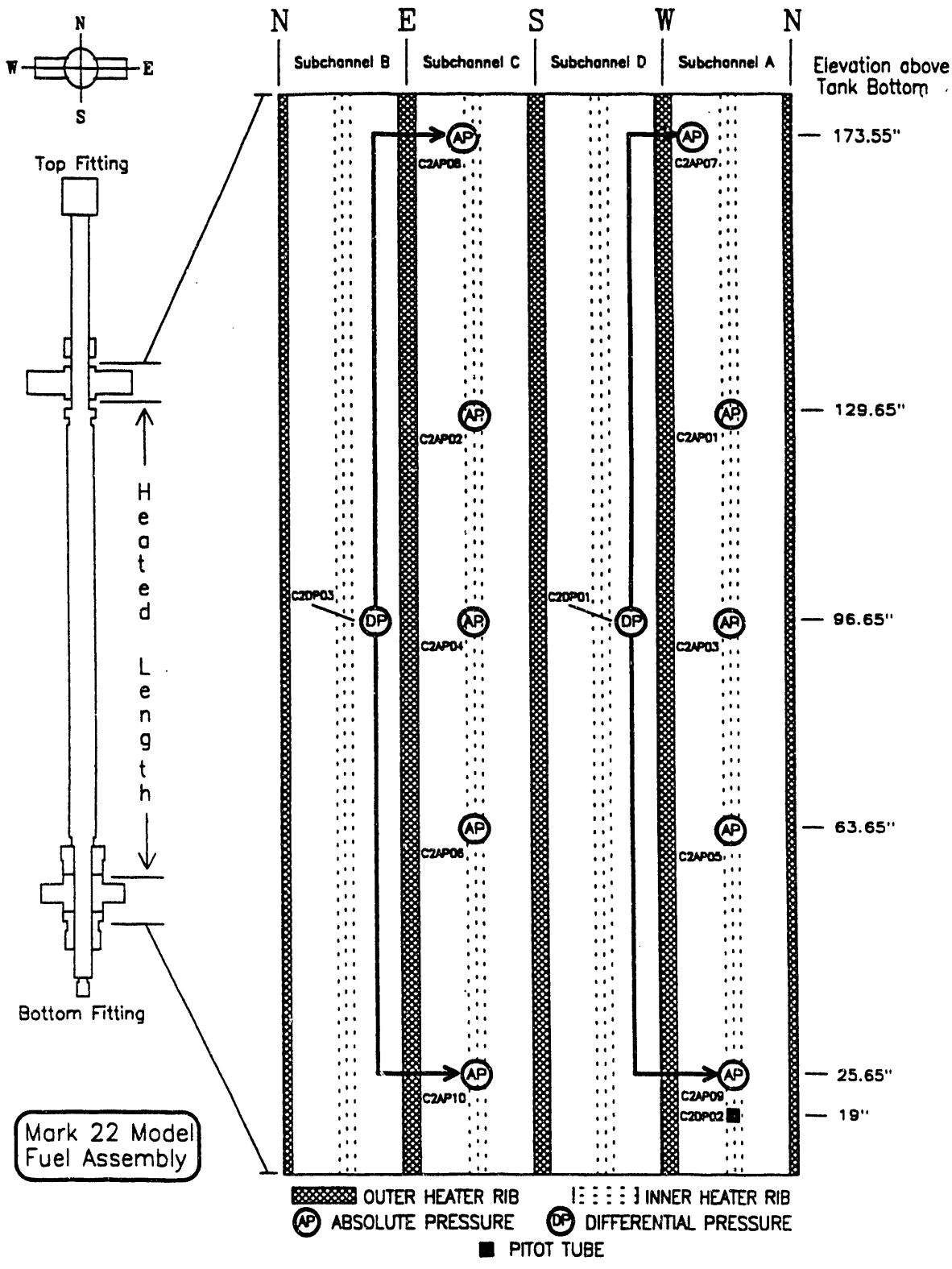


Figure 3. Fuel Assembly Channel 2 Pressure and Differential Pressure Taps

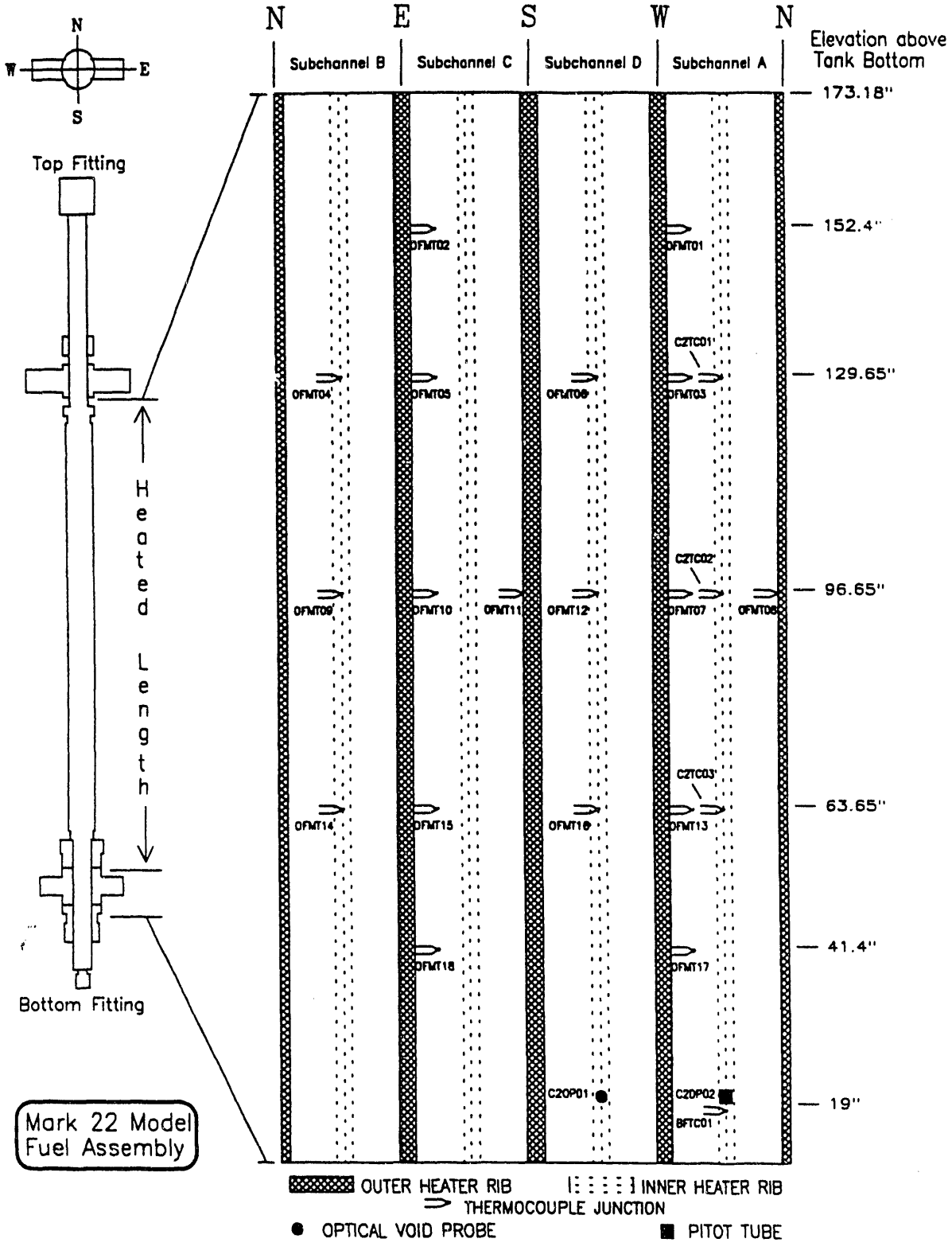


Figure 4. Fuel Assembly Channel 2 and Outer Heater Tube Instruments

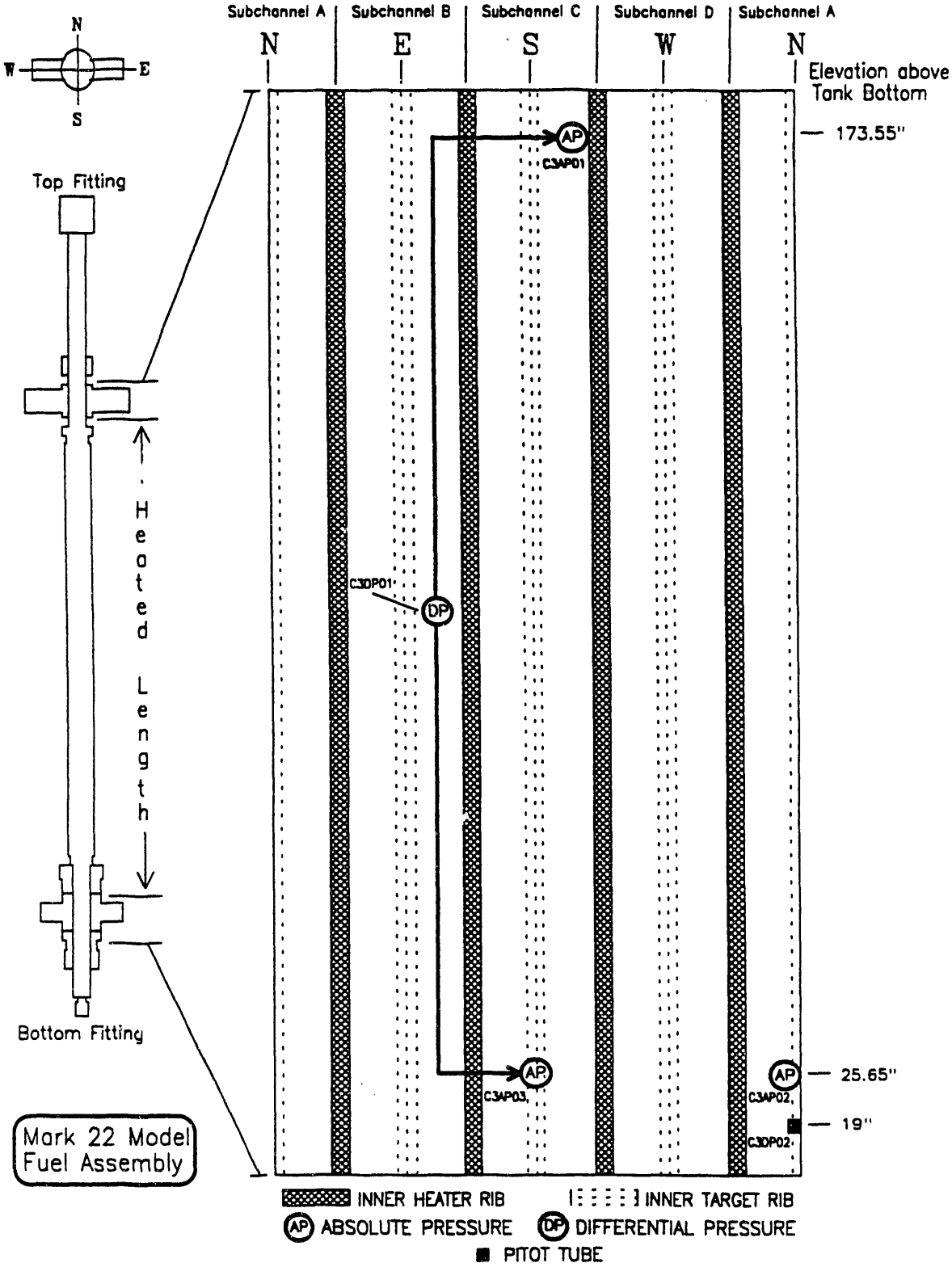


Figure 5. Fuel Assembly Channel 3 Pressure and Differential Pressure Taps

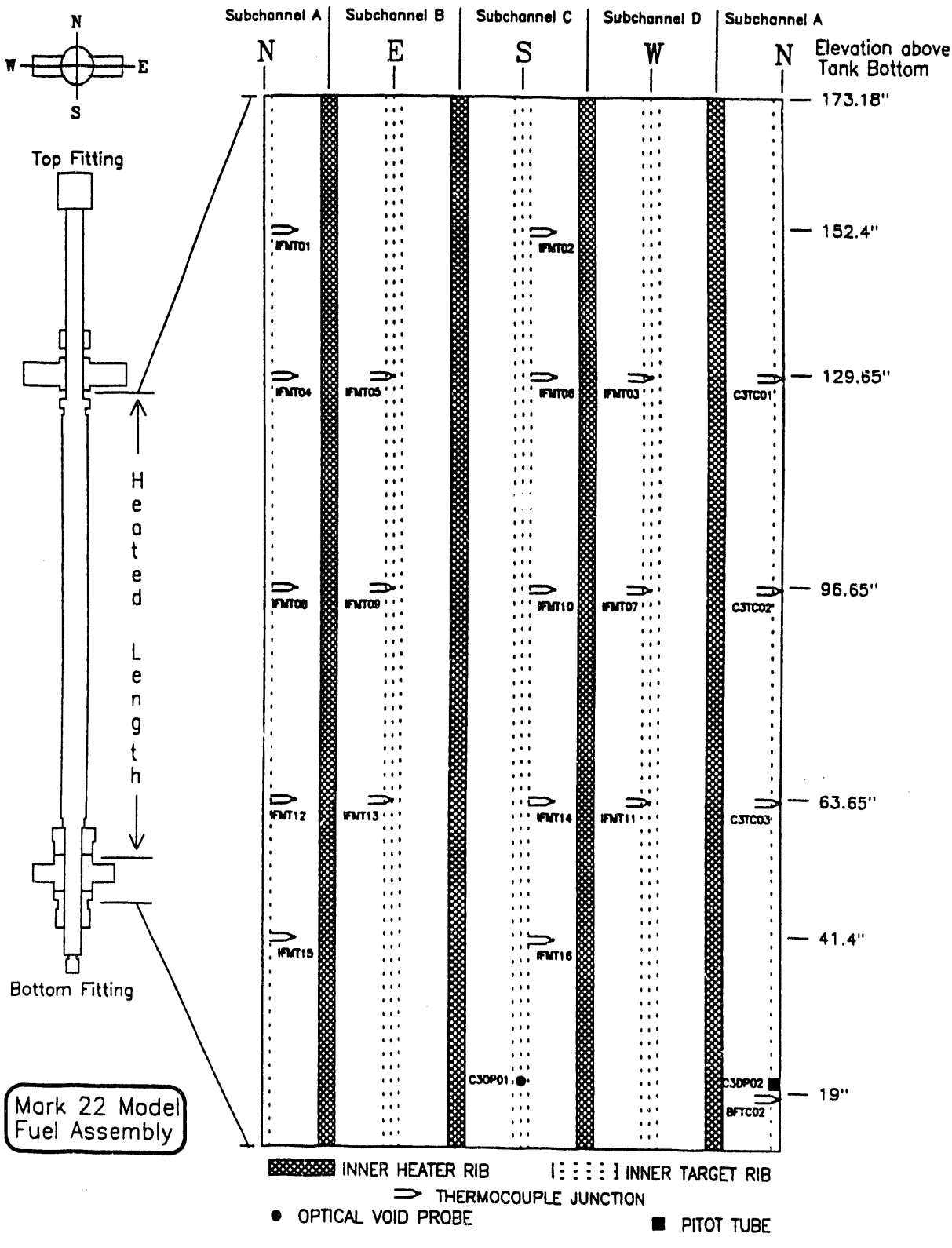


Figure 6. Fuel Assembly Channel 3 and Inner Heater Tube Instruments

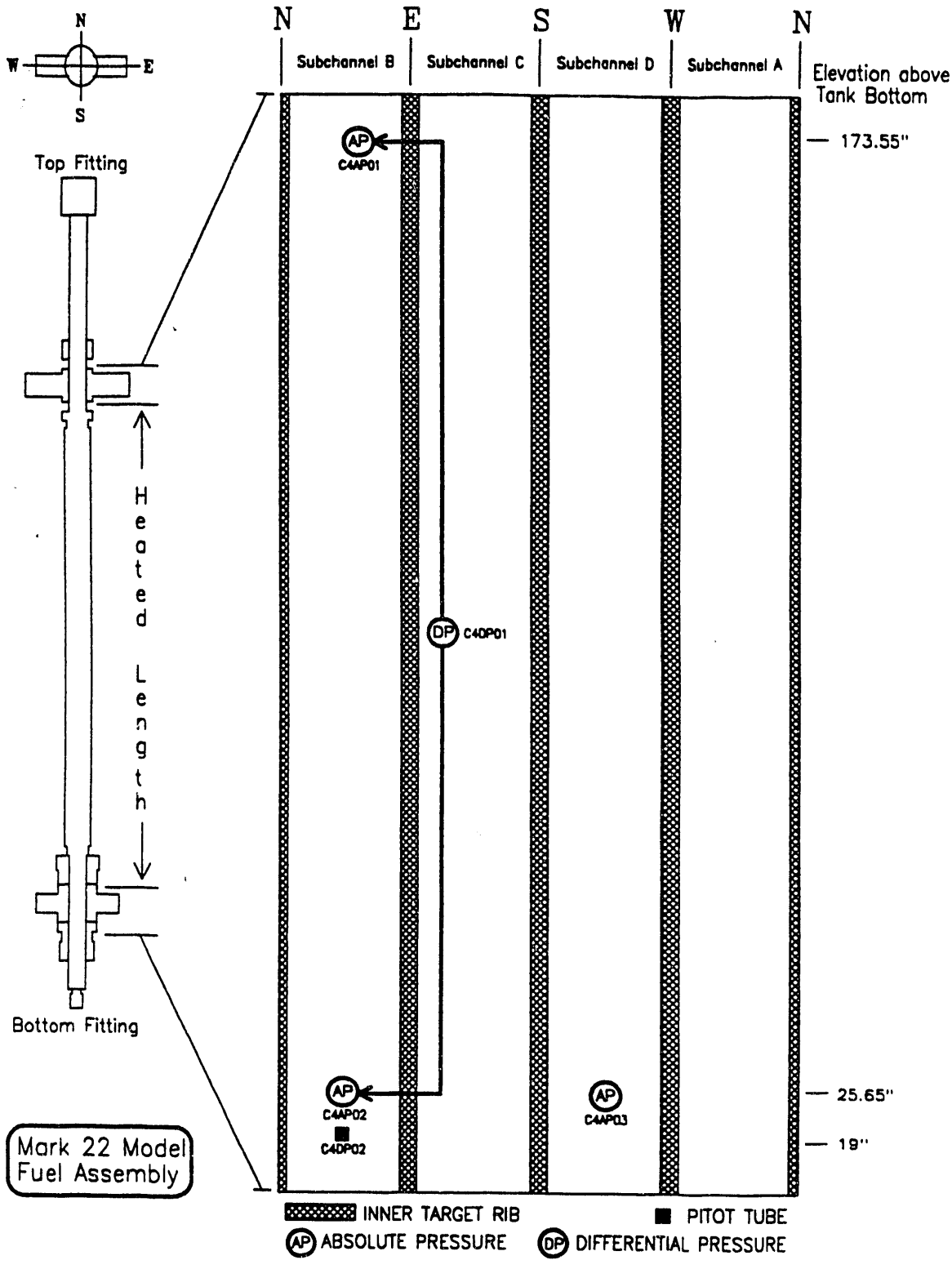


Figure 7. Fuel Assembly Channel 4 Pressure and Differential Pressure Taps

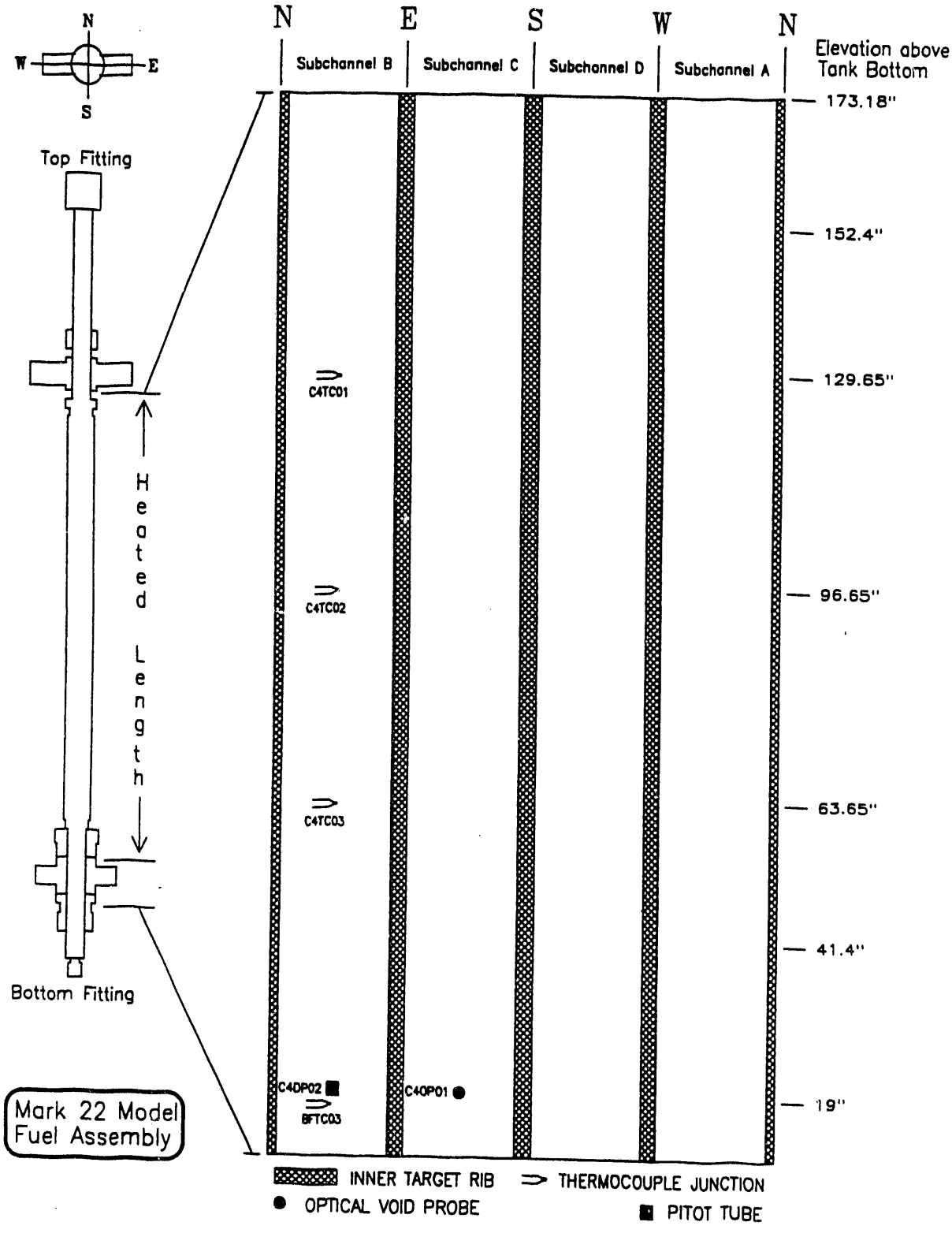


Figure 8. Fuel Assembly Channel 4 Instruments

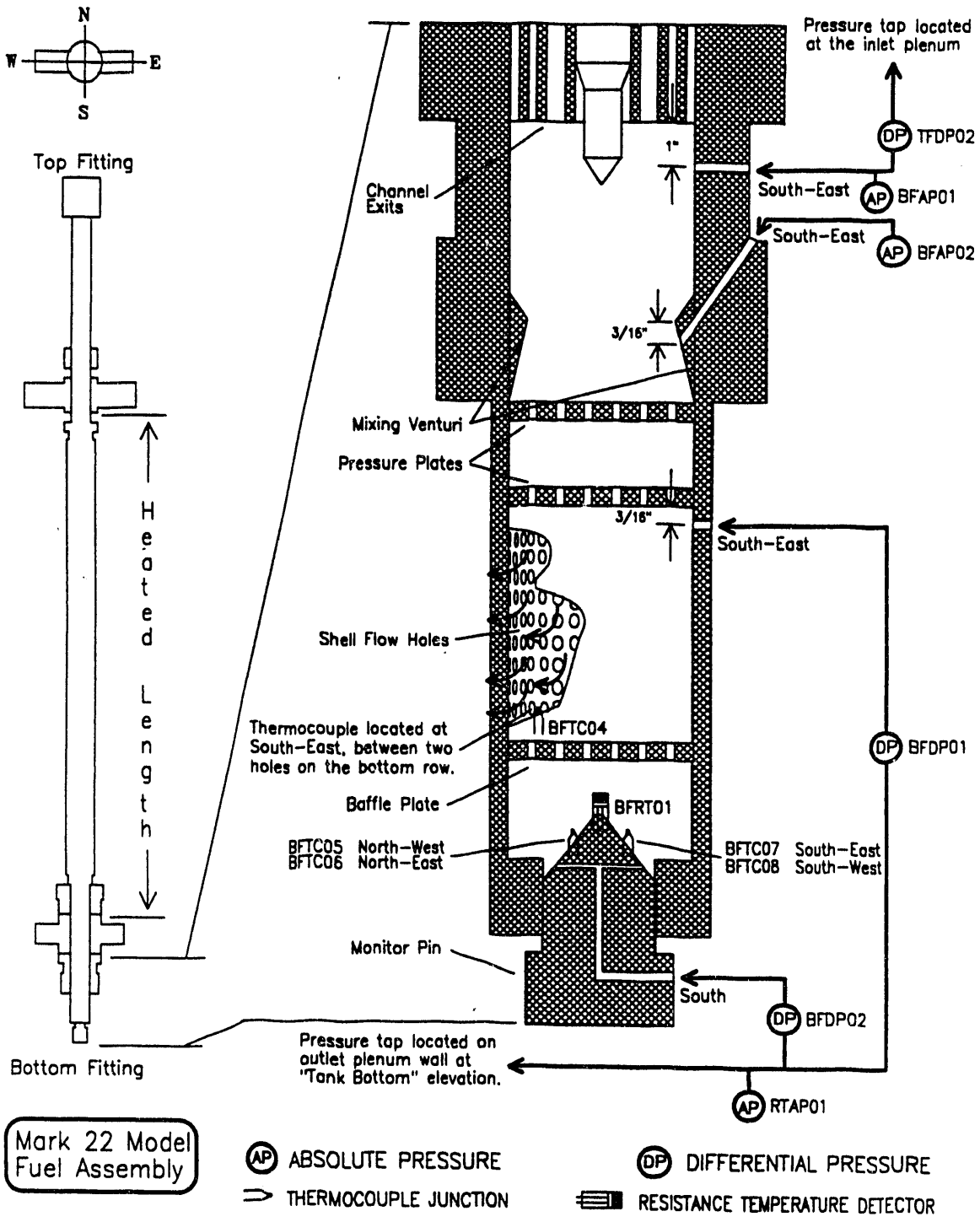


Figure 9. Fuel Assembly Bottom Fitting Instruments

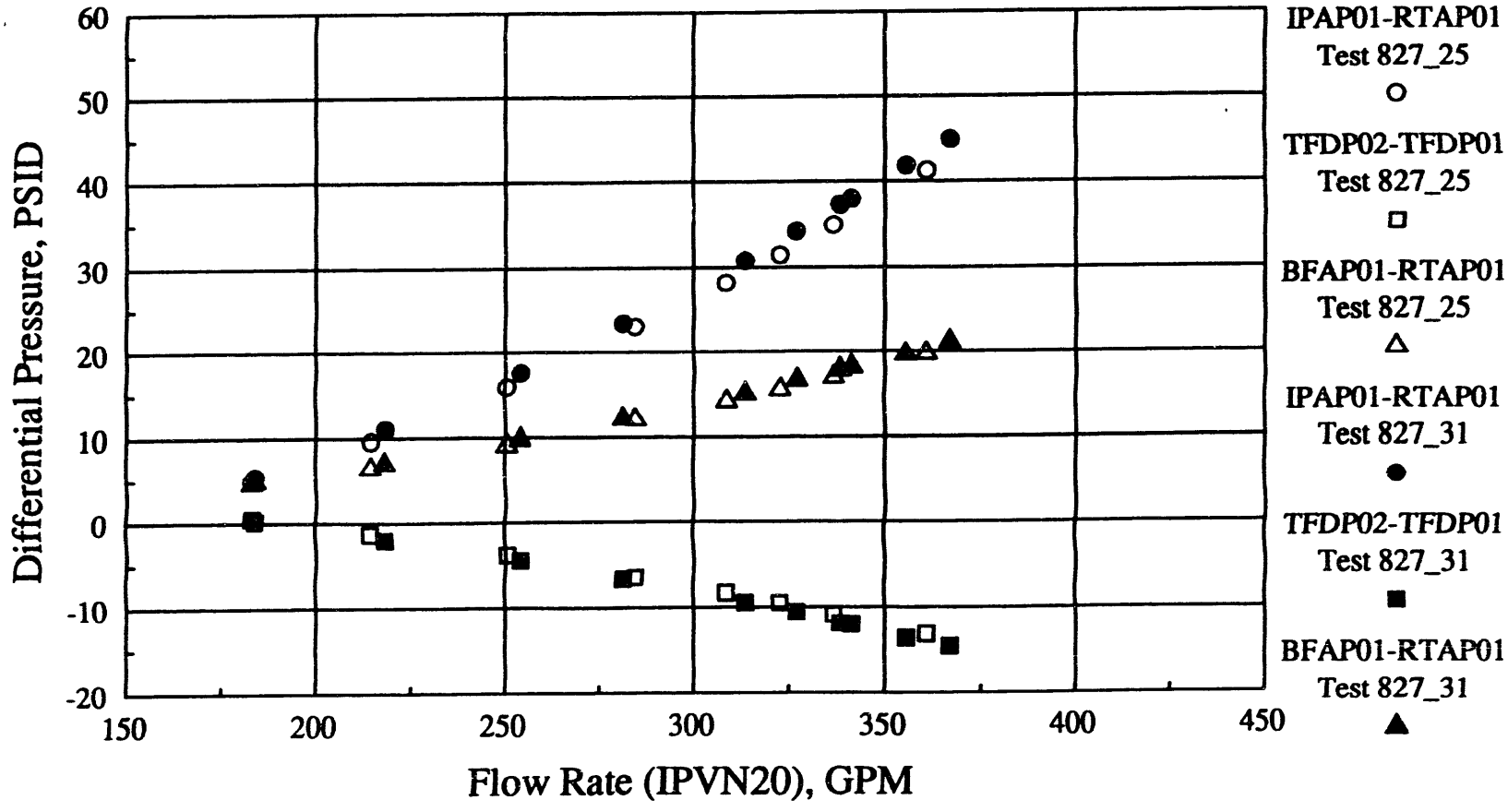


Figure 10. Follow-On Baseline Test (Solid) and Flow Excursion Post-Repair Test (Open) Overall Pressure Drop Comparison

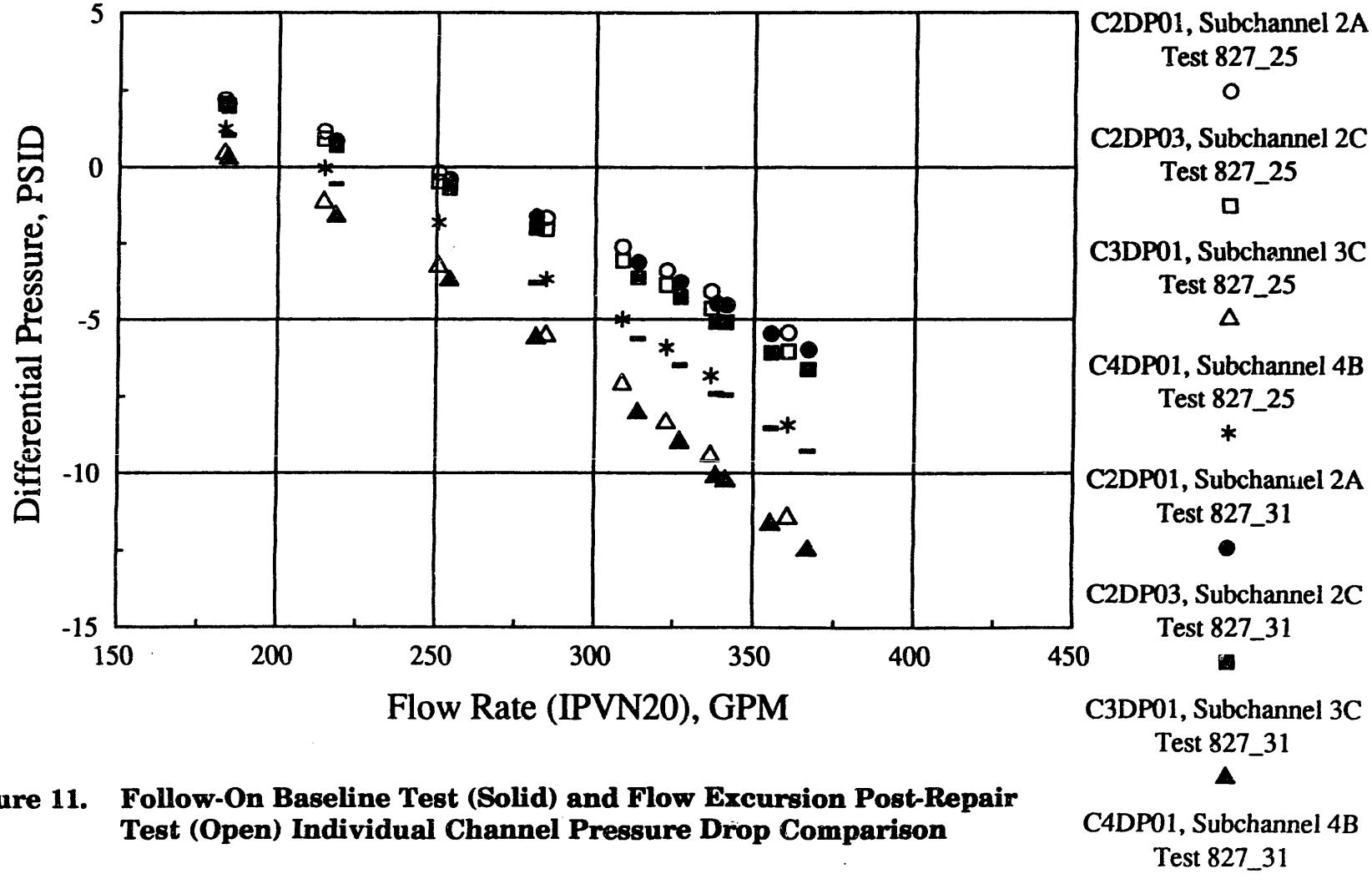


Figure 11. Follow-On Baseline Test (Solid) and Flow Excursion Post-Repair Test (Open) Individual Channel Pressure Drop Comparison

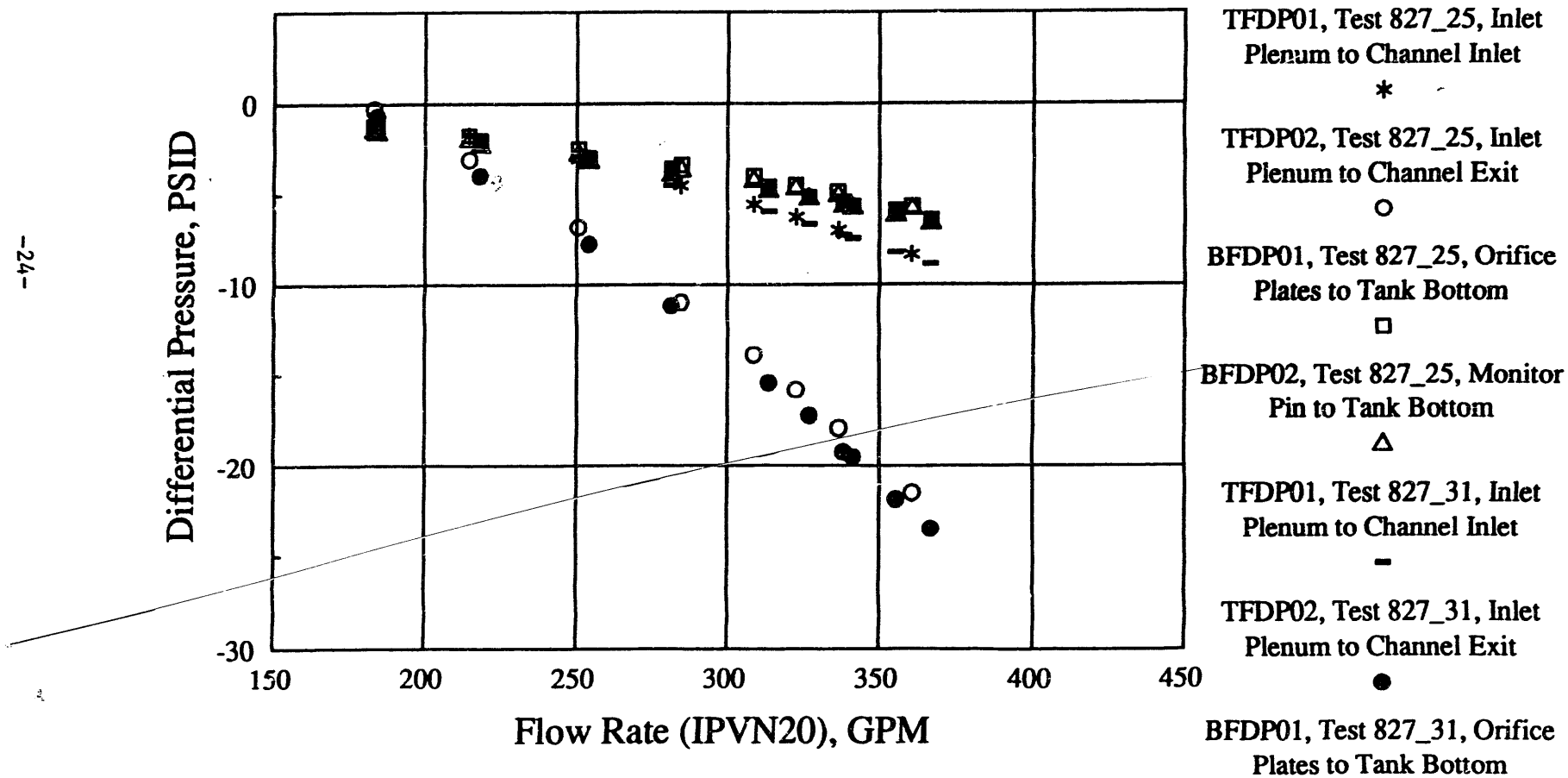


Figure 12. Follow-On Baseline Test (Solid) and Flow Excursion Post-Repair Test (Open) Selected Pressure Drop Data Comparison

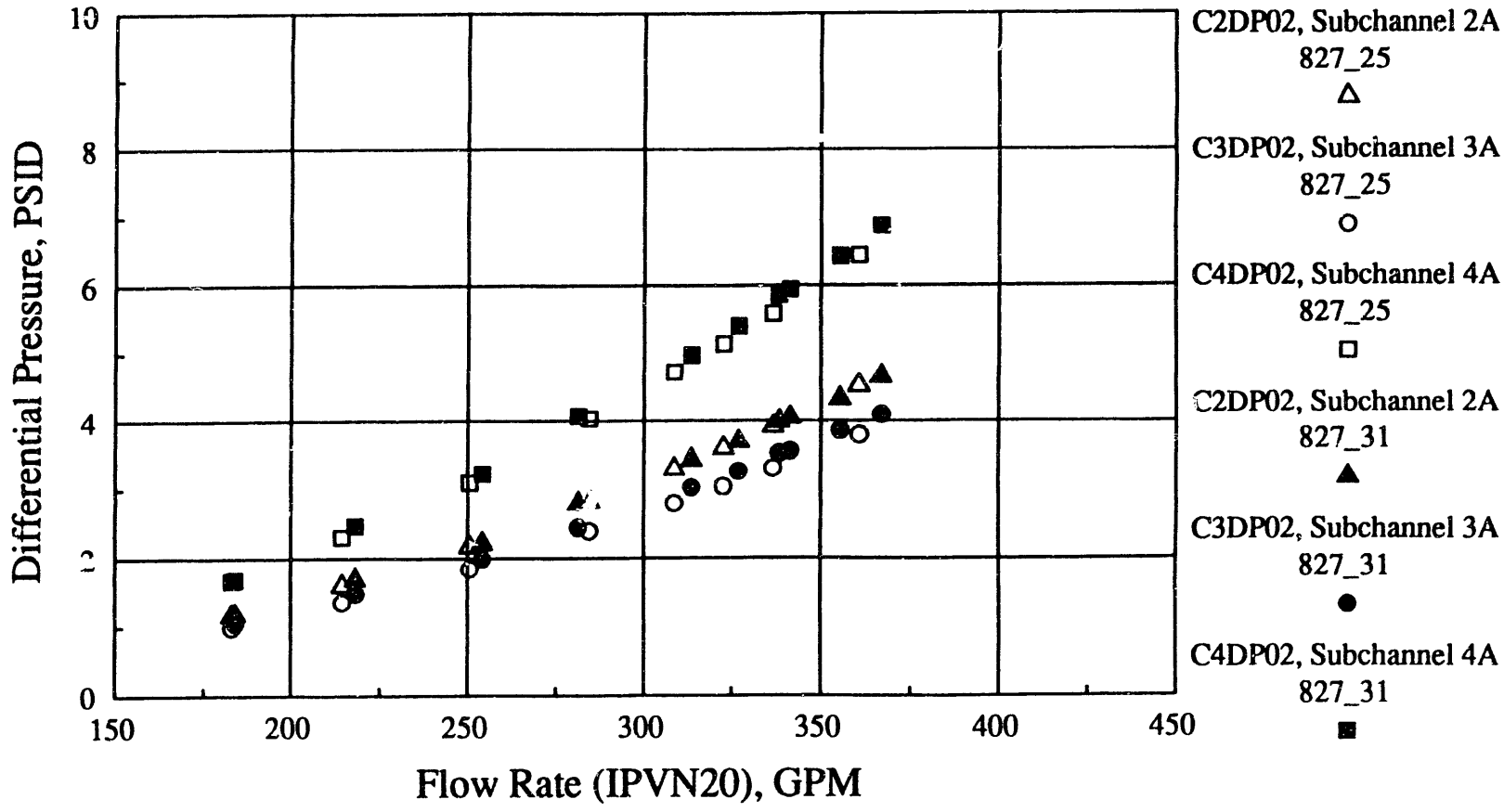


Figure 13. Follow-On Baseline Test (Solid) and Flow Excursion Post-Repair Test (Open) Channel Pitot Tube Pressure Data Comparison

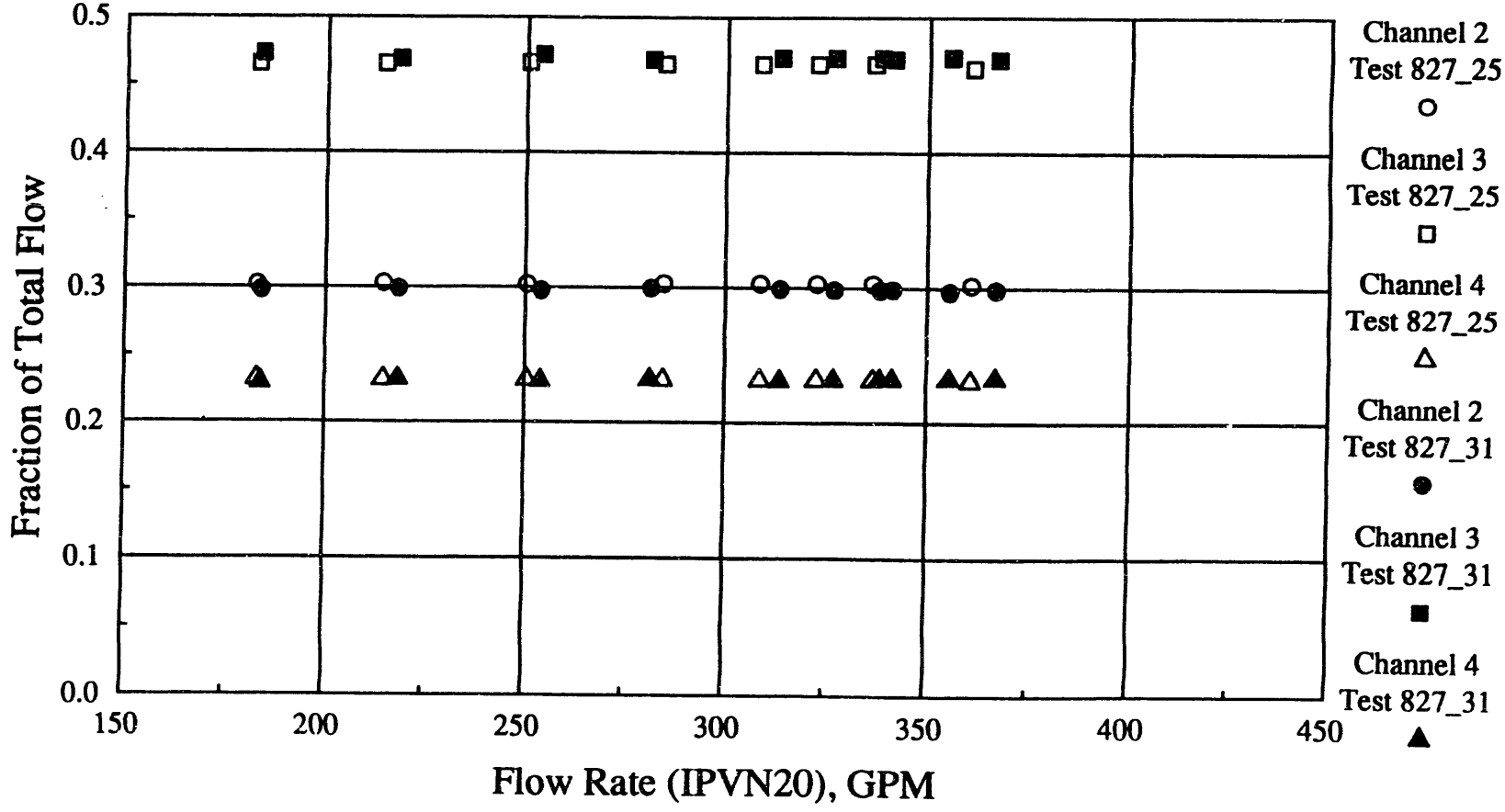


Figure 14. Follow-On Baseline Test (Solid) and Flow Excursion Post-Repair Test (Open) Channel Flow Split Comparison

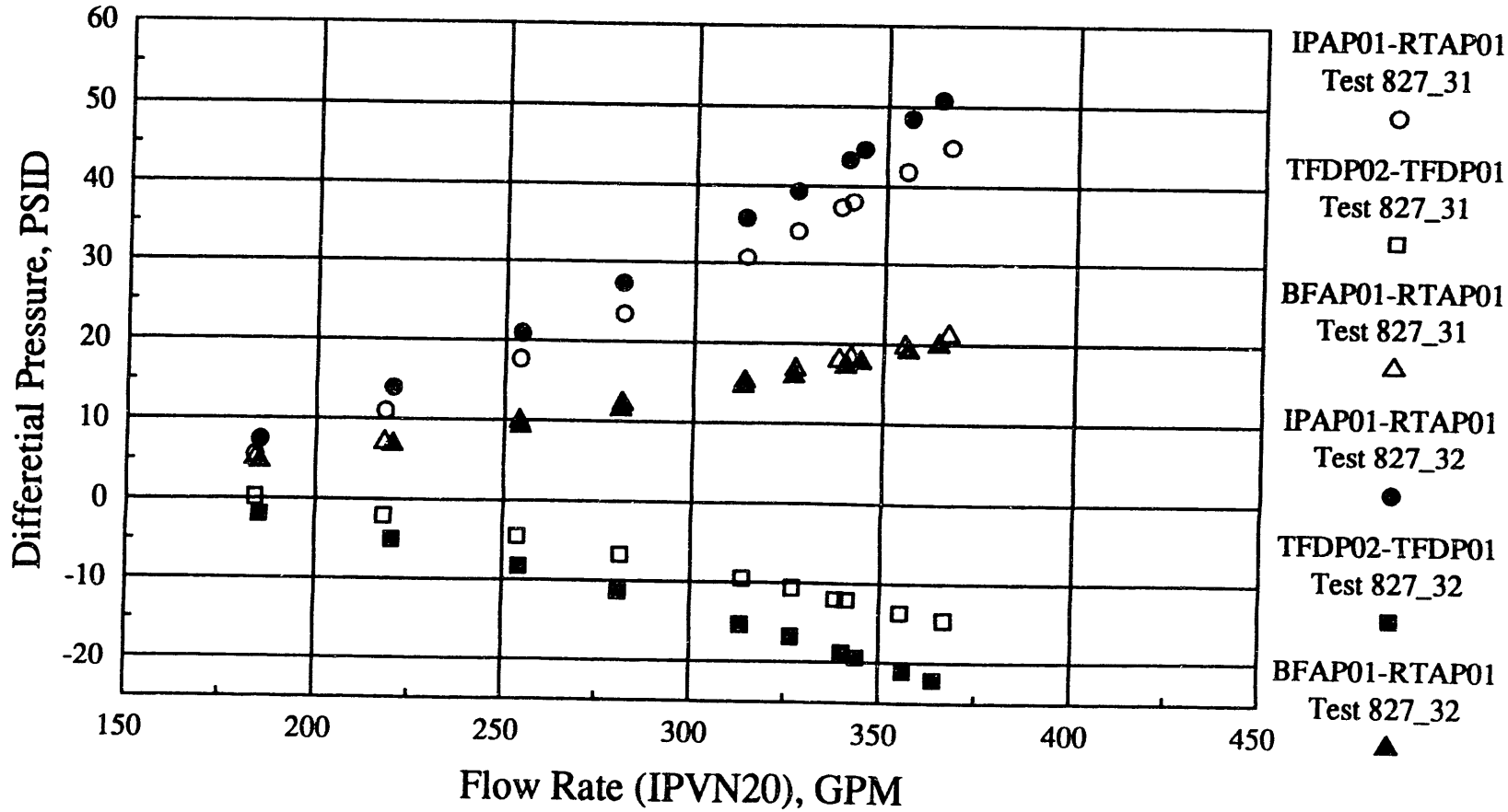


Figure 15. Plugged (Solid) vs. Unplugged (Open) Bypass Overall Pressure Drop

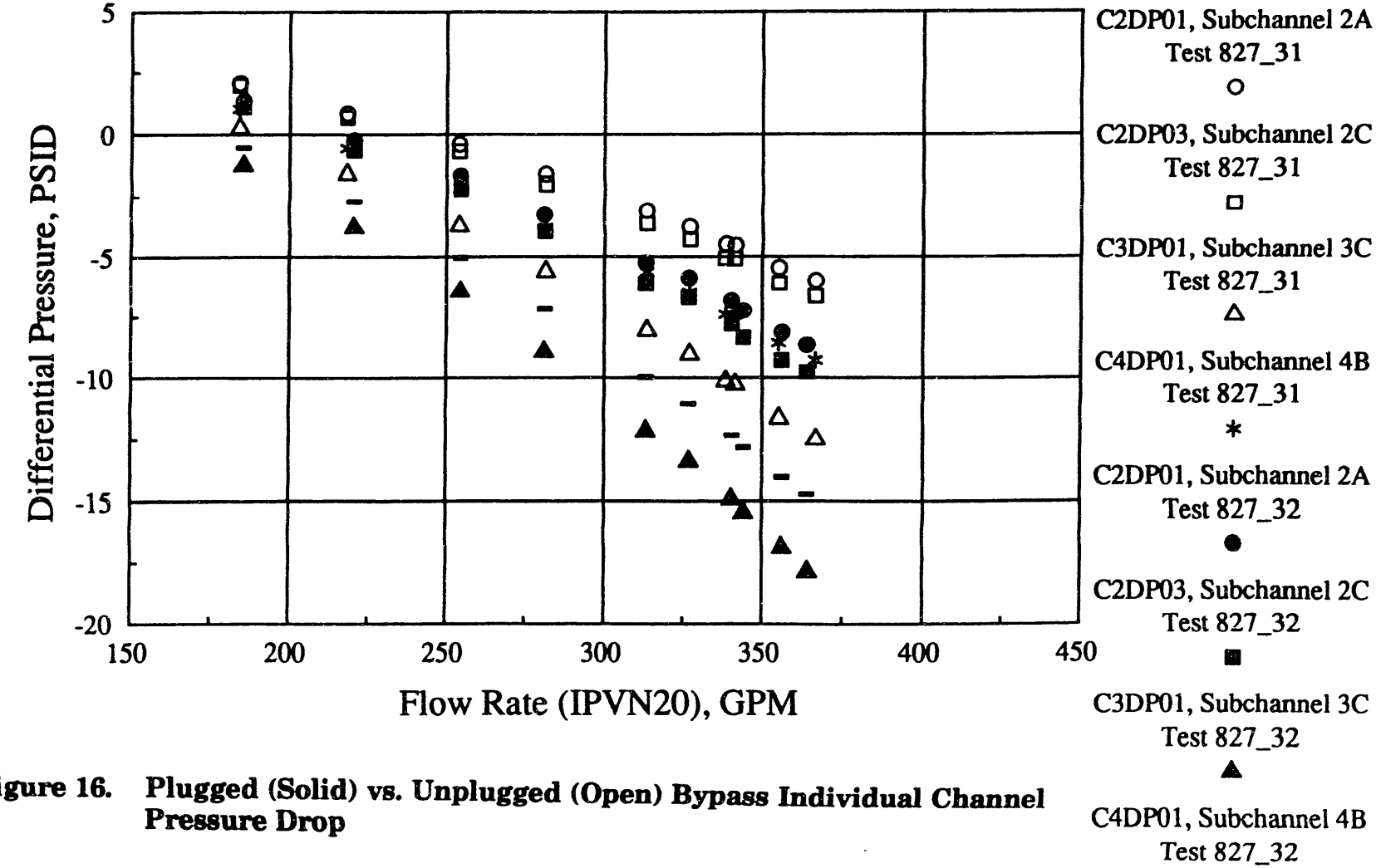


Figure 16. Plugged (Solid) vs. Unplugged (Open) Bypass Individual Channel Pressure Drop

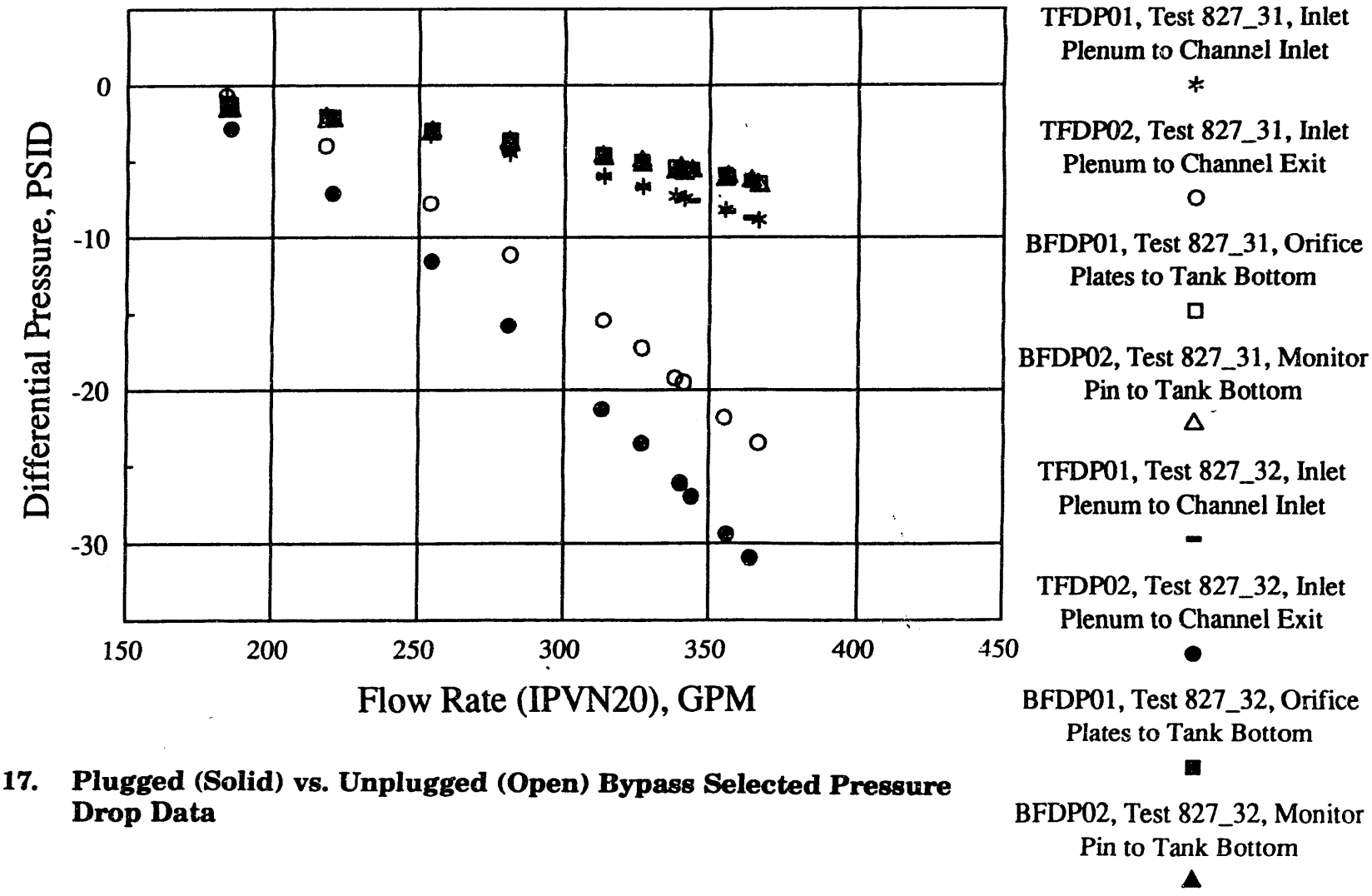


Figure 17. Plugged (Solid) vs. Unplugged (Open) Bypass Selected Pressure Drop Data

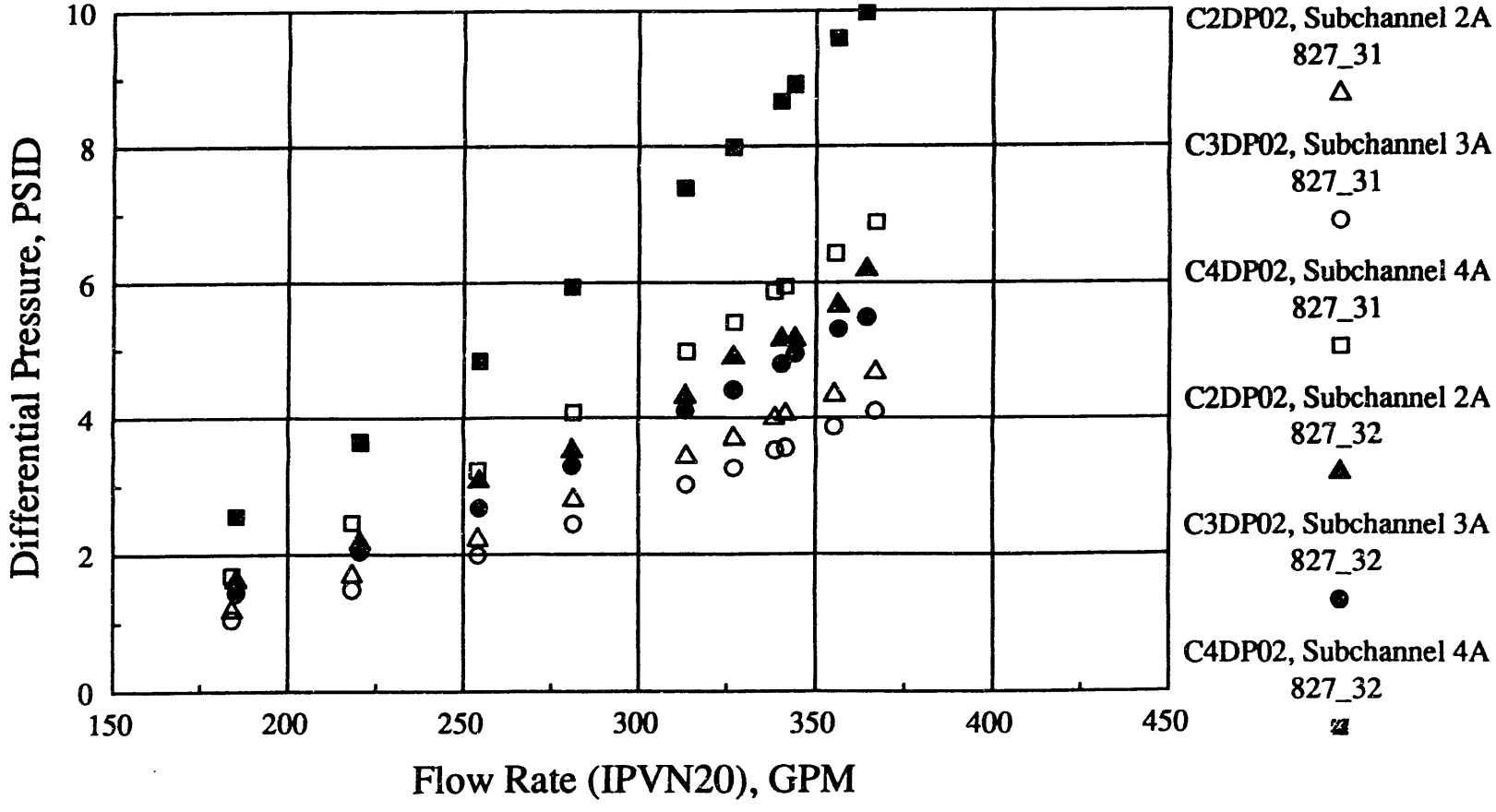


Figure 18. Plugged (Solid) vs. Unplugged (Open) Bypass Channel Pitot Tube Pressure Data

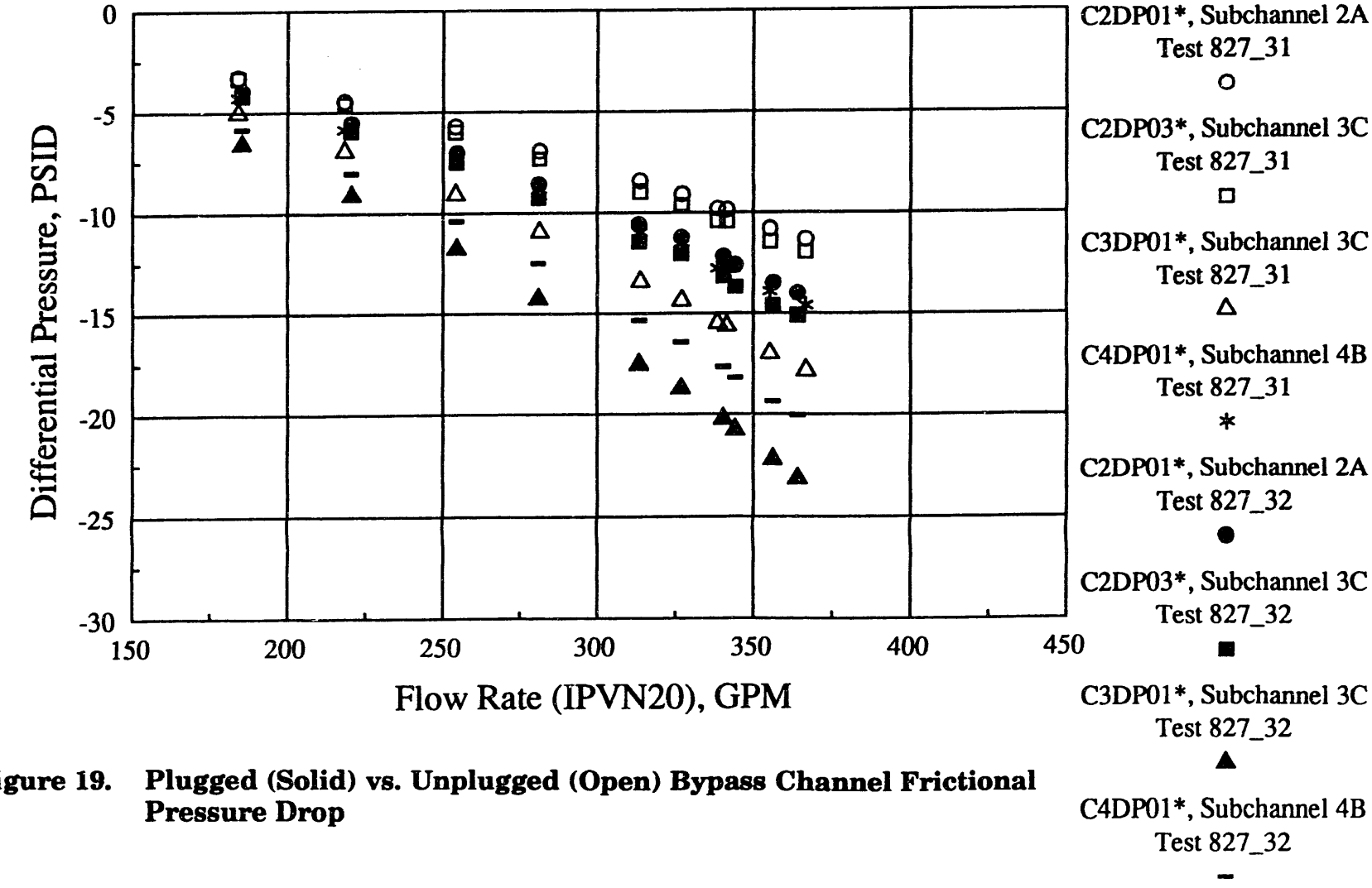


Figure 19. Plugged (Solid) vs. Unplugged (Open) Bypass Channel Frictional Pressure Drop

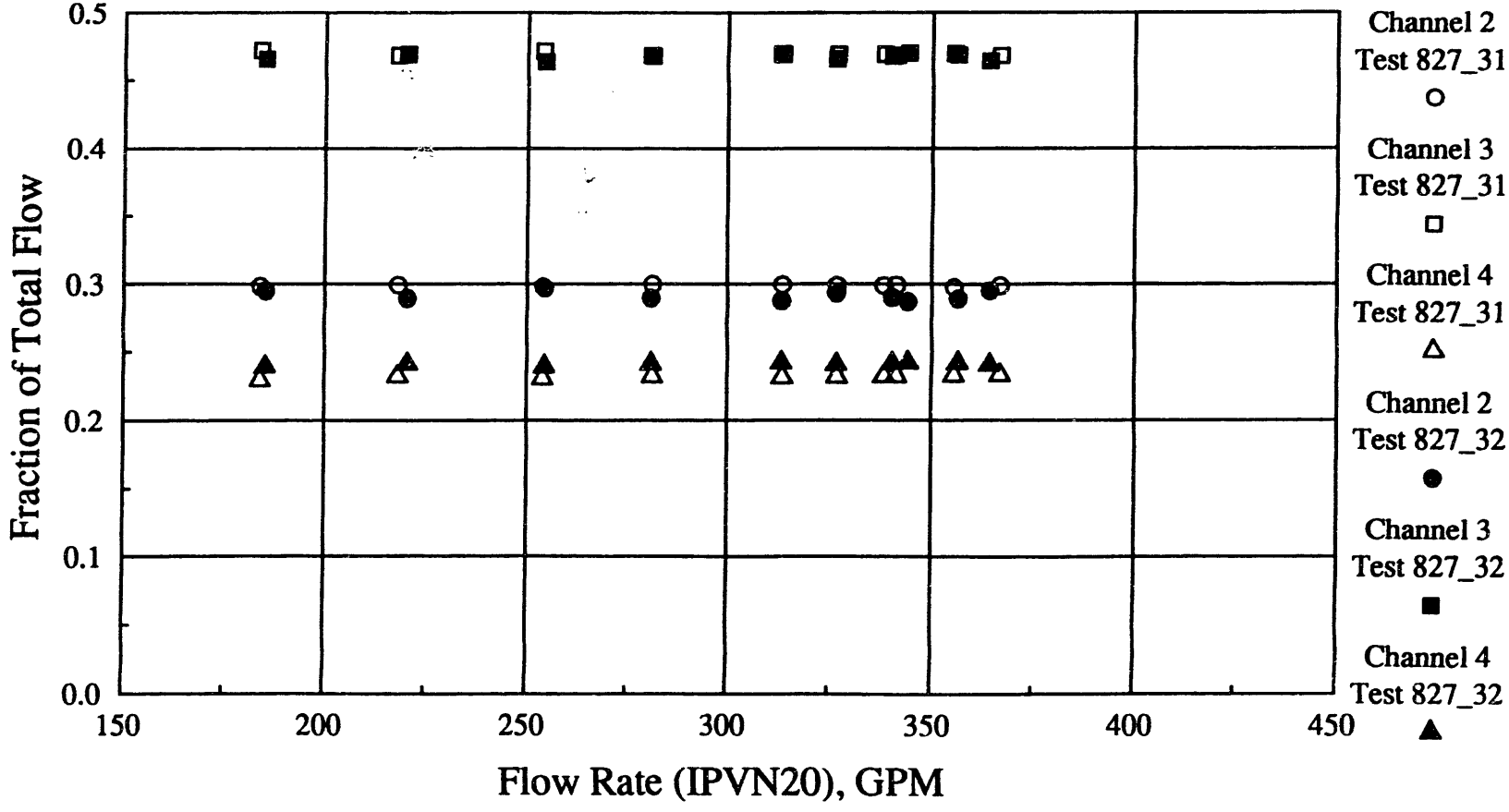


Figure 20. Plugged (Solid) vs. Unplugged (Open) Bypass Channel Flow Split

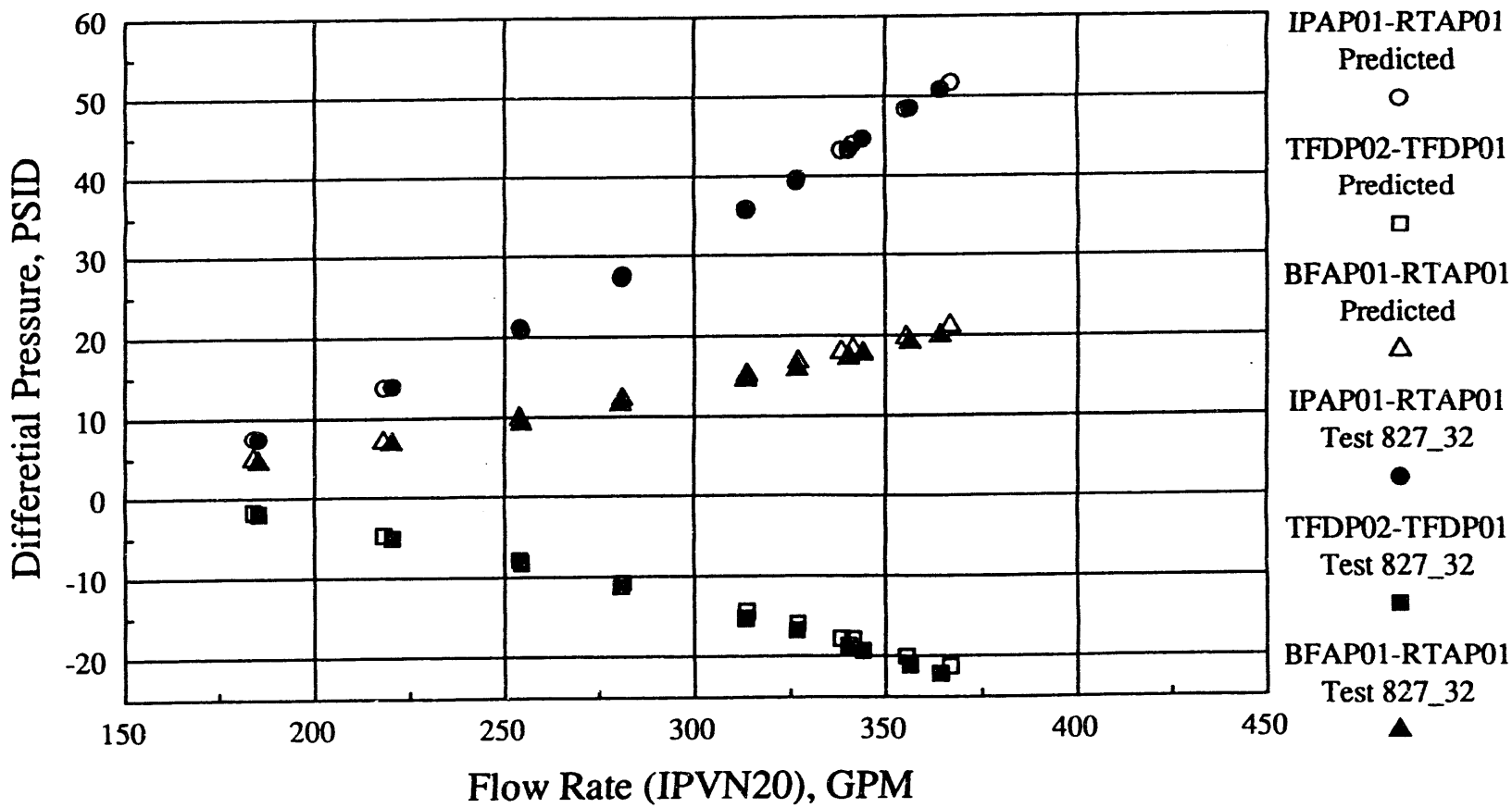


Figure 21. Plugged Bypass Predicted vs. Actual Overall Pressure Drop

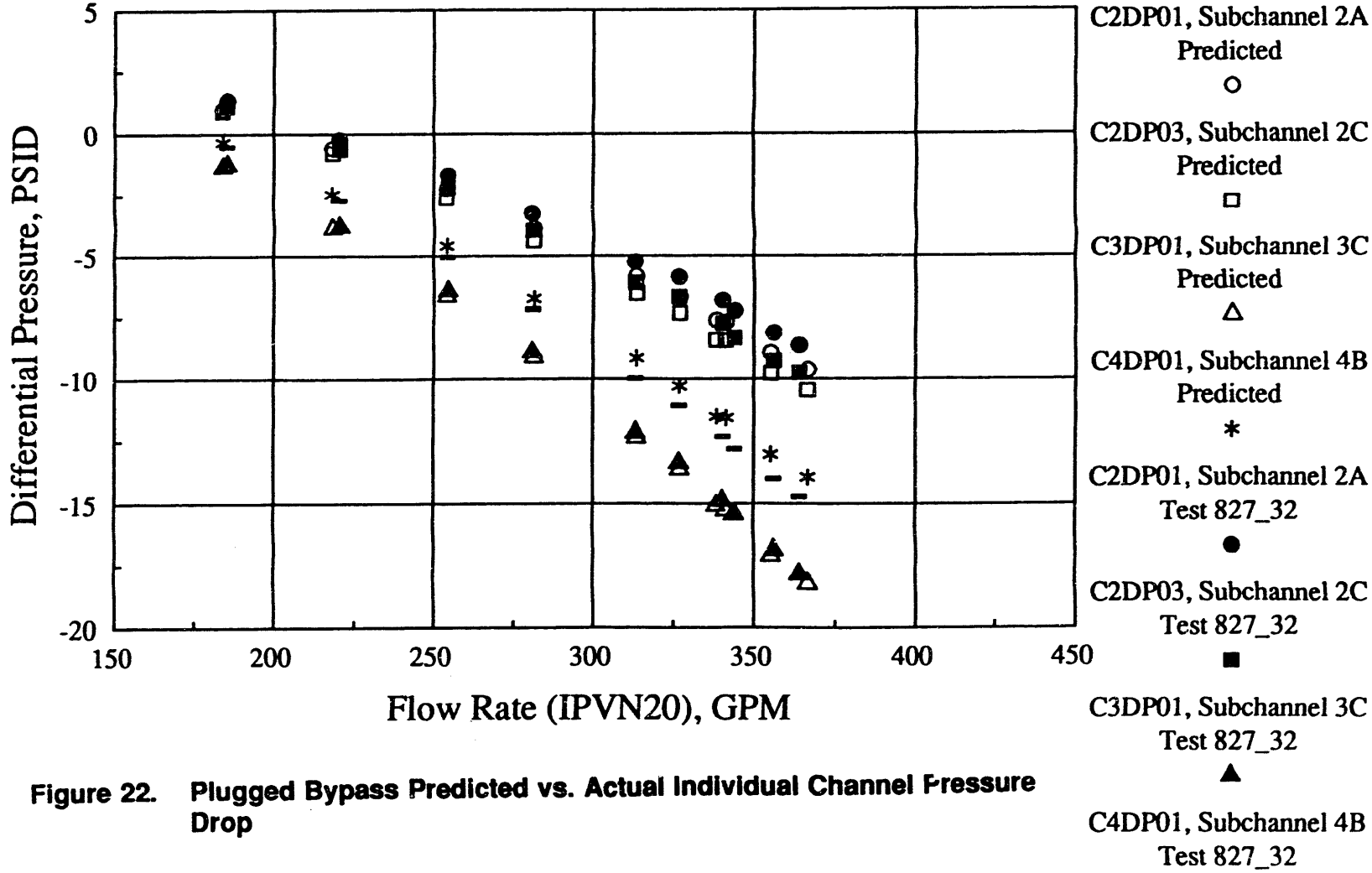


Figure 22. Plugged Bypass Predicted vs. Actual Individual Channel Pressure Drop

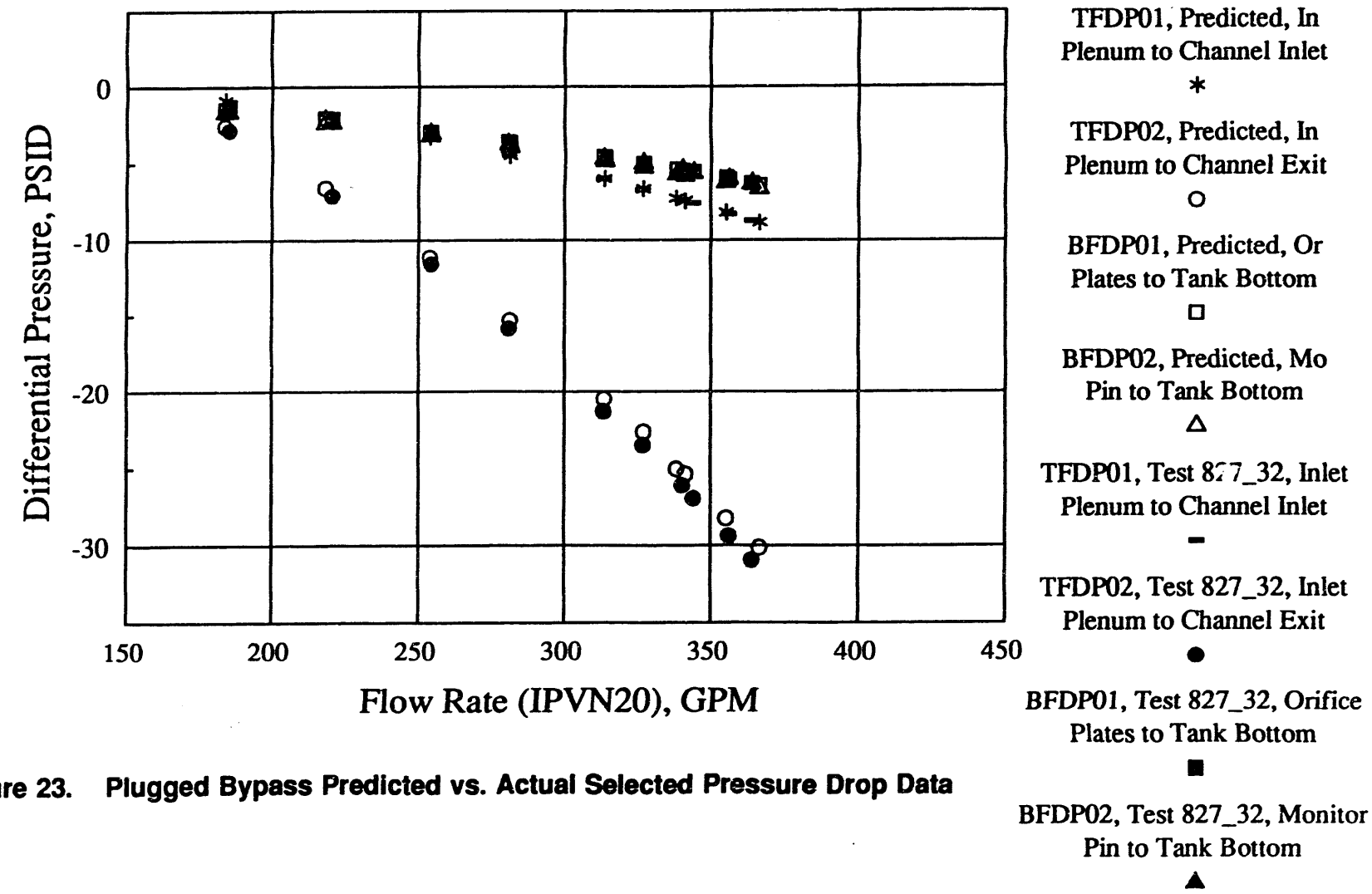


Figure 23. Plugged Bypass Predicted vs. Actual Selected Pressure Drop Data

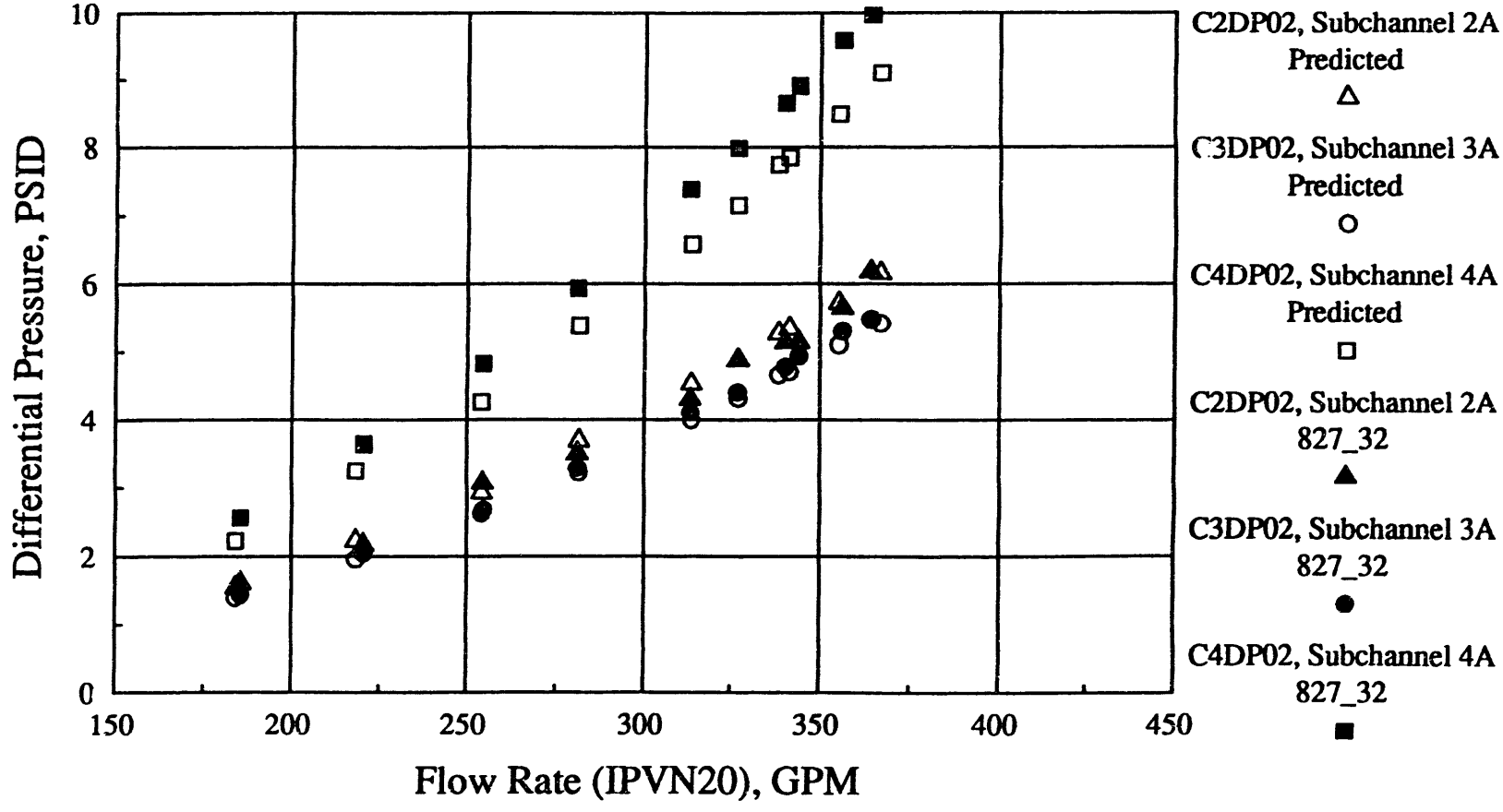


Figure 24. Plugged Bypass Predicted vs. Actual Channel Pitot Tube Pressure Data

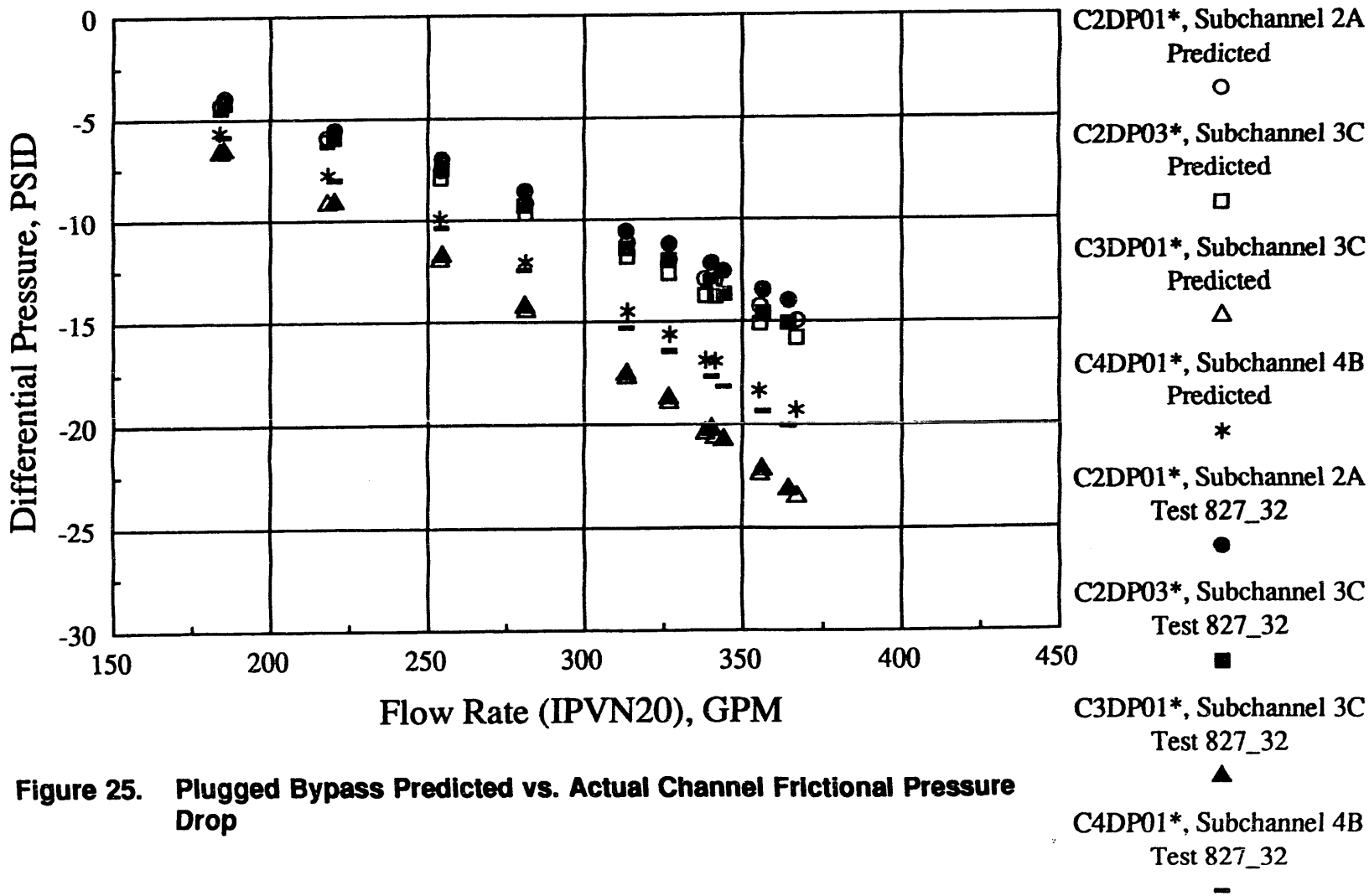


Figure 25. Plugged Bypass Predicted vs. Actual Channel Frictional Pressure Drop

Figure 26.

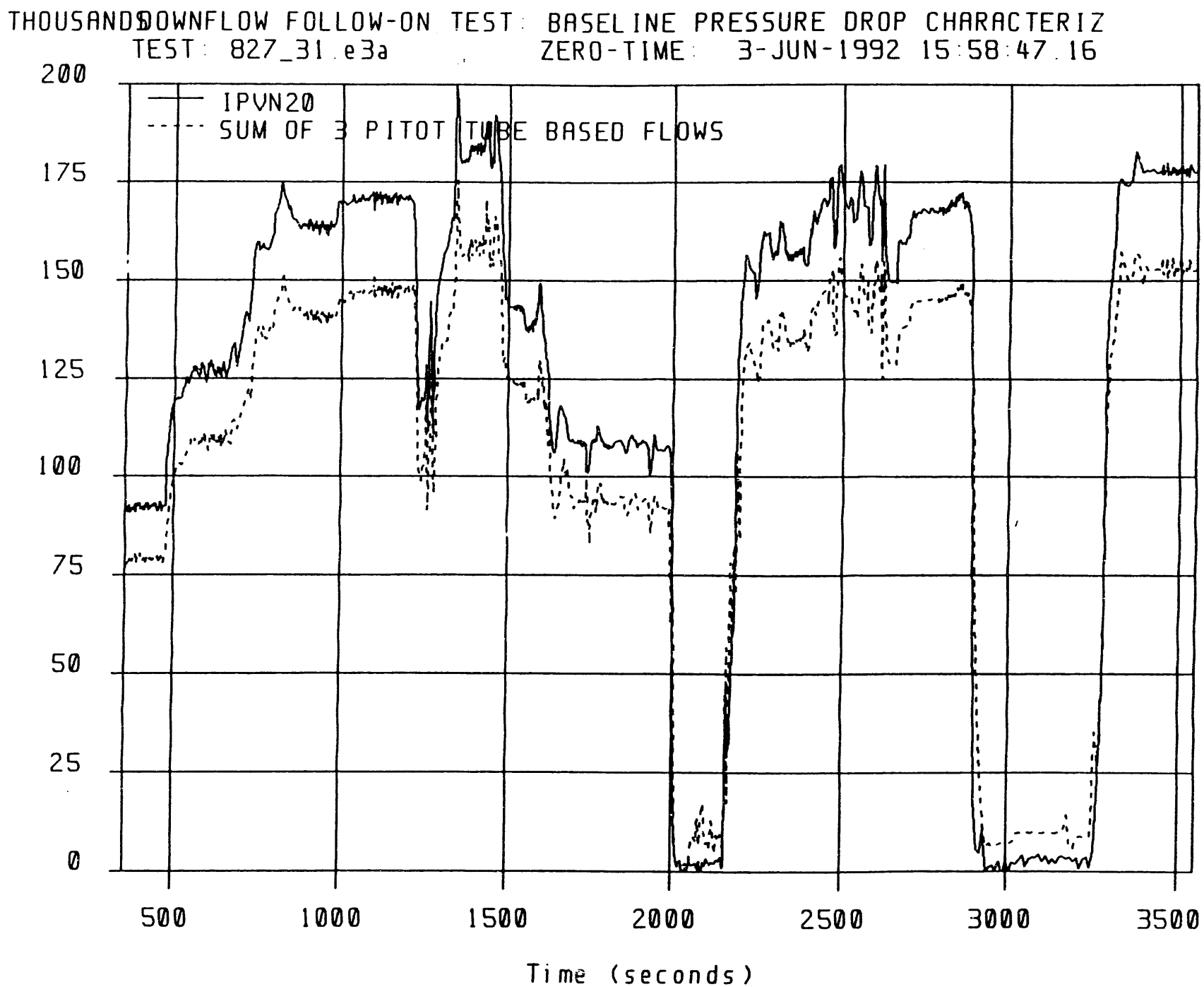

THOUSANDSDOWNFLOW FOLLOW-ON TEST: BASELINE PRESSURE DROP CHARACTERIZ
TEST: 827_31.e3a
ZERO-TIME: 3-JUN-1992 15:58:47.16
IPVN20
SUM OF 3 PITOT TUBE BASED FLOWS
200
175
150
125
100
75
50
25
0
LBM/HR
500
1000
1500
2000
2500
3000
3500
Time (seconds)

Figure 27.

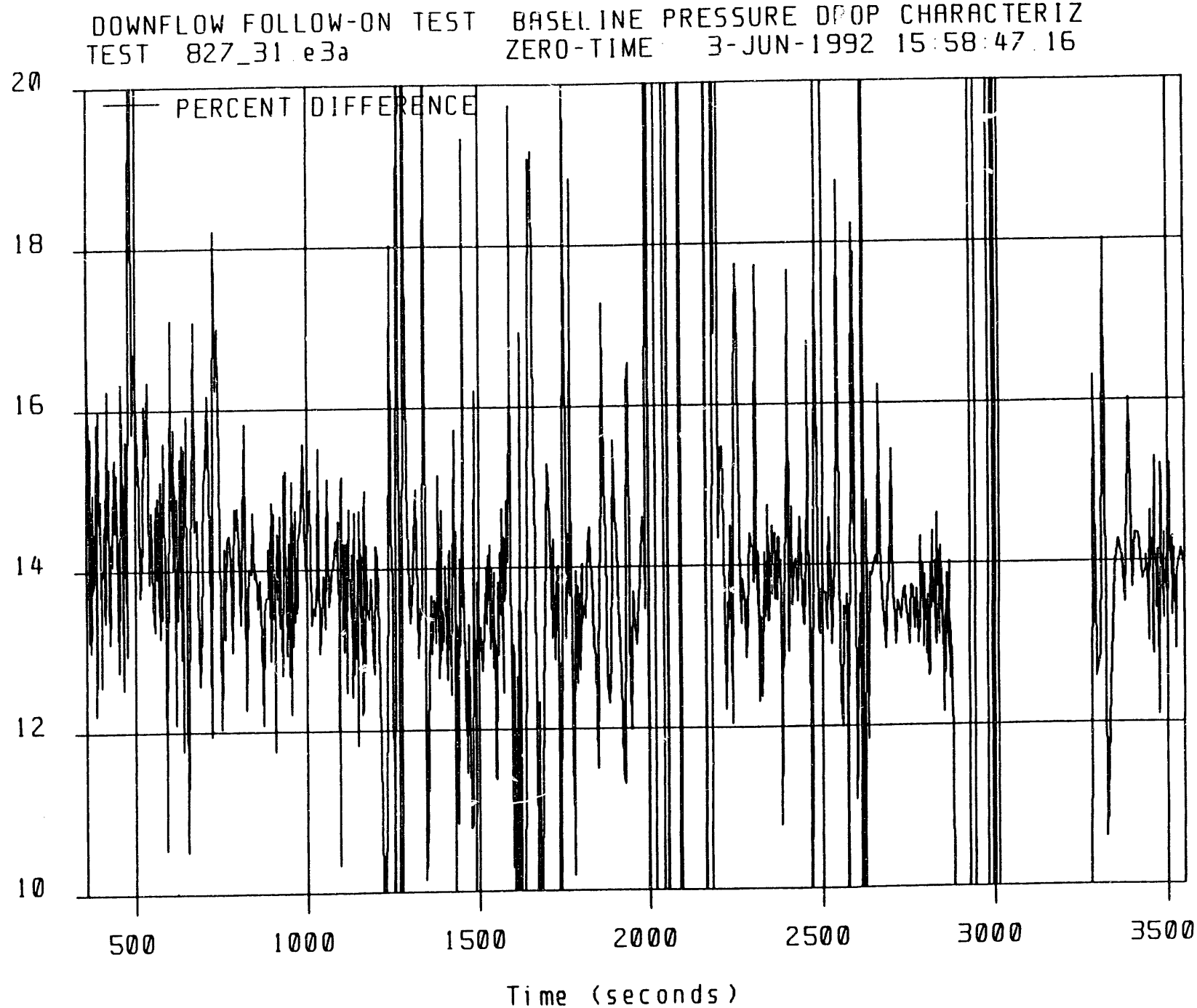

DOWNFLOW FOLLOW-ON TEST BASELINE PRESSURE DROP CHARACTERIZ
TEST 827_31 e3a ZERO-TIME 3-JUN-1992 15:58:47.16
PERCENT DIFFERENCE
20
18
16
14
12
10
PERCENT
500
1000
1500
2000
2500
3000
3500
Time (seconds)

Figure 28.

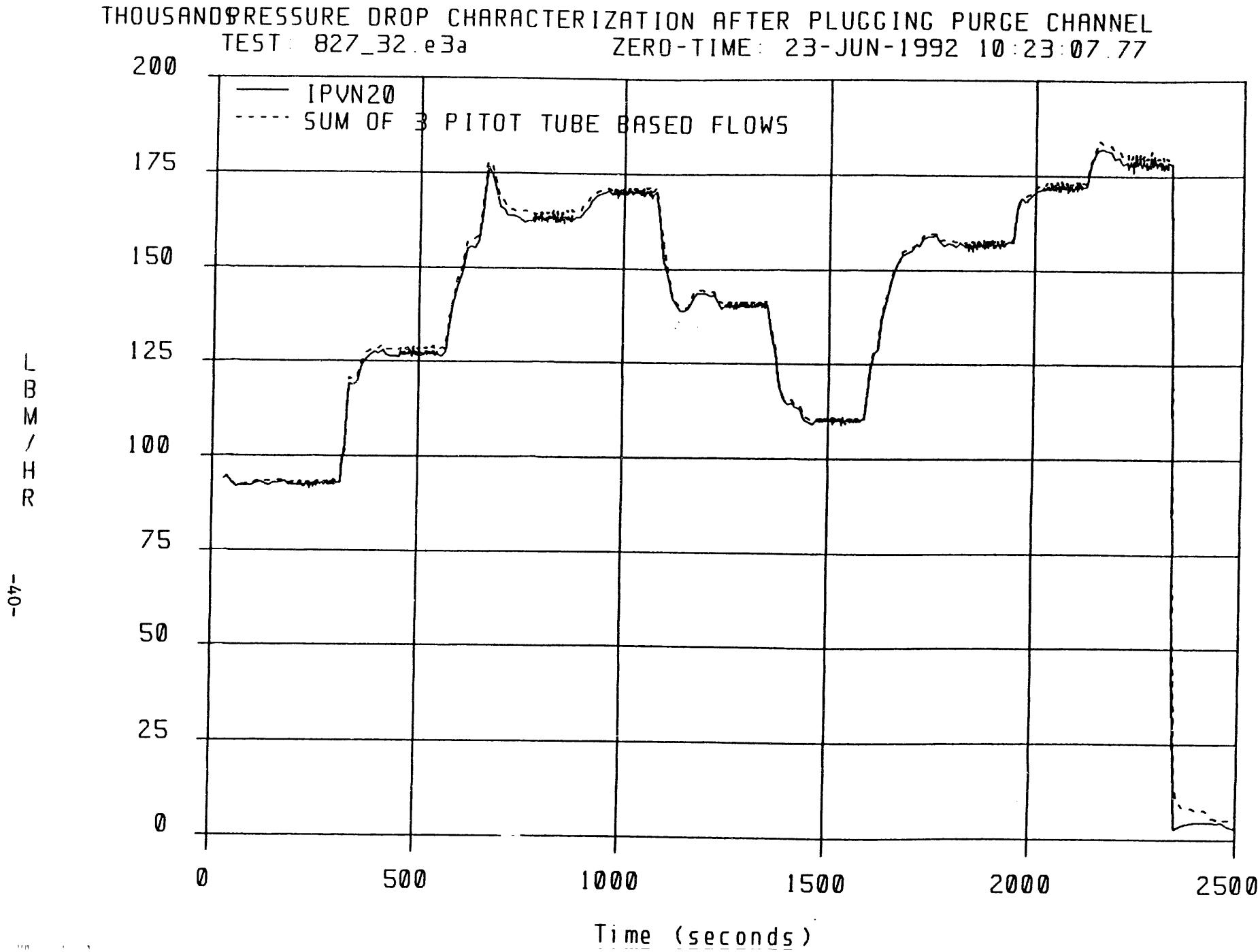

THOUSANDS PRESSURE DROP CHARACTERIZATION AFTER PLUGGING PURGE CHANNEL
TEST: 827_32.e3a
ZERO-TIME: 23-JUN-1992 10:23:07.77
IPVN20
SUM OF 3 PITOT TUBE BASED FLOWS
200
175
150
125
100
75
50
25
0
LBM/HR
0
500
1000
1500
2000
2500
Time (seconds)

Figure 29.

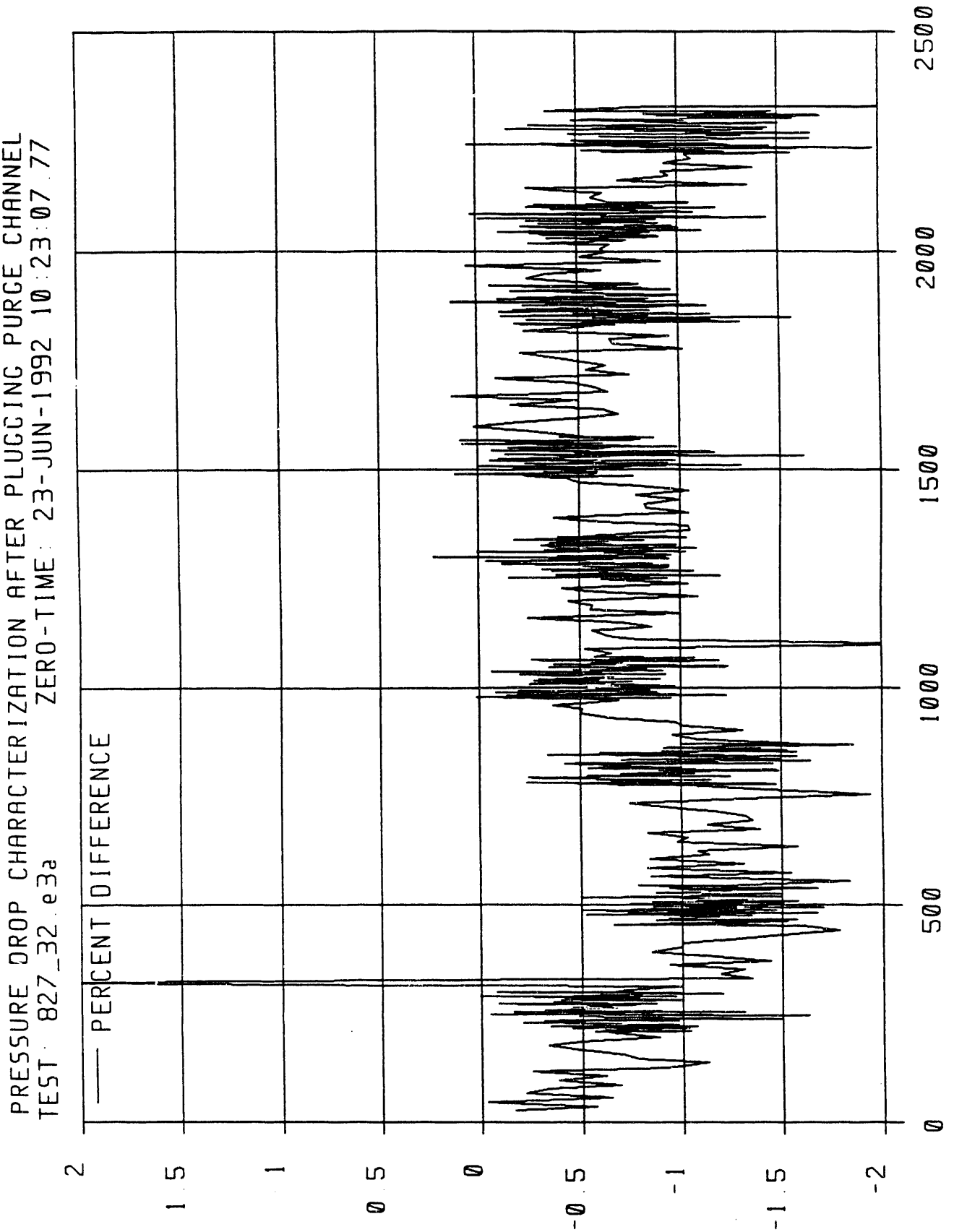

PRESSURE DROP CHARACTERIZATION AFTER PLUGGING PURGE CHANNEL
TEST: 827_32.e3a ZERO-TIME: 23-JUN-1992 10:23:07.77
PERCENT DIFFERENCE
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
PERCENT
0
500
1000
1500
2000
2500
Time (seconds)

Figure 30.

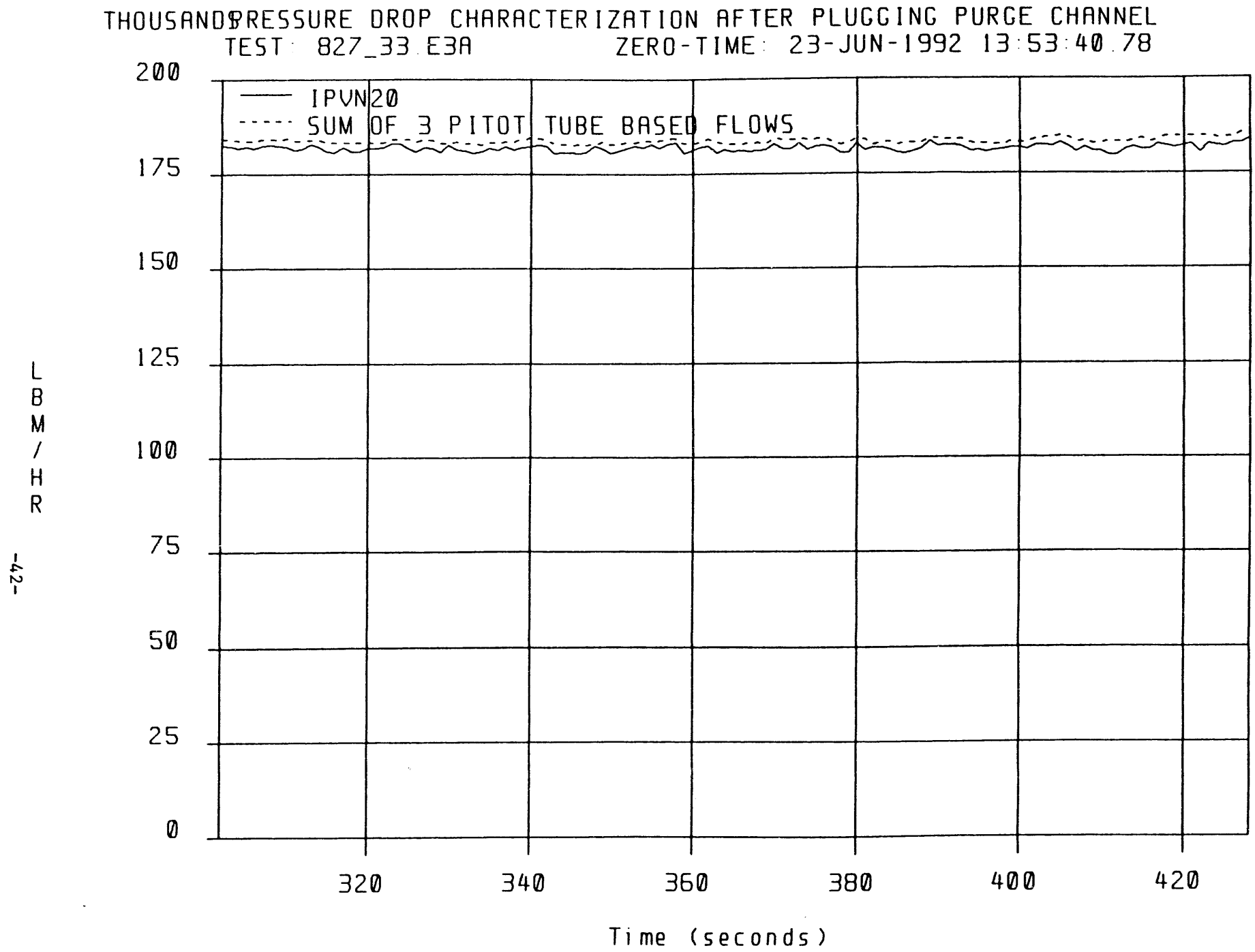
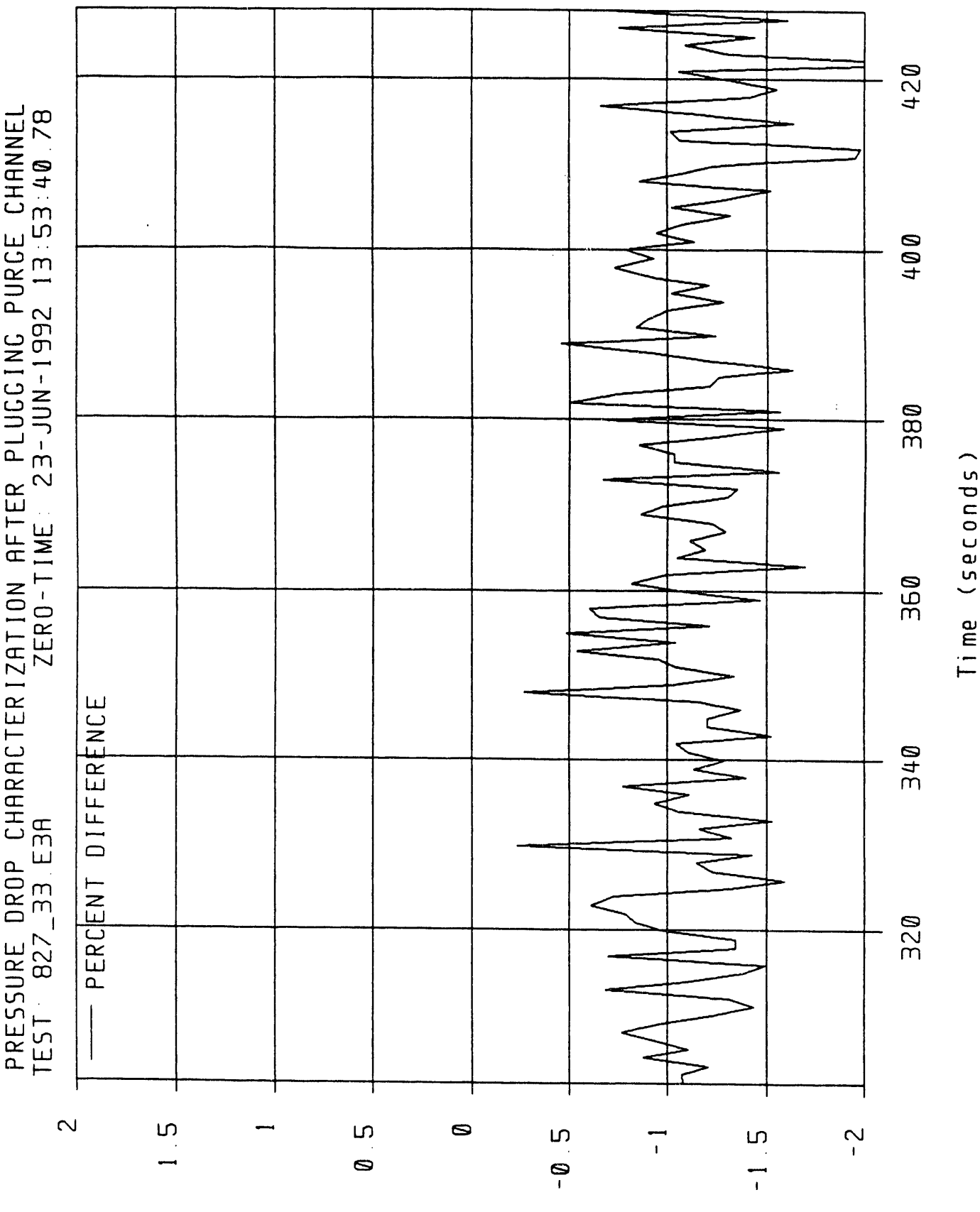

THOUSANDSPRESSURE DROP CHARACTERIZATION AFTER PLUGGING PURGE CHANNEL
TEST 827_33 E3A
ZERO-TIME 23-JUN-1992 13:53:40.78
IPVN20
SUM OF 3 PITOT TUBE BASED FLOWS
200
175
150
125
100
75
50
25
0
LBM/HR
320
340
360
380
400
420
Time (seconds)

Figure 31.


PRESSURE DROP CHARACTERIZATION AFTER PLUGGING PURGE CHANNEL
TEST 827_33 E3A ZERO-TIME 23-JUN-1992 13:53:40.78
PERCENT DIFFERENCE
2
1.5
1
0.5
0
-0.5
-1
-1.5
-2
PERCENT
320
340
360
380
400
420
Time (seconds)

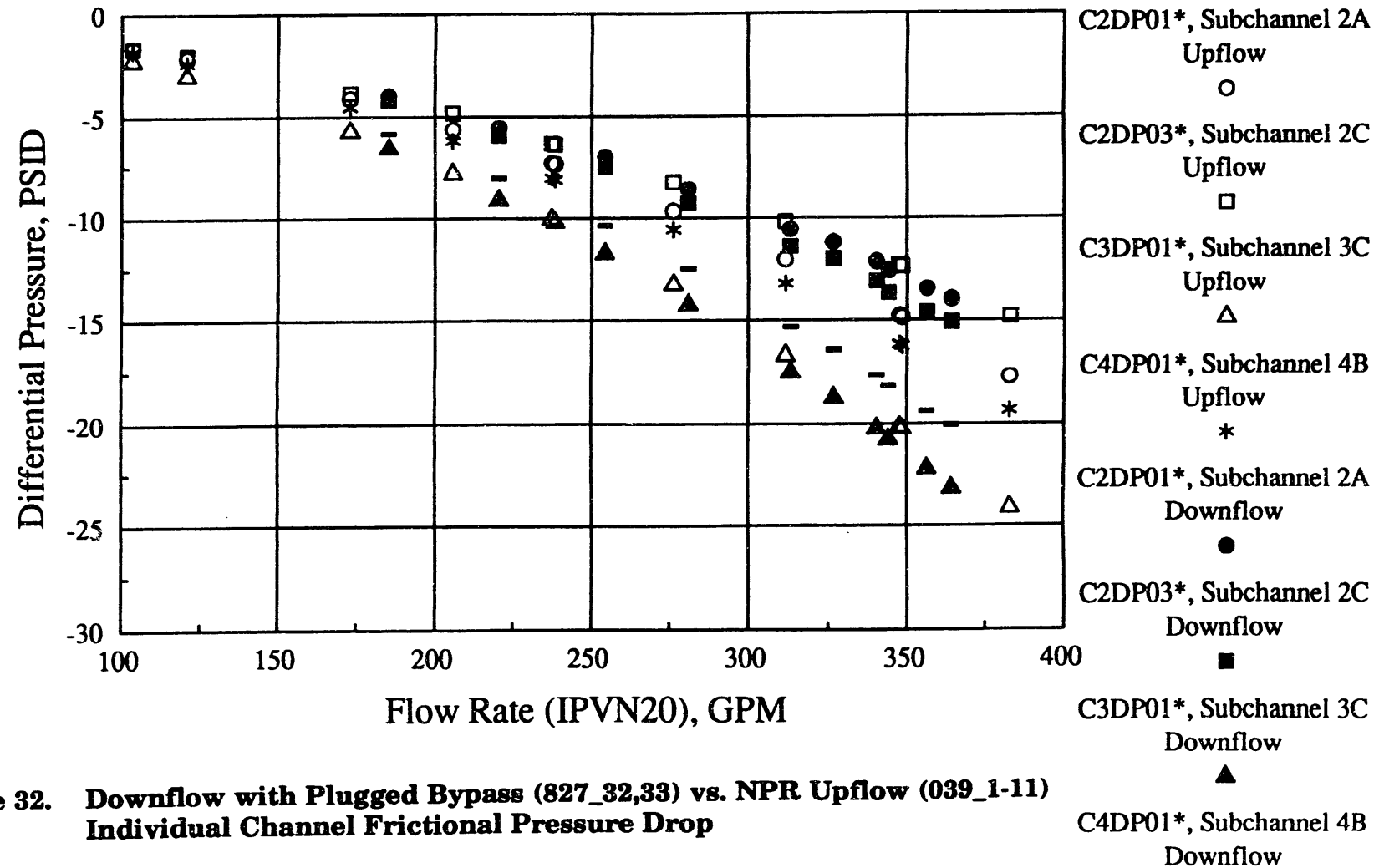


Figure 32. Downflow with Plugged Bypass (827_32,33) vs. NPR Upflow (039_1-11) Individual Channel Frictional Pressure Drop

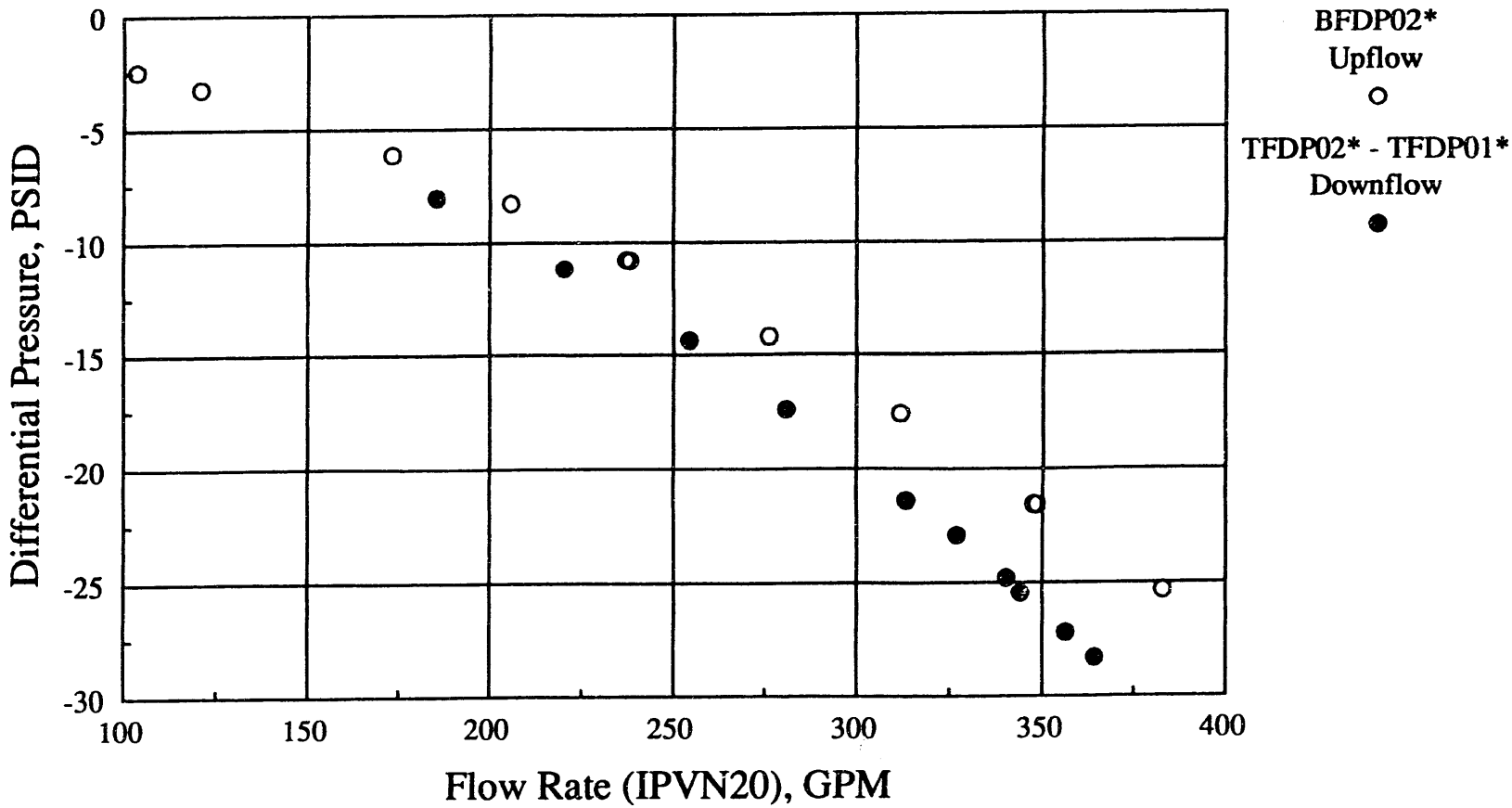


Figure 33. Downflow with Plugged Bypass (827_32,33) vs. NPR Upflow (039_1-11) Individual Channel Overall Frictional Pressure Drop

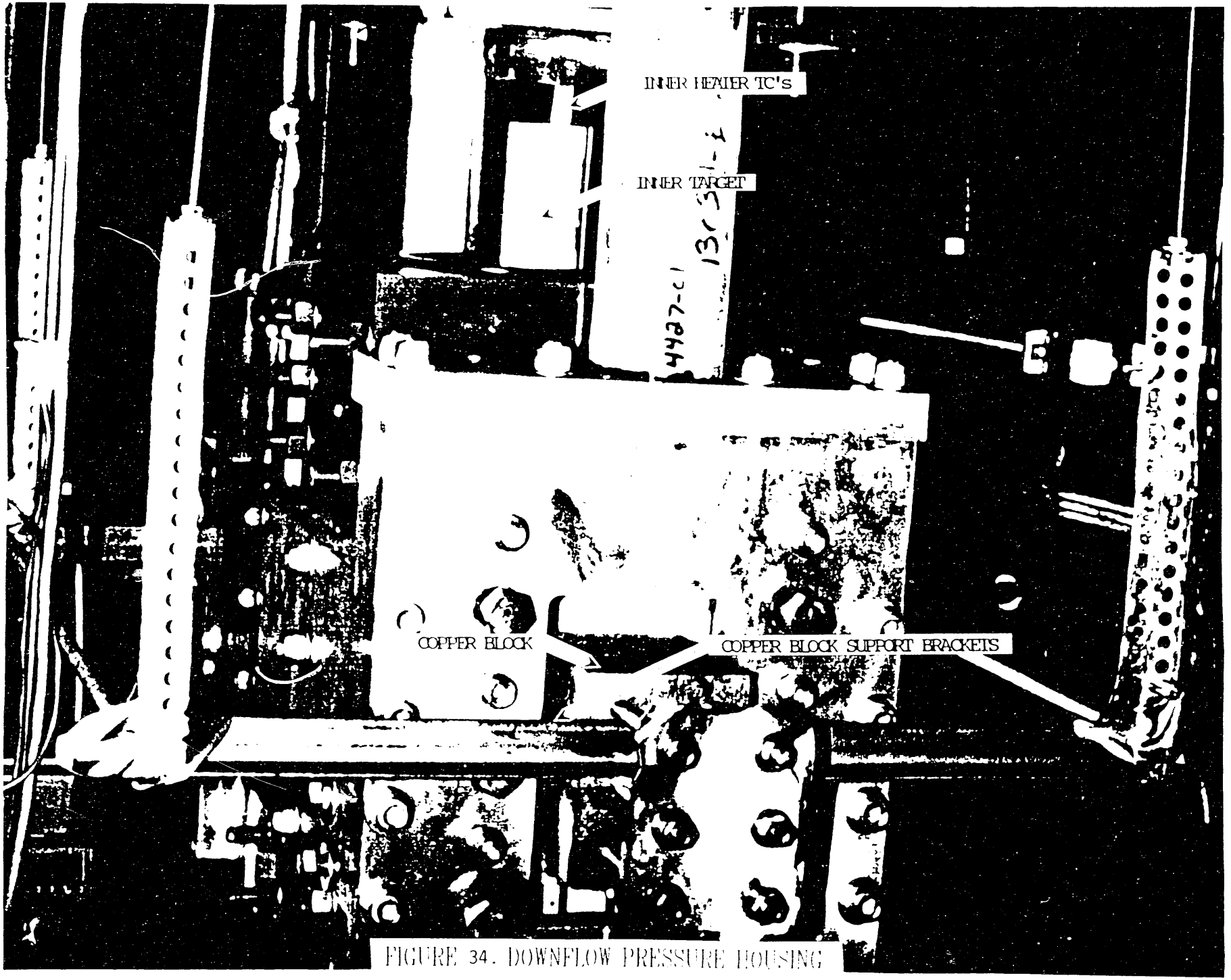


FIGURE 34. DOWNFLOW PRESSURE HOUSING

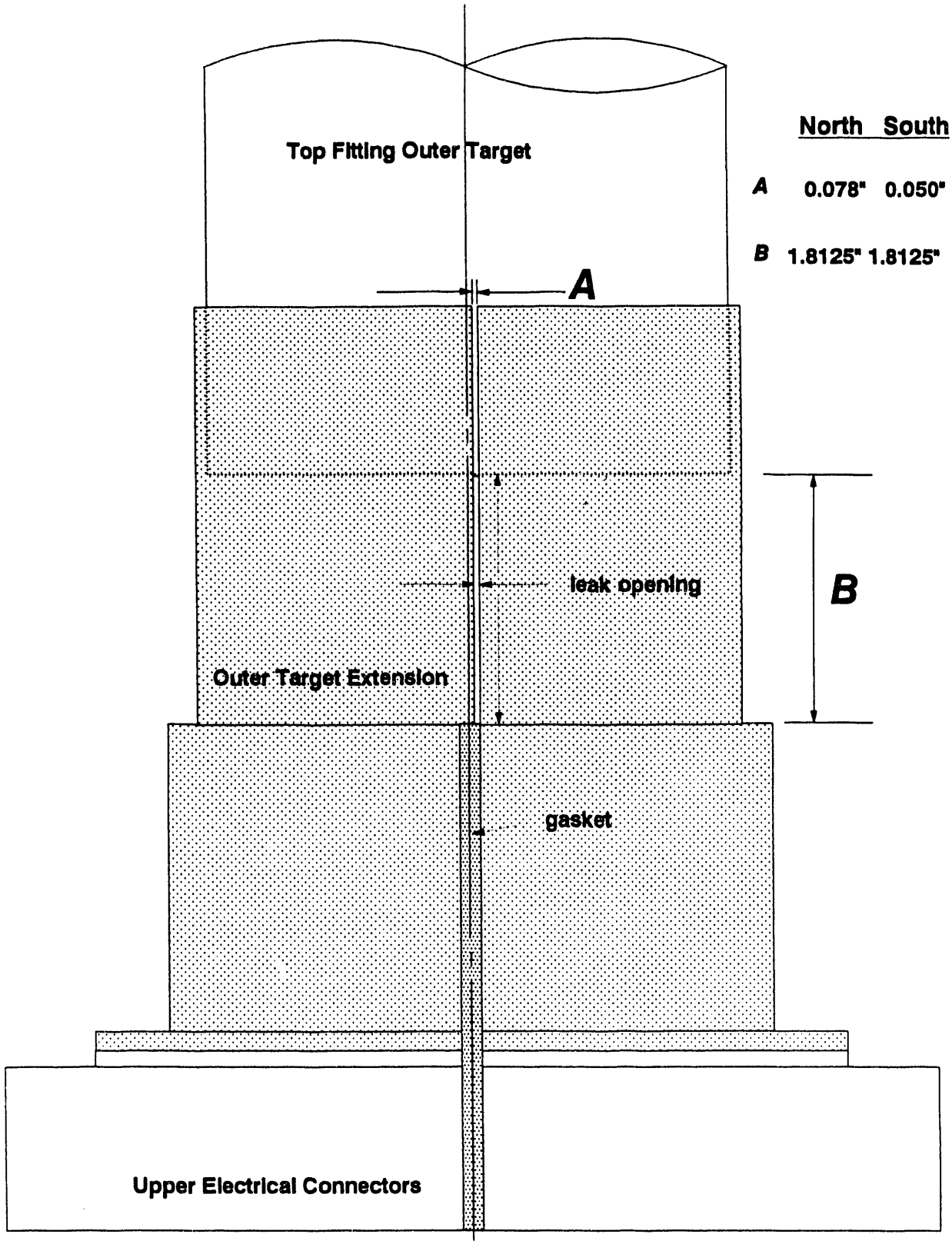


Figure 35. Primary Leakage Path at Outer Target Extension

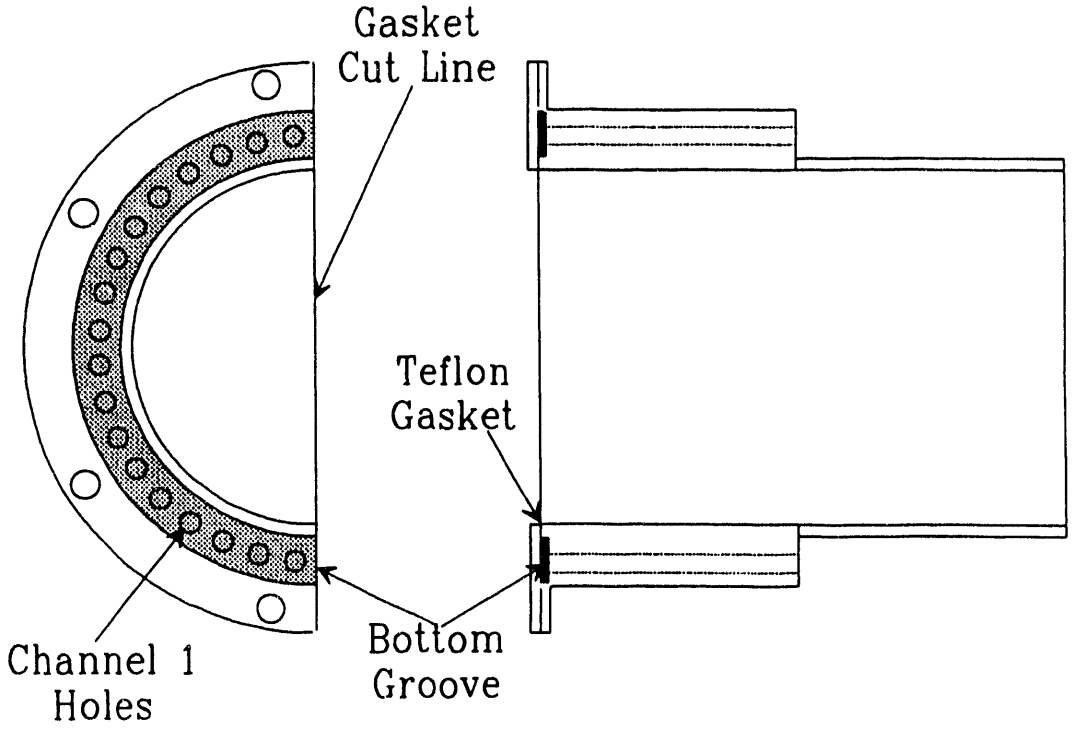


Figure 36. Teflon Gasket Location in Outer Target Extension

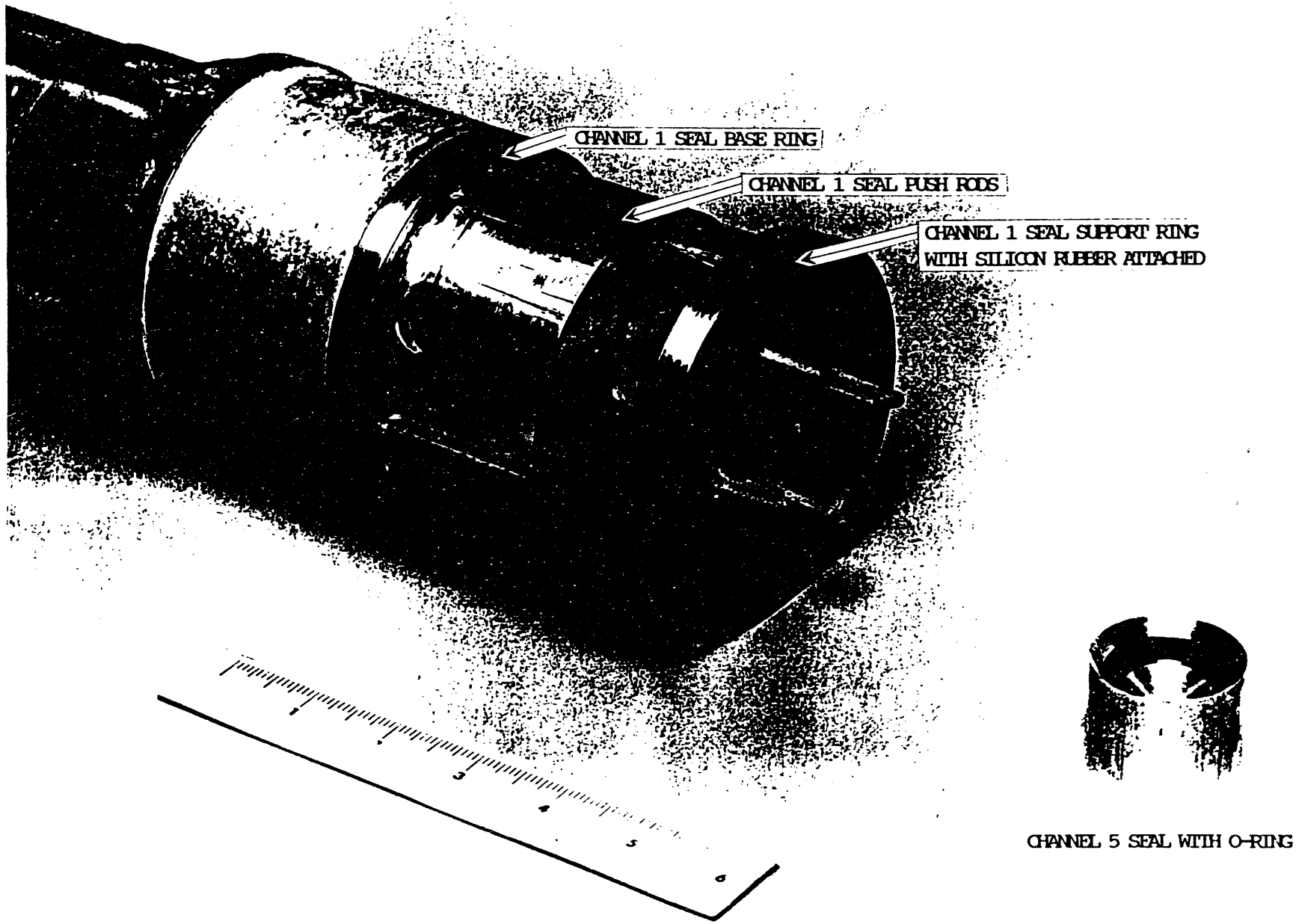


FIGURE 37. BFI WITH CHANNEL 1 SEAL IN PLACE

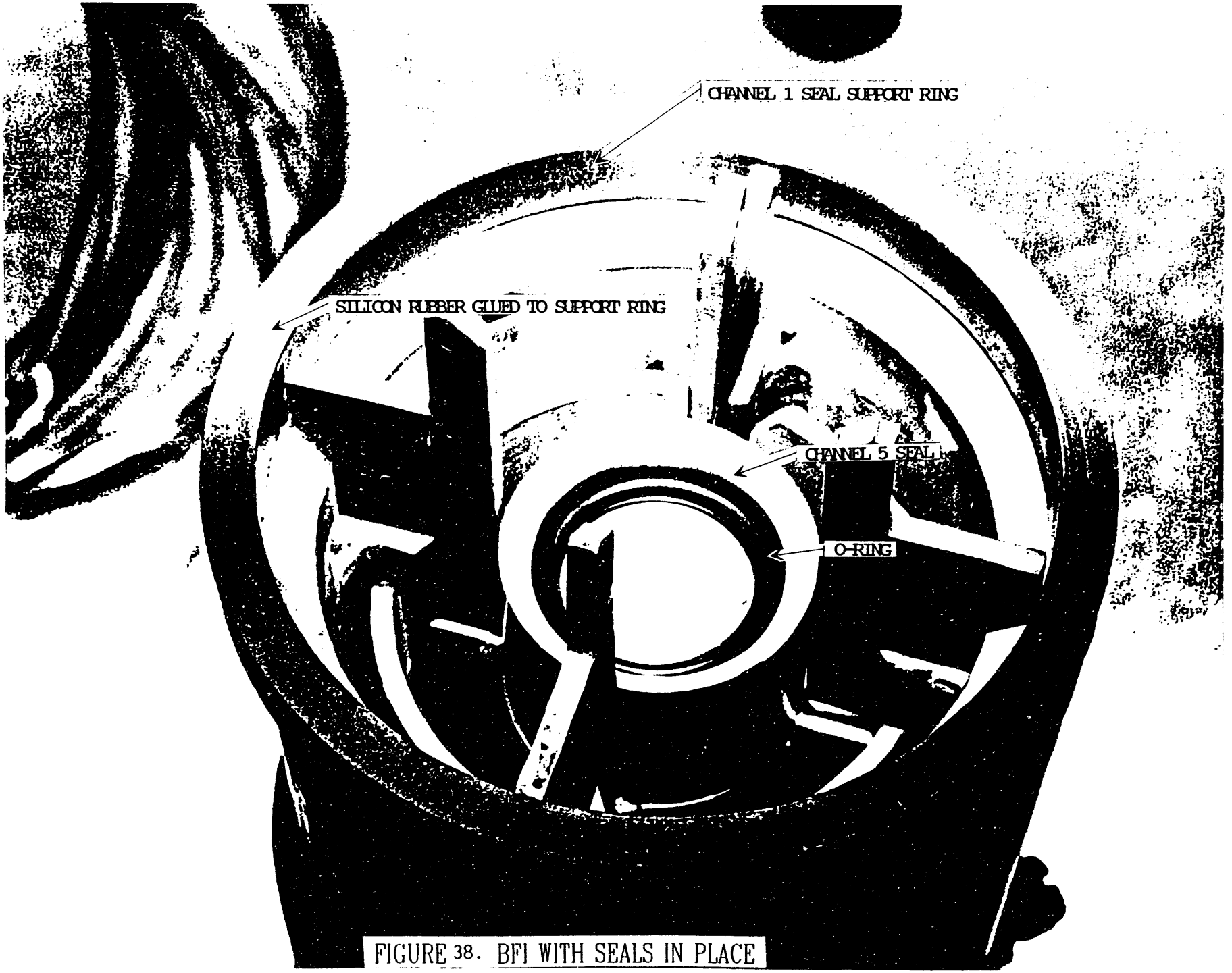


FIGURE 38. BFI WITH SEALS IN PLACE

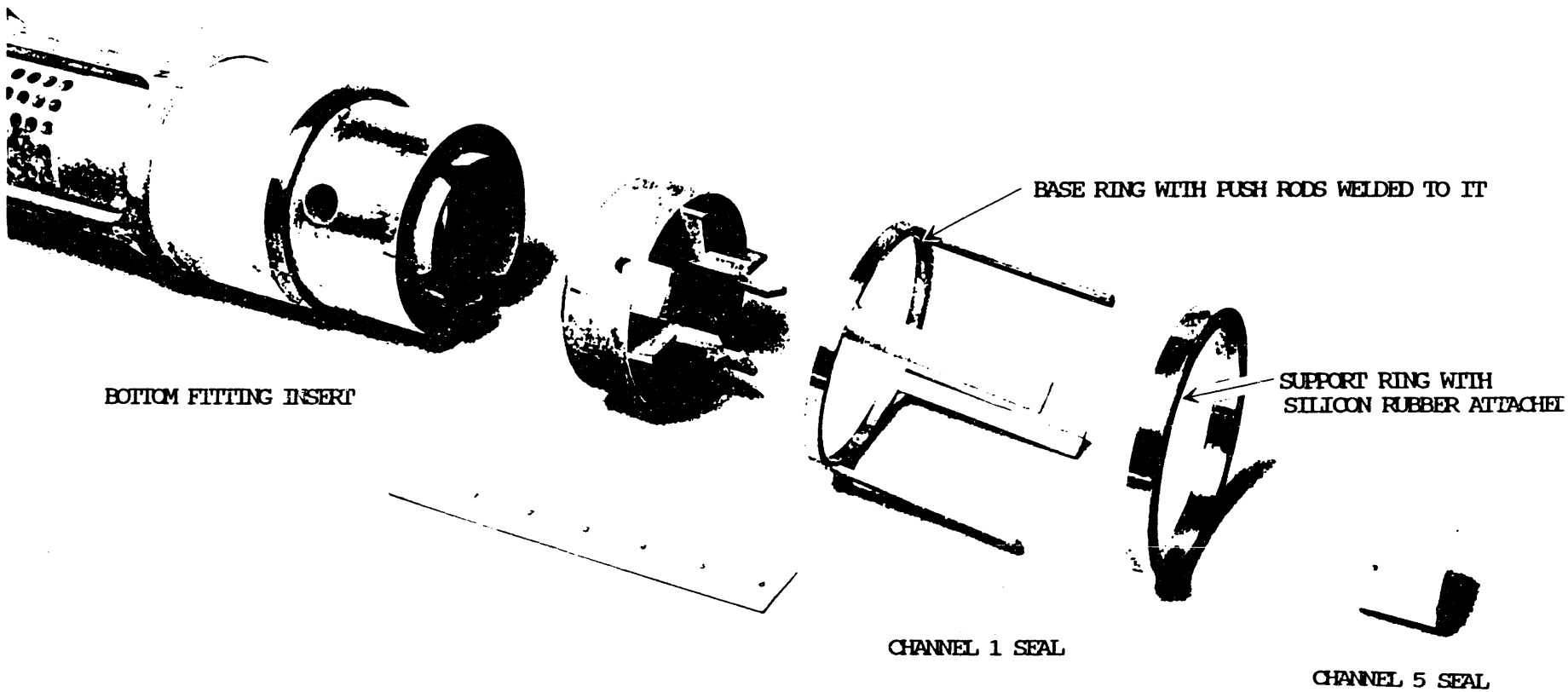


FIGURE 39. ASSEMBLY VIEW OF CHANNEL 1 & 5 LOWER SEAL

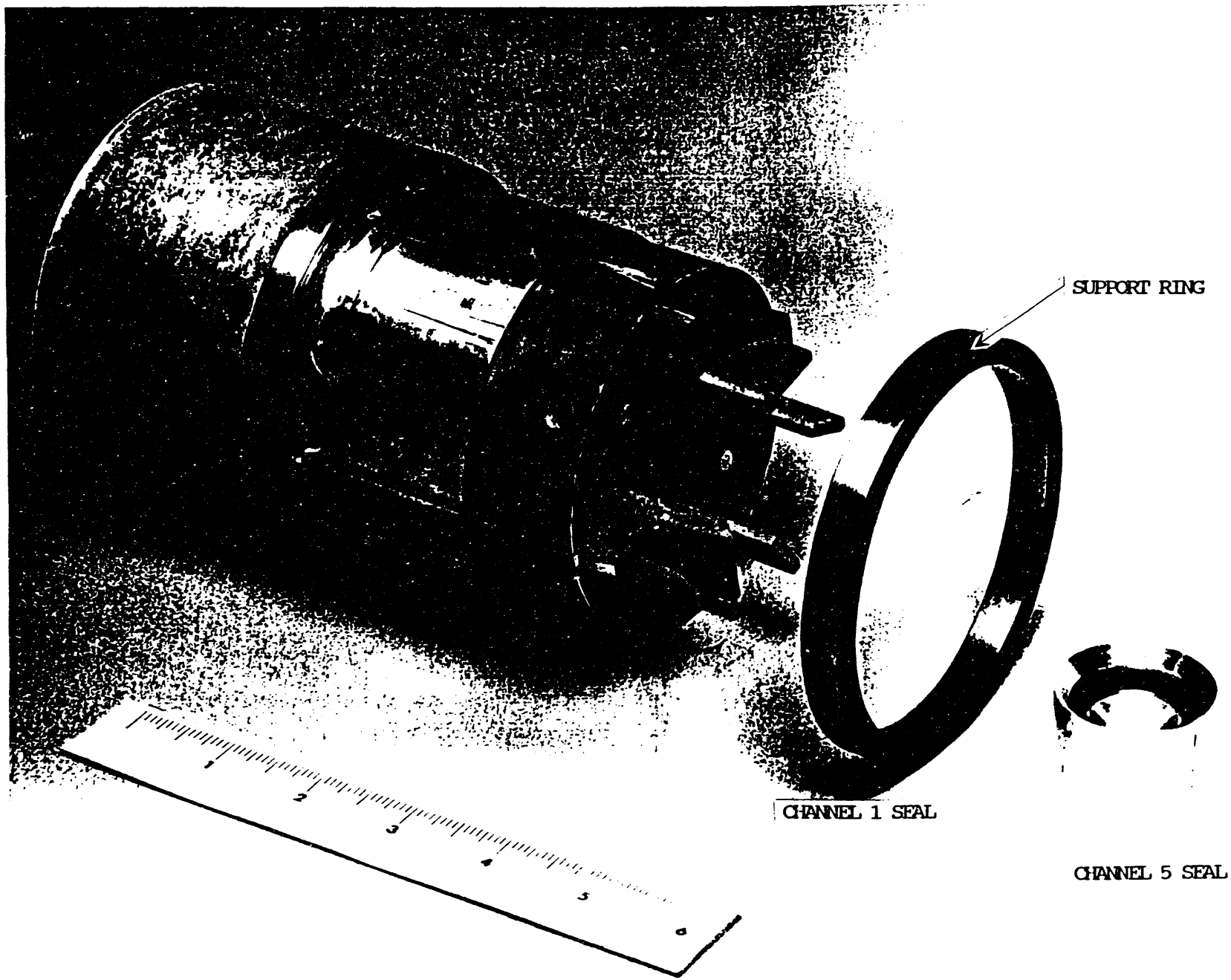


FIGURE 40. BOTTOM FITTING INSERT WITH BASE RING AND RODS INSTALLED

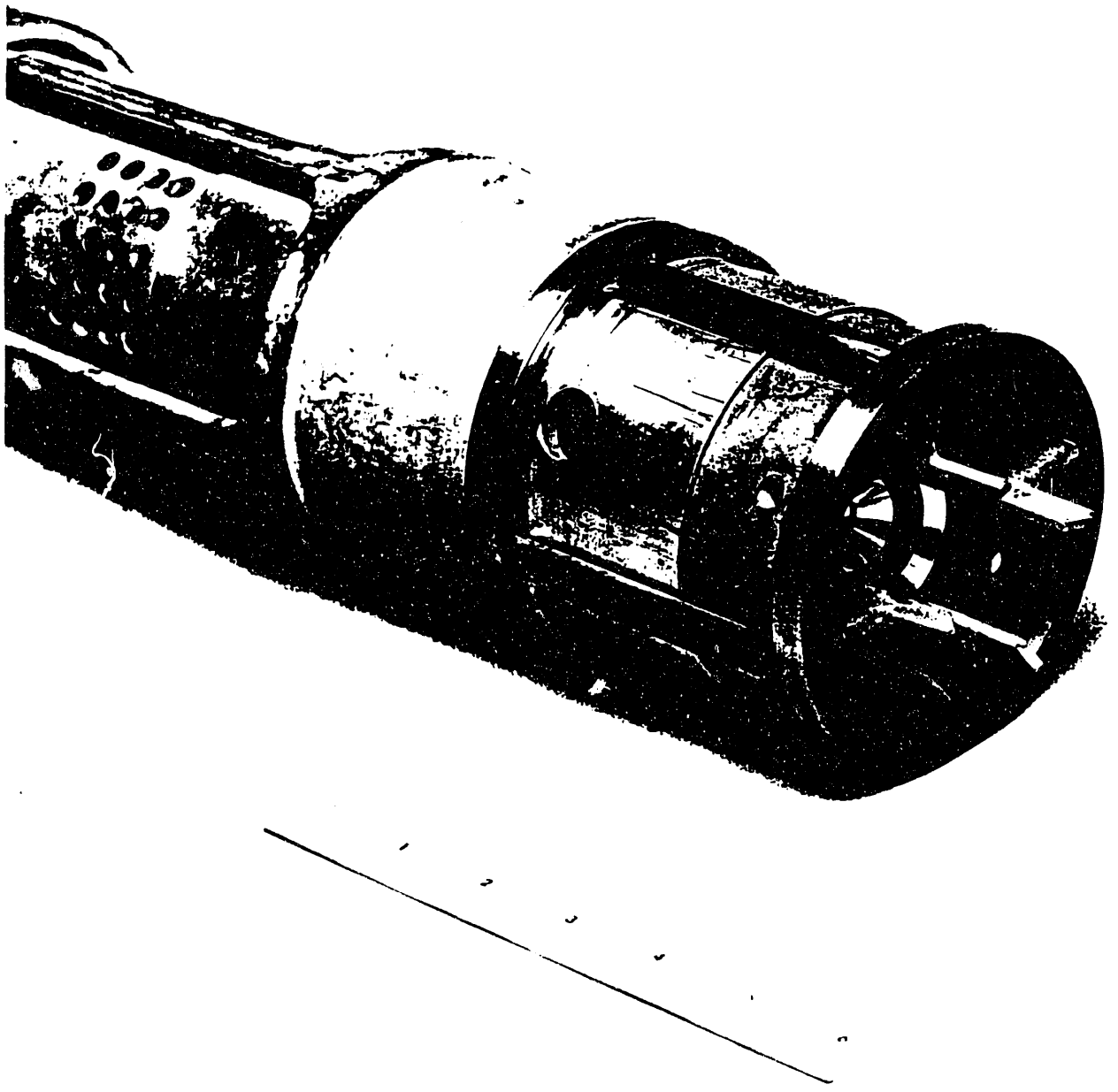


FIGURE 41. BOTTOM FITTING INSERT WITH SEALS INSTALLED

APPENDIX A

Logbook Records from Flow Excurison Follow-on Testing

May 5, 1992

Preparing the downflow loop for follow-on pressure drop tests.

5/5/92 - turned 90° elbow 180° from the boost pump and connected it to the downflow piping.

- removed the upflow piping to the holding tank and connected the downflow exit piping to it.

- removed the blank in the 4000 gpm return line.

- replaced the gaskets on each venturi and tightened them in place.

- reinstalled the turbine meter after having it certified.

- installed the following TC's in their respective positions on the upflow TC reference junction

VTAB	REF. JUNCT. CHANNEL	DAS CHANNEL
WSTC01	65	129
IPTC01	61	1
IPTC02	62	9
IPTC03	63	132
MSTC01	32	65
MSTC02	66	10
MSTC03	67	130
TFTC01	64	131

5/7/92 - Calibrating all of the AP's and DP's on the downflow loop putting each in a Calibration states.

5/13/92 - Debugging the downflow loop. found WSCV01 flow control valve not operating properly having instruments look at it.

SDS

Witnessed & Understood by me,	Date	Invented by	Date
		Recorded by A-1	

5/27/92

Fixing downflow loop backpressure valve WCCV02 it seem to have the same problem as WSCV01.

SDSpeed

5/28/92

Replaced bundle inner heater counter weight arem and applied the weights. removed the tension bar used to hold it in place while installing the dummy test section.

Filling the bundle with the high purity water supply.

SDSpeed

5/29/92

- Backfilling the loop DP's with high purity water.
- forward filling the loop AP's

14:05 - Checking zeros on AP's & DP's
: all AP's passed
: all DP's passed except C20P02, C30P01, C40P02 having instruments check these out

15:02 - 4000 gpm loop west pump on
- bypass valve by control room opened 4 notches (~70 PSI on g
- bypass valve by 12,000 gal tanks closed which increased the pressure and the inlet to the downflow from 70 TO 73

15:20 - filling the inlet reservoir using the 4000 gpm pumps @ about 100 gpm. bypass pressure = 68 psig 4000 loop is 1750 gpm

Flow valve @ 60% : flow = 60 gpm → pressure @ inlet = 76 psia
pressure @ outlet = 66 psig
Pressure valve position = 75%

SDSpeed

To Page

Witnessed & Understood by me,	Date	Invented by A-2	Date
		Recorded by	

5/29/92

- 4000 gpm loop bypass set-up in the 3 notch from closed position with the flowrate at 1250 gpm and pressure @ 117 psia on downflow loop back pressure valve = 35% (28 psi) flow valve = 26% (412 gpm) and inlet pressure = 82 psia

16:28 - Fuel assembly isolated

16:29 - 4000 gpm pump off.

June 1, 1992

Power in the plant was shut down the past weekend which automatically opens the backpressure valve to go to the holding tank also the inlet flow and quick dump which drained the loop.

08:00 - filling the south 12,000 gal tank in preperation to fill the downflow loop.

1 - computer went down with the power outage without a controlled shutdown which wiped out the data base reinstalling the vtable and all the constants for each vtab.

15:05 - Turned on 4000 gpm loop west pump.
- about 70 psi at the bypass on the 4000 loop.
- bypass valve in the 4th notch from closed
- filling the downflow loop including the inlet reservoir, upper plenum (inlet), bundle and outlet plenum to backpressure valve.

15:16 - System is now full, venting off all high point vents

To Page N

Witnessed & Understood by me,	Date	Invented by A-3	Date
		Recorded by	

June 1, 1992 (Cont)

15:18 – isolating the downflow loop

15:20 – 4000 gpm loop pump off

– high purity water supply on the downflow loop to keep it water solid.

SD Spruel

June 2, 1992

07:00 – instruments checking out DPs C2DP02, IPDP04, IPDP06 they didn't pass zero check

– High purity water supply line sprang a leak. fixing with a new line.

– performing continuity checks on all instruments being used on this test.

Instrument Group	Method
Thermocouple	Unplug the thermocouple at its connector.

	Instrument VTAB	Continuity Checked by:	Date	Patch Cable Checked by:	Date
→	IPTC01	JRD SDS	6/2/92	←	
→	IPTC02	JRD SDS	6/2/92	←	
→	IPTC03	JRD SDS	6/2/92	←	
→	WSTC01	JRD SDS	6/2/92	←	

Instrument Group	Method
RTD's	Disconnect either the white or green signal wire3 at the RTD connector block.

	Instrument VTAB	Continuity Checked by:	Date	Patch Cable Checked by:	Date
	BFRT01	JAY / SCOTT	6/2/92	JAY	6/2/92
IPRT01 ←	~~OPRT01~~	JAY / SCOTT	6/2/92	JAY	6/2/92
	TFRT01	N/A			
	WCRT01	N/A			

SD Spruel

To Page N

Witnessed & Understood by me,	Date	Invented by A-4	Date
		Recorded by	

From Page No.

June 2, 1992 (cont.)

Continuity check continued:

Instrument Group	Method
RTD REFERENC	Do not break connection but rather change the Keithley current source a few milliamps and monitor MSRF01.

Instrument VTAB	Continuity Checked by:	Date	Patch Cable Checked by:	Date
MSRF01	JRO SOS	6/2/92	←	

Instrument Group	Method
AP's & DP's	Unplug connector at transmitter.

Instrument VTAB	Continuity Checked by:	Date	Patch Cable Checked by:	Date
BFAP01	JRO SOS	6/2/92	←	
BFDP01	"	"	"	
BFDP02	"			
~~BFAP01~~	"			
BFAP02	"			
C2AP01	"			
C2AP02	"			
C2AP03	"			
C2AP04	"			
C2AP05	"			
C2AP06	"			
C2AP07	"			
C2AP08	"			
C2AP09	"			
C2AP10	"			
C2DP01	"			
C2DP02	"			
C2DP03	"			
C3AP01	"			
C3AP02	"			
C3AP03	"			
C3DP01	"			
C3DP02	"			
C4AP01	"			
C4AP02	"			
C4AP03	"			
C4DP01	"			
C4DP02	"			
FCAP01	NA			
FCDP01	NA			
FCDP02	NA			
FCDP03	NA			
FCDP04	NA			
HWAP01	NO JRO SOS	6/2/92	←	

continued next page

To Page No

Witnessed & Understood by me,	Date	Invented by A-5	Date
		Recorded by	

BOOK NO.

From Page No.

June 2, 1992 (cont)

Continuity checks continued:

COMPLETE

IPDPC4	x JRO SOS	6/2/92	←		
IPDPC5	x JRO SOS		←		
IPDPC6	x JRO SOS		←		
HXAP01	NA				
IPAP01	x JRO SOS	6/2/92	←		
IPDP01	NA				
IPDP02	NA				
IPDP03	NA				
~~OPAP01~~ RTAP01	x JAY SCOTT				
TFAP01	x JRO SOS				
TFDP01	x JRO SOS				
TFDP02	x JRO SOS				
WSAP01	NA	6/2/92	←		

Instrument Group	Method
Turbine Meter	Plug frequency source into connector for pickup coil.

Instrument VTAB	Continuity Checked by:	Date	Patch Cable Checked by:	Date
WSTM01	JAY SCOTT	6/1/92	←	

June 3, 1992

07:00 – filling 12,000 gal. tanks (NORTH and SOUTH)

07:15 – Turned on the west 4000 GPM pump to heat the water up to ~ 80 °F.

11:45 – Pump off (4000), water Temperature = 81 °F

11:45 – instruments now FINISHING checking out C2DP02, IPDP04, IPDP06

15:15 – Starting 4000 gpm (west) pump.

15:20 – Venting High point vent on piping leading into inlet rese[rvoir]
– loop supply (house) isolated.

SDSpand

To Page

Witnessed & Understood by me,	Date	Invented by A-6	Date
		Recorded by	

June 3, 1992 (cont)

15:20 - 4000 gpm loop now servicing the downflow loop with a dead head pressure of ~ 70 PSIG.
- 4000 loop supply tank @ 12.9 FT.
- 4000 loop supply water @ 79 °F

15:40 - Flowing through test section for a consistancy check @ ~ 200 gpm.

15:49:30 - Starting Run # 827-31 supply temp. = 81 °F

16:03 - flow = 185 gpm @ 80 °F

16:08 - flow = 257 gpm @ 80 °F

16:15 - flow = 330 gpm @ 80 °F

16:18 - flow = 344 gpm @ 81.5 °F

16:23 - flow = 368 gpm @ 81 °F

16:25 - flow = 289 gpm @ 82 °F

16:29 - flow = 212 gpm @ 82 °F

16:33 - Stopped flowing through test section temporarily to transfer water from the north 12,000 gal. tank to the south 12,000 gal tank.

16:38 - flow = 315 gpm @ 78 °F

16:46 - flow = 345 gpm @ 79 °F

(continued next page)

SD Frost

Witnessed & Understood by me,	Date	Invented by A-7	Date
		Recorded by	

June 3, 1992 (cont.)

16:50 - stopped flowing temporarily to transfer water to the south tank.

16:57 - flow = 368 gpm @ 75.5 °F

17:01 - Stopped flow through fuel assembly

17:02 - stopped 4000 gpm pump

- taking zero
- TFDC02 out of spec slightly by .00077 volts
- running post test checks for run 827-31.
- house supply water on downflow loop.

SDSproul

June 4, 1992

Analyzing data to determine if the pressure drop across the fuel assembly matches that from before

15:10 - draining the inlet reservior and fuel assembly in preparation for the inspection of the fuel assem

- opened reservior drain and vent
- opened outlet plenum drain and vent.
- set-up bore-scope for pressure housing inspection.

SDSproul

To Page No

Witnessed & Understood by me,	Date	Invented by A-8	Date
		Recorded by	

June 5, 1992

07:00 - draining 4000 gpm Loop so Jose Ross can remove some pressure transducers.

- opened the bottom of the outlet plenum.
- checked the air quality inside for safety reasons.
- loosened the conax fittings on the TC transition bowl on top of the inlet plenum.
- lifted the top extension spool up ~ 8" feeding the TC wires through while doing so.
- removed the bottom fitting insert from the bottom of the bundle
- erection personnel fabricating supports for the heater tubes (inner and outer) and a clamp to hold the two electrical connectors together.

- performed a visual inspection in the top of the pressure housing; nothing seems to be out of place or loose. (see video).

SOSpeed

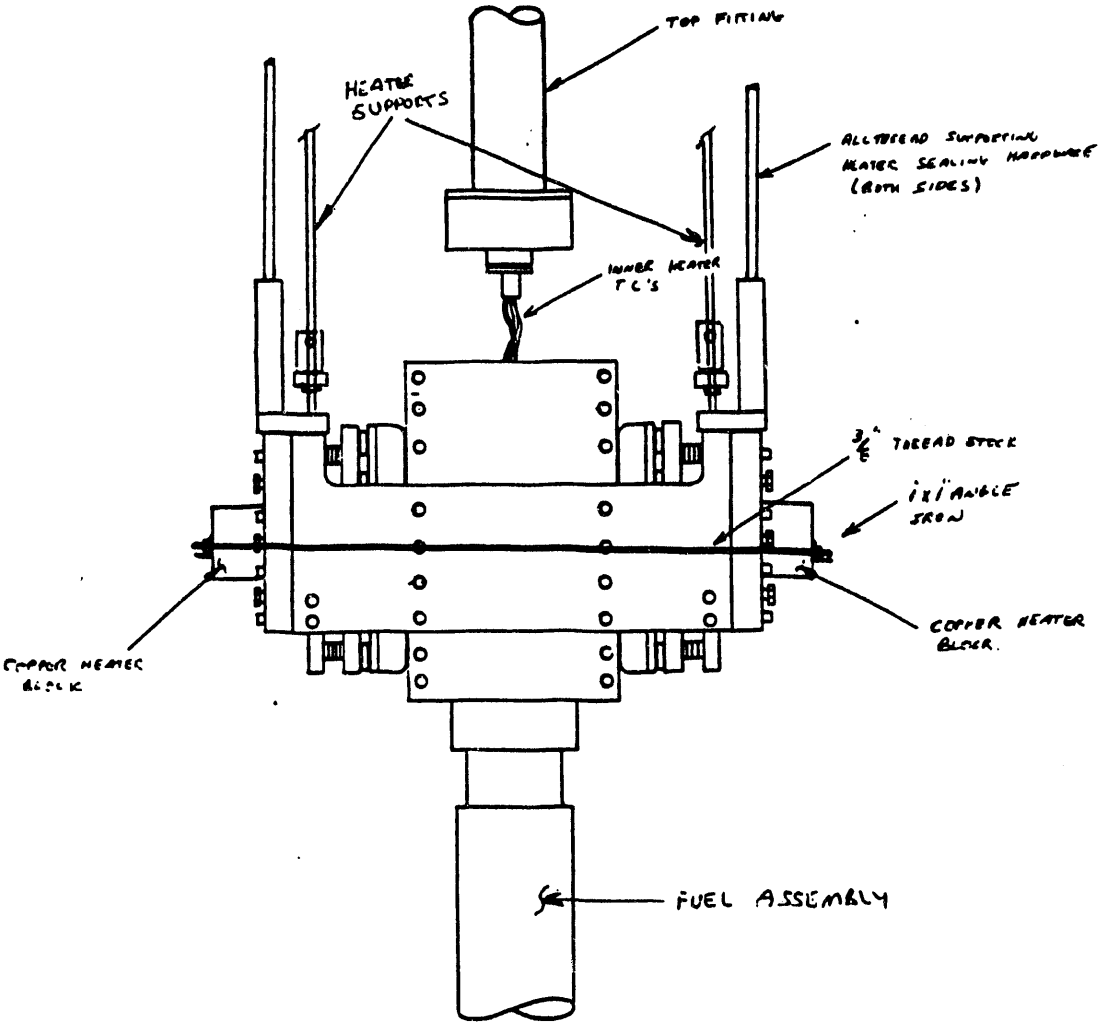
June 6, 1992

07:00 - preparing pressure housing for disassembly.
- supporting heaters (inner and outer) from above
- removed counter weight arm and weights
- clamped both heater (copper) blocks together to keep them from separating. (see ~~sketch~~ sketch next page)
- supported the heater blocks brace from the beams above.
- removed all of the conax packing glands from the TC bowl on the top. insured that all of the thermocouples would slide into the fuel assembly top fitting so the top fitting is raised to expose the top of the pressure housing.

JO Speed

Witnessed & Understood by me,	Date	Invented by A-9	Date
		Recorded by	

June 8, 1992 (cont.)



Measured the gap between the to outer target extension to determine possible leak rate through them.
• used feeler gages to measure the width of the gap.

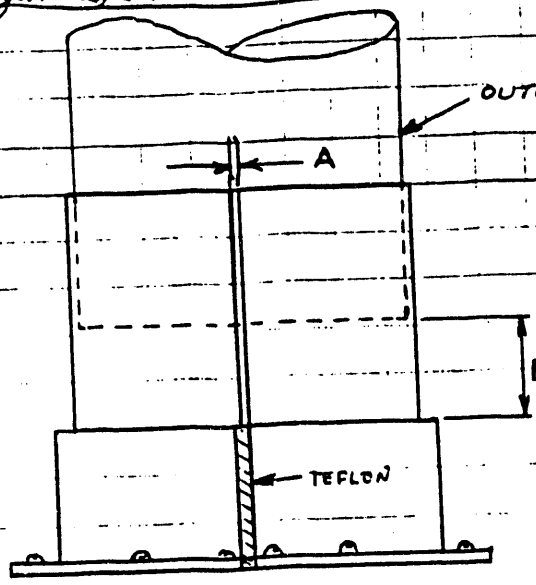
see drawing next ~~post~~ page.

S.D. Proud

To Page N

Witnessed & Understood by me,	Date	Invented by A-10	Date
		Recorded by	

June 8, 1992 (Cont.)



OUTER TARGET EXTENSION

	NORTH SIDE	SOUTH
DIMENSION A =	.078"	.056
	~~1.8125~~ 1.8125"	1.81
DIMENSION B =	~~4.0312~~ 4.0312	~~4.031~~

DIMENSION "B" ABOVE IS ACQUIRED BY SUBTRACTING DIMESION "B" ((FIGURE 1) OUTER HEATER (FUEL) EXTENSION FROM TOP FITING FLANGE FROM OUTER TARGET EXTENSION TO PRESSURE HOUSING SURFACE WERE TOP FITING FLANGE IS CONNECTED. THE OUTER FUEL EXTENSION SEALS THE GAI, OVER THE DISTANCE IT IS INSERTED, WITH A TEFLON BAND.

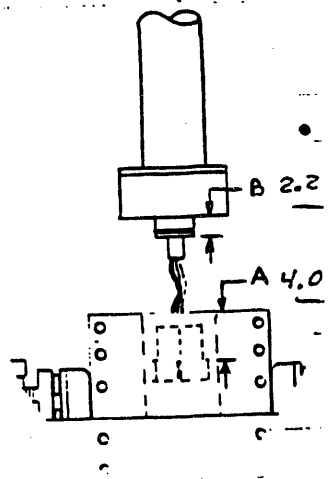
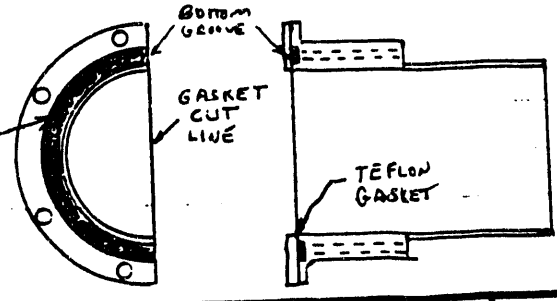


FIGURE 1

- FINISHED REMOVING THE PRESSURE HOUSING COMPONENTS AND REMOVED THE TARGET EXTENSION halves.

Prepared the two halves of the outer target extension for reassembly using the new gasket to seal off channel #1 completely from flow.



FILLED THE BOTTOM GROOVE WITH RTV SEALANT. LET DRY AND THEN SHAVE IT SMOOTH WITH A RAZER BLADE SO IT MATCHED THE BOTTOM SURF

(cont. next page) SDM To Page N

Witnessed & Understood by me,	Date	Invented by A-11	Date
		Recorded by	

From Page No.__

June 9, 1992

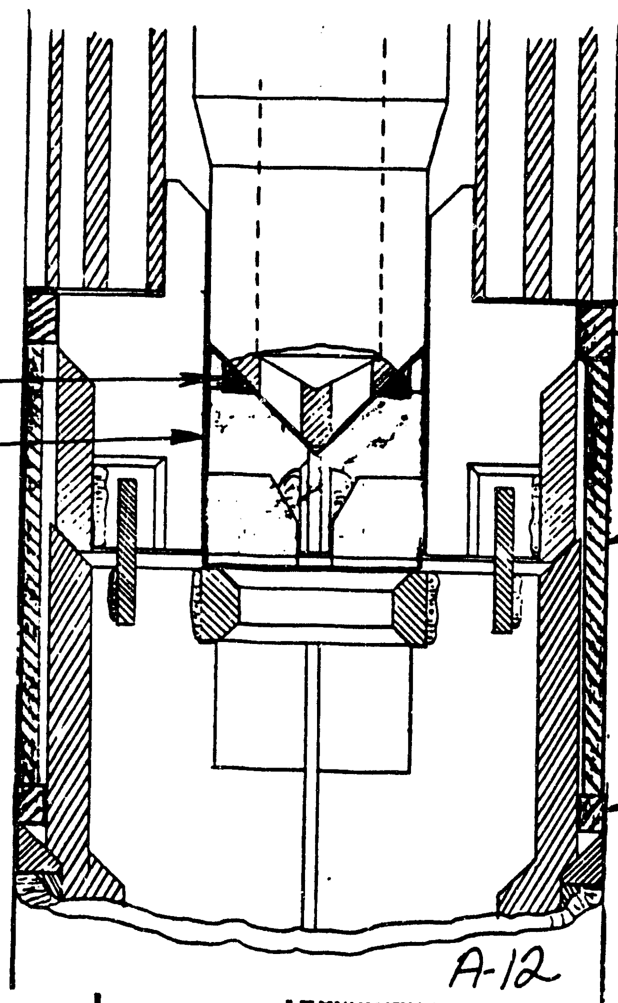
A new teflon gasket was then made to cover the flanged end of the target extension including the portion that was sealed with RTV.

reassembling the pressure housing with the new gasket in place under the outer target extension.

replaced the channel 5 orifice screw with a solid screw. see video.

June 10, 1992.

Machine shop is machining out parts to plug the inner target channel 5 and the outer target channel 1.



Witnessed & Understood by me

Date

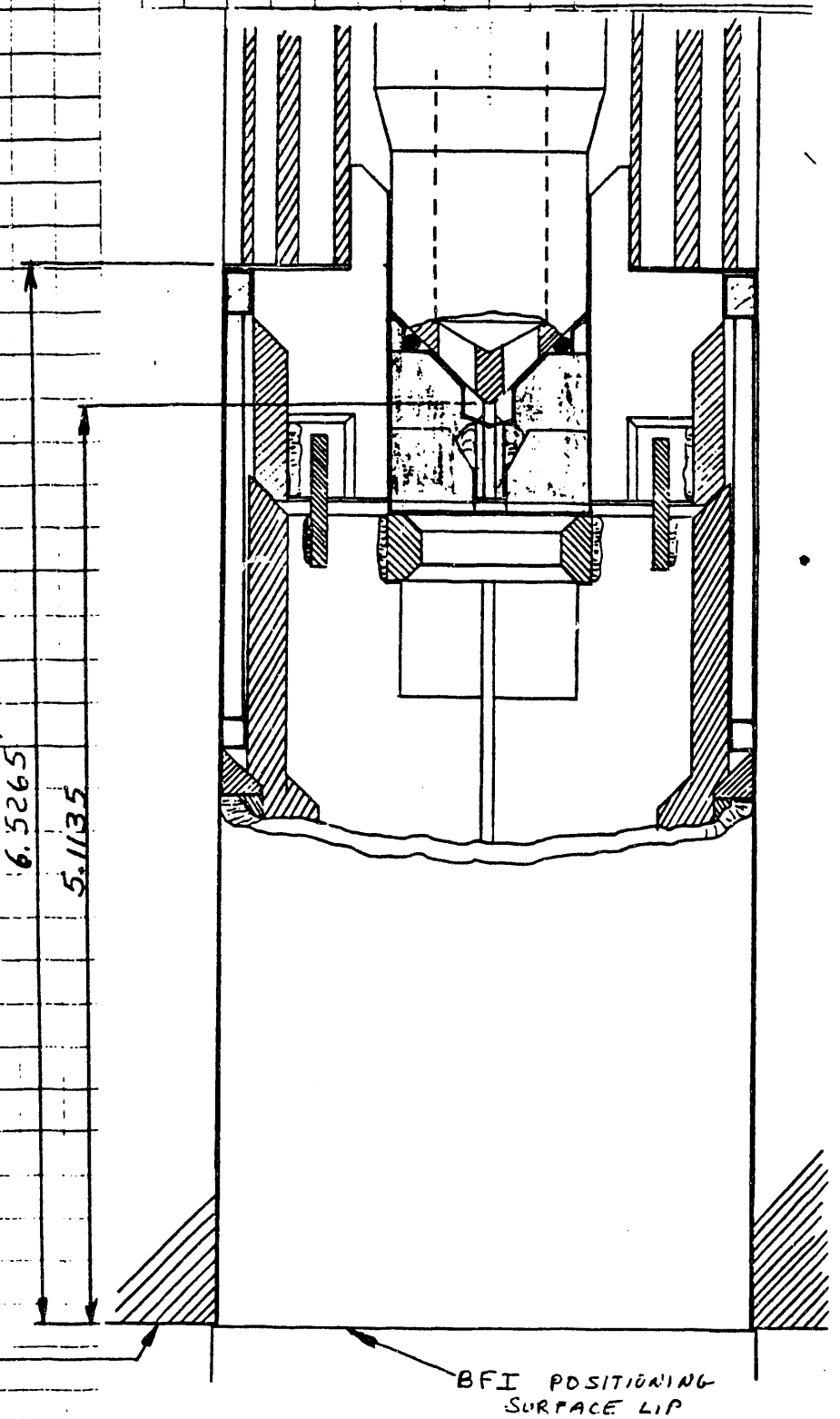
Recorded by

To Page

From Page No. ___

June 10, 1992

The seals used to isolate the inner target and the outer target are designed to seal with the Bottom Fitting Insert in it's proper position up against the upper inside face of the outlet plenum.



To Page No. ___

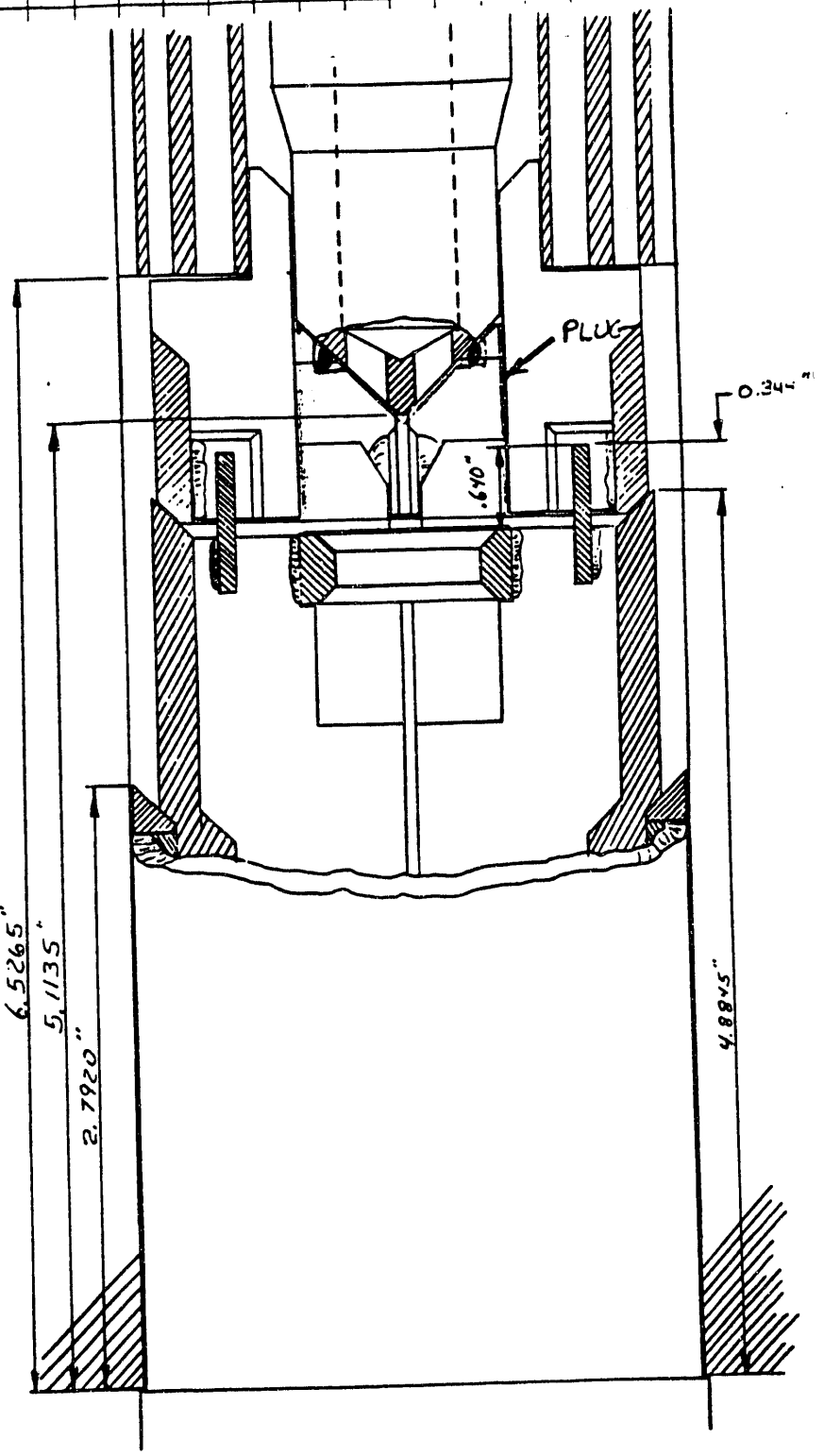
Witnessed & Understood by me,	Date	Invented by A-13	Date
		Recorded by	

June 18 - 19, 1992

Some of the dimensions used to place the seals with proper compression.

The channel 5 plug was machined longer than needed so that when put in place it would show the same oversize dimension at the upper inside face of the outlet plenum.

This was done without the O-ring in place to insure a metal to metal contact. The dimension of gap between the upper inside face of the outlet plenum, (U.I.F.O.P), and the BFI positioning surface lip is then machined off of the bottom of the plug which would allow metal to metal contact between the plug and the inner target with the BFI in its proper position. With the O-ring added after this will allow it to be compressed ~ 1/32 of an inch



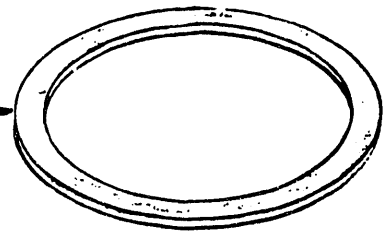
S D Sproul

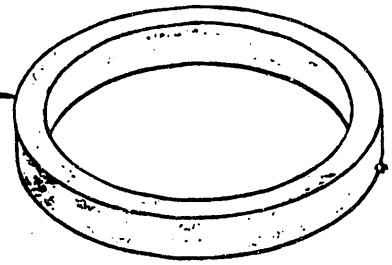
Witnessed & Understood by me,	Date	Invented by A-14	Date
		Recorded by	

June 18, 19, 1992 (CONT.)

Channel #1 seal configuration: (Reference drawing Page 13)

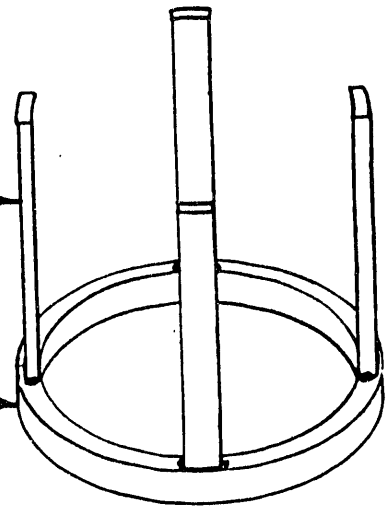
Channel #1 seal consists of a 1/32" rubber seal material glued to a support ring. This is then held in place by the extension bars which are welded to the seal base ring. While sizing this seal assembly the Channel 5 plug is removed to keep from interfering with the dimensioning.





The seal assembly placed over the B.F.I. and inserted into the outlet plenum.

The gap is then measured between the upper inside face of the outlet plenum and the B.F.I. positioning surface lip. This measurement minus 1/64" is then removed from the upper ends of the extension bars. After completing this the gap measurement should be 1/64" which will be compressed with the B.F.I. in place with the holding bolts.



Note: A check was preformed to insure that the rubber seal was mak full contact with the channel sides by appling a thin film of vacuum grease on the rubber surface and inserting the assembl into the channels. The results showed positive contact all around.

To Page

Witnessed & Understood by me,	Date	Invented by A-15	Date
		Recorded by	

June 18 - 19, 1992 (cont.)

- Both bottom seals seem to fit well.
- assembled the seals and the C.F.T. into the outlet plenums.
- reconnected the pressure taps inside the plenum.
- Closed up the plenum and started filling the loop with house supply water.
- reassembled the upper TC can on the top of the upper (inlet) plenums.
- replaced the conax fittings with the same parts that were removed.

S.D. Sprouse

June 22, 1992

08:00 - Replaced C20P02 0-10 PSID transmitter with a spare due to its sluggish operation.

OLD B/W SN = 880519

NEW B/W SN = 880522

10:15 - connected the control air lines back up to the 4000 GPM loop valve.
- 4000 GPM (west) pump on

10:21 - starting to fill the inlet reservoir from the 4000 G loop.
- reservoir almost full noticed that the pressure housing the top of the bundle is leaking more than normal

10:42 - 4000 GPM PUMP OFF

- torqued the pressure housing seal assemblies with the hou supply water on the loop until the leakage was to minimum.

S.D. Sprouse

To Pag

Witnessed & Understood by me,	Date	Invented by A-16	Date
		Recorded by	

June 22, 1992 (cont.)

11:23 – 4000 gpm west pump on reservoir is now full. Venting off the inlet plenums.

11:50 – Pump off.

– backfilling all of the DP's
– forward filling all of the AP's

15:00 – 4000 gpm pump on to heat water to 75 or 80

16:40 – Water temp. is at 79°F decided to run test in the morning.

– West 4000 gpm pump off.

SD Sprouse

June 23, 1992

Run # 82252

07:30 – Taking zeros on DP's and AP's.

09:47 – 4000 gpm loop circ. pump on (west) to heat loop water

– removed the electronic cards out of the turbine meter case to trig for less interference due to less vibration.

– 12,000 gal tank level @ 12.1 feet feeding from both tanks

10:10 – Starting flow thru the fuel assembly @ 200 gpm

– running Cavus. check

10:15 – Stopped flow thru fuel assembly

10:22 – Started flow again for test runs

MDP

To Page No

Witnessed & Understood by me,	Date	Invented by A-17	Date
		Recorded by	

From Page No.

June 23, 1992 (cont.)

Run # 827-32

10:27 - Setting up first run @ 187 gpm 28.5 psi @ RTA

10:31 - 2nd run @ 256 gpm

10:37 + 3rd run @ 333 gpm
- supply tank levels north = 8 ft. south = 9 ft.

10:40 - 4th run @ 344 gpm

10:45 - 5th run @ 286 gpm
- loop inlet temperature = 77°F @ IPRTG1

10:49 - 6th run @ 218 gpm

10:55 - 7th run @ 316 gpm

10:57 - 8th run @ 345 gpm

11:01 - 9th run @ 368 gpm

- 10th run @ 371 gpm the west pump tripped off

11:15 - turned 4000 gpm west pump back on ... tripped again not sure why this is happening the t
levels are @ 4.2 ft on the north tank and 5.7
on the south tank. This loop has been run
with only one tank and a level of less than 4,
without a pump trip. not sure if it's a high
trip or a high temp. trip.

letting the pump sit over lunch so it can cool
(if that's the problem) also filling the south tank
have enough level for the last run.

SDF

To Page

Witnessed & Understood by me,	Date	Invented by A-18	Date
		Recorded by	

From Page No.__

June 23, 1992 (Cont.)

12:45 - South tank level is now at 9.5 feet.
- Turned the west 4000 gpm pump on to heat up the waters to 75-80 °F.

13:51 - water temperature @ the tank is now 77 °F
- tank level is @ 10.2 feet

13:55 - Starting flow thru the fuel assembly

13:59 - taking data for the last run @ 371 gpm
Run # 827_33

14:01 - Stopped data save for run # 827_33

14:03 - West 4000 gpm pump off

14:10 - taking post test zeros on the DP's and AP's

- running scanit program

SDS

To Page No

Witnessed & Understood by me,	Date	Invented by A-19	Date
		Recorded by	

APPENDIX B

Instrument Records Flow Excurison Follow-on Testing

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880121

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
Standardize		
Certified & Stand.		
6 Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/708-10
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	190882
PROPERTY NO.	4427-01-020
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance	N
Operates within previously defined limits	N
Deviates from Mfg or previously defined limits	Y
Inoperative (Describe below)	Y

AS LEFT	
Limited (Describe below)	✓
Meets Manufacturer's Tolerance ADS	✓
Other (Describe Below)	

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
2 SHCROFT	0-100 PSI	PRESS. STD.	0700123
1 FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44160-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S E
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, BFAP01 ADS ~~14,999~~ A 14,996 R
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.
CALIBRATED AS A UNIT WITH 0880123 AMPL., TRANSDUCER

AS RECEIVED ____ AS LEFT ✓

B&W S.N. 0880121

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880123
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 75
Facility I. D. Name BFAP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	60.011	0.01%	
10.000	10.000	83.978	83.982	0.00%	
20.000	20.000	107.971	107.973	0.00%	
30.000	30.000	131.965	131.963	0.00%	
40.000	40.000	155.958	155.985	0.01%	
50.000	50.000	179.952	179.997	0.02%	
60.000	60.000	203.946	203.984	0.02%	
70.000	70.000	227.939	228.052	0.05%	
80.000	80.000	251.933	252.044	0.05%	
90.000	90.000	275.926	276.054	0.05%	
100.000	100.000	299.920	300.067	0.06%	
90.000	90.000	275.926	275.984	0.02%	
80.000	80.000	251.933	251.919	-0.01%	
70.000	70.000	227.939	227.881	-0.02%	
60.000	60.000	203.946	203.796	-0.06%	
50.000	50.000	179.952	179.820	-0.06%	
40.000	40.000	155.958	155.839	-0.05%	
30.000	30.000	131.965	131.828	-0.06%	
20.000	20.000	107.971	107.877	-0.04%	
10.000	10.000	83.978	83.945	-0.01%	
0.000	0.000	59.984	59.973	0.00%	

$\bar{x} = 59.992$

CURVEFIT OUTPUT FOR VTAB bfap01

DATE: 20-MAY-92
TIME: 16:55:19

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1899954E-04	0.0000000E+00	0.7316241E-02	-0.7316241E-02	0.0000000E+00
2	0.2399000E-01	10.00000	10.01128	-0.1128313E-01	-0.1128313
3	0.4798100E-01	20.00000	20.01926	-0.1926320E-01	-0.9631601E-01
4	0.7197100E-01	30.00000	30.02249	-0.2249103E-01	-0.7497010E-01
5	0.9599300E-01	40.00000	40.03472	-0.3471838E-01	-0.8679596E-01
6	0.1200050	50.00000	50.03843	-0.3843394E-01	-0.7686789E-01
7	0.1439920	60.00000	60.02740	-0.2739800E-01	-0.4566334E-01
8	0.1680600	70.00000	70.04574	-0.4573720E-01	-0.6533886E-01
9	0.1920520	80.00000	80.02810	-0.2809871E-01	-0.3512338E-01
10	0.2160620	90.00000	90.01361	-0.1360888E-01	-0.1512098E-01
11	0.2400750	100.0000	99.99602	0.3976312E-02	0.3976312E-02
12	0.2159920	90.00000	89.98450	0.1549708E-01	0.1721898E-01
13	0.1919270	80.00000	79.97610	0.2389886E-01	0.2987358E-01
14	0.1678890	70.00000	69.97457	0.2542640E-01	0.3632343E-01
15	0.1438040	60.00000	59.94913	0.5087444E-01	0.8479073E-01
16	0.1198280	50.00000	49.96471	0.3529070E-01	0.7058141E-01
17	0.9584700E-01	40.00000	39.97388	0.2612042E-01	0.6530106E-01
18	0.7183600E-01	30.00000	29.96621	0.3378845E-01	0.1126282
19	0.4788500E-01	20.00000	19.97922	0.2077510E-01	0.1038755
20	0.2395300E-01	10.00000	9.995845	0.4154973E-02	0.4154972E-01
21	-0.1900046E-04	0.0000000E+00	-0.8545972E-02	0.8545972E-02	0.0000000E+00

EGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.61467204E-03 0.41742666E+03 -0.37661537E+01

ESS = 0.1521E-01 SD = 0.2907E-01 R2 = 0.999999E+00
2*SD = 0.5814E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880542

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	188774
PROPERTY NO.	4427-01-104
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	✓
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED Manufacturer	Model	Item	B&W Serial No.
~~ASHCROFT~~	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED			
COOPER	~~2~~P160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME ADS
Date (M-D-Y)	05/18/92
Reviewed By	

Service Notes 0-100 PSIG, BEAP02 ~~15.000~~ 14.994

SEE ATTACHED DATA SHEET.

LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880542
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 72
Facility I. D. Name BFAP02

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.994 OHMS
'ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.994 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.994 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.976	60.005	0.01%	
10.000	10.000	83.966	83.953	-0.01%	
20.000	20.000	107.957	107.948	0.00%	
30.000	30.000	131.947	131.921	-0.01%	
40.000	40.000	155.938	155.956	0.01%	
50.000	50.000	179.928	179.946	0.01%	
60.000	60.000	203.918	203.934	0.01%	
70.000	70.000	227.909	228.000	0.04%	
80.000	80.000	251.899	251.977	0.03%	
90.000	90.000	275.890	276.025	0.06%	
100.000	100.000	299.880	300.042	0.07%	
90.000	90.000	275.890	275.955	0.03%	
80.000	80.000	251.899	251.911	0.00%	
70.000	70.000	227.909	227.891	-0.01%	
60.000	60.000	203.918	203.792	-0.05%	
50.000	50.000	179.928	179.777	-0.06%	
40.000	40.000	155.938	155.802	-0.06%	
30.000	30.000	131.947	131.792	-0.06%	
20.000	20.000	107.957	107.857	-0.04%	
10.000	10.000	83.966	83.951	-0.01%	
0.000	0.000	59.976	60.012	0.02%	

$\bar{x} = 60.009$

CURVEFIT OUTPUT FOR VTAB bfap02 ✓

DATE: 20-MAY-92
TIME: 16:56:14

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.3998960E-05	0.0000000E+00	0.2042064E-02	-0.2042064E-02	0.0000000E+00
2	0.2394400E-01	10.00000	10.00228	-0.2275591E-02	-0.2275591E-01
3	0.4793900E-01	20.00000	20.01672	-0.1671783E-01	-0.8358915E-01
4	0.7191200E-01	30.00000	30.01656	-0.1656279E-01	-0.5520931E-01
5	0.9594700E-01	40.00000	40.03684	-0.3683579E-01	-0.9208949E-01
6	0.1199370	50.00000	50.03292	-0.3292241E-01	-0.6584481E-01
7	0.1439250	60.00000	60.02276	-0.2275569E-01	-0.3792615E-01
8	0.1679910	70.00000	70.03963	-0.3962596E-01	-0.5660851E-01
9	0.1919680	80.00000	80.01403	-0.1402738E-01	-0.1753422E-01
10	0.2160160	90.00000	90.01253	-0.1252585E-01	-0.1391761E-01
11	0.2400330	100.0000	99.99270	0.7300997E-02	0.7300997E-02
12	0.2159460	90.00000	89.98343	0.1657033E-01	0.1841147E-01
13	0.1919020	80.00000	79.98658	0.1342111E-01	0.1677638E-01
14	0.1678820	70.00000	69.99427	0.5730267E-02	0.8186095E-02
15	0.1437830	60.00000	59.96364	0.3636445E-01	0.6060741E-01
16	0.1197680	50.00000	49.96252	0.3747709E-01	0.7495417E-01
17	0.9579300E-01	40.00000	39.97265	0.2735001E-01	0.6837502E-01
18	0.7178300E-01	30.00000	29.96277	0.3723242E-01	0.1241081
19	0.4784800E-01	20.00000	19.97875	0.2125127E-01	0.1062563
20	0.2394200E-01	10.00000	10.00144	-0.1440654E-02	-0.1440654E-01
21	0.3001040E-05	0.0000000E+00	0.4965922E-02	-0.4965922E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.37124058E-02 0.41769390E+03 -0.47093516E+01

ESS = 0.1133E-01 SD = 0.2508E-01 R2 = 0.999999E+00
2*SD = 0.5017E-01

RD 45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880540

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 188767
PROPERTY NO. 4427-01-102
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD.	070012 3
FLUKE	8840 A	DMM	086040 4

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	089016 6
COMPAQ	PORTABLE	COMPUTER	289019 4

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-101-002
Work Order No.	0296
Name	S. ELKINS/D. SYME ADS
Date (M-D-Y)	05 15 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP01 15.000 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880540
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S.ELKINS/D.SYME

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 70
Facility I. D. Name C2AP01

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15 CALIBRATION ACCURACY 0.17%

APPLIED TRANSMITTER PSI	PRESSURE PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.000	59.942	-0.02%	
10.000	10.000	84.000	83.950	-0.02%	
20.000	20.000	108.000	107.894	-0.04%	
30.000	30.000	132.000	131.878	-0.05%	
40.000	40.000	156.000	155.947	-0.02%	
50.000	50.000	180.000	179.9[illegible]	-0.03%	
60.000	60.000	204.000	203.923	-0.03%	
70.000	70.000	228.000	227.974	-0.01%	
80.000	80.000	252.000	251.971	-0.01%	
90.000	90.000	276.000	276.001	0.00%	
100.000	100.000	300.000	300.034	0.01%	
90.000	90.000	276.000	275.905	-0.04%	
80.000	80.000	252.000	251.812	-0.08%	
70.000	70.000	228.000	227.810	-0.08%	
60.000	60.000	204.000	203.715	-0.12%	
50.000	50.000	180.000	179.741	-0.11%	
40.000	40.000	156.000	155.766	-0.10%	
30.000	30.000	132.000	131.770	-0.10%	
20.000	20.000	108.000	107.810	-0.08%	
10.000	10.000	84.000	83.903	-0.04%	
0.000	0.000	60.000	59.937	-0.03%	

59.940

CURVEFIT OUTPUT FOR VTAB c2ap01

DATE: 20-MAY-92
TIME: 16:38:36

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.2000867E-05	0.0000000E+00	-0.3401342E-02	0.3401342E-02	0.0000000E+00
2	0.2401000E-01	10.00000	10.02011	-0.2011020E-01	-0.2011020
3	0.4795400E-01	20.00000	20.01179	-0.1179454E-01	-0.5897270E-01
4	0.7193800E-01	30.00000	30.01506	-0.1505792E-01	-0.5019306E-01
5	0.9600700E-01	40.00000	40.04863	-0.4862894E-01	-0.1215723
6	0.1199940	50.00000	50.04289	-0.4288985E-01	-0.8577971E-01
7	0.1439830	60.00000	60.03287	-0.3286517E-01	-0.5477529E-01
8	0.1680340	70.00000	70.04352	-0.4352078E-01	-0.6217255E-01
9	0.1920310	80.00000	80.02657	-0.2657189E-01	-0.3321486E-01
10	0.2160610	90.00000	90.01822	-0.1821829E-01	-0.2024255E-01
11	0.2400940	100.0000	100.0060	-0.5974508E-02	-0.5974508E-02
12	0.2159650	90.00000	89.97831	0.2168818E-01	0.2409797E-01
13	0.1918720	80.00000	79.96044	0.3955724E-01	0.4944655E-01
14	0.1678700	70.00000	69.97528	0.2472288E-01	0.3531840E-01
15	0.1437750	60.00000	59.94627	0.5373231E-01	0.8955386E-01
16	0.1198010	50.00000	49.96250	0.3750379E-01	0.7500759E-01
17	0.9582600E-01	40.00000	39.97320	0.2680475E-01	0.6701188E-01
18	0.7183000E-01	30.00000	29.97002	0.2997533E-01	0.9991776E-01
19	0.4787000E-01	20.00000	19.97675	0.2324923E-01	0.1162462
	0.2396300E-01	10.00000	10.00049	-0.4923732E-03	-0.4923732E-02
21	-0.2999133E-05	0.0000000E+00	-0.5489412E-02	0.5489412E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.42369320E-02 0.41761394E+03 -0.44477541E+01

ESS = 0.1816E-01 SD = 0.3176E-01 R2 = 0.999999E+00
2*SD = 0.6353E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880550

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	201308
PROPERTY NO.	4427-01-112
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD,	0700123
FLUKE	8840A	DMM	C860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	D8901166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By	S, SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S, ELKINS/D. SYME ADS
Date (M-D-Y)	05/15/92
Reviewed By	

Service Notes 0-100 PSIG, C2AP02 15.000 ~

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED, DOES NOT MEET H:/ RATIO SPECS,

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880550
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S.ELKINS/D.SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP02

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

'ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.997 OHMS
/ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.997 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.997 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.988	59.948	-0.02%	
10.000	10.000	83.983	83.935	-0.02%	
20.000	20.000	107.978	107.861	-0.05%	
30.000	30.000	131.974	131.829	-0.06%	
40.000	40.000	155.969	155.884	-0.04%	
50.000	50.000	179.964	179.837	-0.05%	
60.000	60.000	203.959	203.852	-0.04%	
70.000	70.000	227.954	227.907	-0.02%	
80.000	80.000	251.950	251.914	-0.01%	
90.000	90.000	275.945	275.951	0.00%	
100.000	100.000	299.940	299.970	0.01%	
90.000	90.000	275.945	275.880	-0.03%	
80.000	80.000	251.950	251.799	-0.06%	
70.000	70.000	227.954	227.764	-0.08%	
60.000	60.000	203.959	203.708	-0.10%	
50.000	50.000	179.964	179.699	-0.11%	
40.000	40.000	155.969	155.721	-0.10%	
30.000	30.000	131.974	131.713	-0.11%	
20.000	20.000	107.978	107.763	-0.09%	
10.000	10.000	83.983	83.858	-0.05%	
0.000	0.000	59.988	59.964	-0.01%	

$\bar{x} = 59.956$

CURVEFIT OUTPUT FOR VTAB c2ap02 ✓

DATE: 20-MAY-92
TIME: 16:39:53

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.7999255E-05	0.0000000E+00	-0.3350469E-03	0.3350469E-03	0.0000000E+00
2	0.2397900E-01	10.00000	10.02173	-0.2172712E-01	-0.2172712
3	0.4790500E-01	20.00000	20.01186	-0.1185764E-01	-0.5928822E-01
4	0.7187300E-01	30.00000	30.01307	-0.1307112E-01	-0.4357041E-01
5	0.9592800E-01	40.00000	40.04409	-0.4409268E-01	-0.1102317
6	0.1198810	50.00000	50.02611	-0.2611472E-01	-0.5222944E-01
7	0.1438960	60.00000	60.02750	-0.2749775E-01	-0.4582958E-01
8	0.1679510	70.00000	70.03904	-0.3903826E-01	-0.5576894E-01
9	0.1919580	80.00000	80.02411	-0.2411445E-01	-0.3014306E-01
10	0.2159950	90.00000	90.01518	-0.1517565E-01	-0.1686183E-01
11	0.2400140	100.0000	99.99227	0.7734374E-02	0.7734374E-02
12	0.2159240	90.00000	89.98567	0.1432618E-01	0.1591798E-01
13	0.1918430	80.00000	79.97630	0.2370131E-01	0.2962664E-01
14	0.1678080	70.00000	69.97954	0.2045822E-01	0.2922603E-01
15	0.1437520	60.00000	59.96755	0.3245374E-01	0.5408957E-01
16	0.1197430	50.00000	49.96862	0.3137605E-01	0.6275211E-01
17	0.9576500E-01	40.00000	39.97614	0.2385701E-01	0.5964252E-01
18	0.7175700E-01	30.00000	29.96468	0.3531706E-01	0.1177235
19	0.4780700E-01	20.00000	19.97095	0.2904843E-01	0.1452421
	0.2390200E-01	10.00000	9.989566	0.1043407E-01	0.1043407
21	0.8000745E-05	0.0000000E+00	0.6352105E-02	-0.6352105E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.30082182E-02 0.41794701E+03 -0.56221932E+01

ESS = 0.1259E-01 SD = 0.2645E-01 R2 = 0.999999E+00
2*SD = 0.5290E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880543

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 189740
PROPERTY NO. 4427-01-105
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED (Y-N) ~~N~~ Y
RECAL INT. (MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	070012 3
FLUKE	8840A	DMM	086040 4

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	089016 6
COMPAQ	PORTABLE	COMPUTER	289019 4

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 15 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP03 15,000 ~

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS

B-13

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880543
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP03

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15 CALIBRATION ACCURACY 0.17%

APPLIED TRANSMITTER PSI	PRESSURE PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.000	59.997	0.00%	
10.000	10.000	84.000	83.955	-0.02%	
20.000	20.000	108.000	107.915	-0.04%	
30.000	30.000	132.000	131.897	-0.04%	
40.000	40.000	156.000	155.951	-0.02%	
50.000	50.000	180.000	179.925	-0.03%	
60.000	60.000	204.000	203.927	-0.03%	
70.000	70.000	228.000	227.985	-0.01%	
80.000	80.000	252.000	251.979	-0.01%	
90.000	90.000	276.000	276.015	0.01%	
100.000	100.000	300.000	300.023	0.01%	
90.000	90.000	276.000	275.942	-0.02%	
80.000	80.000	252.000	251.860	-0.06%	
70.000	70.000	228.000	227.844	-0.07%	
60.000	60.000	204.000	203.745	-0.11%	
50.000	50.000	180.000	179.755	-0.10%	
40.000	40.000	156.000	155.775	-0.09%	
30.000	30.000	132.000	131.794	-0.09%	
20.000	20.000	108.000	107.847	-0.06%	
10.000	10.000	84.000	83.921	-0.03%	
0.000	0.000	60.000	59.999	0.00%	

$\bar{x} = 59.998$

CURVEFIT OUTPUT FOR VTAB c2ap03

DATE: 20-MAY-92
TIME: 16:41:01

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.9981780E-06	0.0000000E+00	0.2553159E-02	-0.2553159E-02	0.0000000E+00
2	0.2395700E-01	10.00000	10.00869	-0.8687259E-02	-0.8687259E-01
3	0.4791700E-01	20.00000	20.00994	-0.9939915E-02	-0.4969957E-01
4	0.7189900E-01	30.00000	30.01465	-0.1465083E-01	-0.4883608E-01
5	0.9595300E-01	40.00000	40.04365	-0.4364508E-01	-0.1091127
6	0.1199270	50.00000	50.03355	-0.3355119E-01	-0.6710238E-01
7	0.1439290	60.00000	60.02939	-0.2939112E-01	-0.4898520E-01
8	0.1679870	70.00000	70.04280	-0.4279559E-01	-0.6113656E-01
9	0.1919810	80.00000	80.02382	-0.2382116E-01	-0.2977644E-01
0	0.2160170	90.00000	90.01657	-0.1656959E-01	-0.1841066E-01
1	0.2400250	100.0000	99.99193	0.8065981E-02	0.8065981E-02
2	0.2159440	90.00000	89.98623	0.1377078E-01	0.1530087E-01
3	0.1918620	80.00000	79.97433	0.2566633E-01	0.3208291E-01
4	0.1678460	70.00000	69.98413	0.1587454E-01	0.2267792E-01
5	0.1437470	60.00000	59.95362	0.4638276E-01	0.7730460E-01
6	0.1197570	50.00000	49.96273	0.3726724E-01	0.7453448E-01
7	0.9577700E-01	40.00000	39.97029	0.2971484E-01	0.7428710E-01
8	0.7179600E-01	30.00000	29.97169	0.2830604E-01	0.9435347E-01
9	0.4784900E-01	20.00000	19.98156	0.1843619E-01	0.9218092E-01
	0.2392300E-01	10.00000	9.994491	0.5508898E-02	0.5508897E-01
1	0.1001822E-05	0.0000000E+00	0.3388704E-02	-0.3388704E-02	0.0000000E+00

EGREE OF POLYNOMIAL 2

OEFFICIENTS
0.29701706E-02 0.41777243E+03 -0.49792479E+01

SS = 0.1373E-01 SD = 0.2762E-01 R2 = 0.999999E+00
2*SD = 0.5525E-01

C2AP04

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880544

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	194479
PROPERTY NO.	4427-01-106
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED (Y-N)	~~N~~ Y
RECAL INT. (MOS.)	12

INSTRUMENT CONDITION	
AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER-	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0010.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SVAE ADS
Date (M-D-Y)	05/15/92
Reviewed By	

Service Notes 0-100 PSIG, C2AP04 14.996 ~

SEE ATTACHED DATA SHEET.

LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880544
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP04

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
'ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	59.969	-0.01%	
10.000	10.000	83.978	84.009	0.01%	
20.000	20.000	107.971	108.061	0.04%	
30.000	30.000	131.965	132.083	0.05%	
40.000	40.000	155.958	156.092	0.06%	
50.000	50.000	179.952	180.064	0.05%	
60.000	60.000	203.946	204.012	0.03%	
70.000	70.000	227.939	228.027	0.04%	
80.000	80.000	251.933	251.982	0.02%	
90.000	90.000	275.926	275.928	0.00%	
100.000	100.000	299.920	299.852	-0.03%	
90.000	90.000	275.926	275.890	-0.02%	
80.000	80.000	251.933	251.880	-0.02%	
70.000	70.000	227.939	227.938	0.00%	
60.000	60.000	203.946	203.911	-0.01%	
50.000	50.000	179.952	179.952	0.00%	
40.000	40.000	155.958	155.972	0.01%	
30.000	30.000	131.965	131.945	-0.01%	
20.000	20.000	107.971	107.941	-0.01%	
10.000	10.000	83.978	83.956	-0.01%	
0.000	0.000	59.984	59.898	-0.04%	

$\bar{z} = 59.934$

CURVEFIT OUTPUT FOR VTAB c2ap04/

DATE: 20-MAY-92
TIME: 16:42:00

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.3499858E-04	0.0000000E+00	0.1371127E-01	-0.1371127E-01	0.0000000E+00
2	0.2407500E-01	10.00000	10.01301	-0.1300936E-01	-0.1300936
3	0.4812700E-01	20.00000	20.02368	-0.2368287E-01	-0.1184143
4	0.7214900E-01	30.00000	30.02755	-0.2755379E-01	-0.9184598E-01
5	0.9615800E-01	40.00000	40.03100	-0.3099773E-01	-0.7749432E-01
6	0.1201300	50.00000	50.02331	-0.2331322E-01	-0.4662643E-01
7	0.1440780	60.00000	60.00922	-0.9218788E-02	-0.1536465E-01
8	0.1680930	70.00000	70.02598	-0.2598305E-01	-0.3711864E-01
9	0.1920480	80.00000	80.01995	-0.1995026E-01	-0.2493782E-01
10	0.2159940	90.00000	90.01170	-0.1170438E-01	-0.1300487E-01
11	0.2399180	100.0000	99.99514	0.4863528E-02	0.4863529E-02
12	0.2159560	90.00000	89.99585	0.4152432E-02	0.4613813E-02
13	0.1919460	80.00000	79.97739	0.2260765E-01	0.2825956E-01
14	0.1680040	70.00000	69.98886	0.1114381E-01	0.1591972E-01
15	0.1439770	60.00000	59.96710	0.3290307E-01	0.5483845E-01
16	0.1200180	50.00000	49.97662	0.2338096E-01	0.4676192E-01
17	0.9603800E-01	40.00000	39.98099	0.1901200E-01	0.4753000E-01
18	0.7201100E-01	30.00000	29.97007	0.2993070E-01	0.9976899E-01
19	0.4800700E-01	20.00000	19.97372	0.2627699E-01	0.1313850
20	0.2402200E-01	10.00000	9.990957	0.9042949E-02	0.9042949E-01
21	-0.3600142E-04	0.0000000E+00	-0.1581064E-01	0.1581064E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 3

COEFFICIENTS

-0.84120217E-03 0.41580149E+03 0.61177070E+01 -0.82856319E+01

ESS = 0.9062E-02 SD = 0.2309E-01 R2 = 0.100000E+01
2*SD = 0.4618E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox ✓
a McDermott company

B&W Ser. No. 0880545

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
For Ind. Only	✓	
4 Standardize		
Certified & Stand.		
6 Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 194491
PROPERTY NO. 4427-01-107
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance	N
Operates within previously defined limits	N
Deviates from Mfg or previously defined limits	Y
Inoperative (Describe below)	Y

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100PSI	PRESS, STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44160-102-002
Work Order No.	6296
Name	S. ELKINS/D. SYME A S E
Date (M-D-Y)	05 15 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP05 14.998 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880545
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

NAME: S.ELKINS / D.SYME

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

Ambient Temperature (F) 70
Facility I. D. Name C2AP05

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.998 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	59.981	0.00%	
10.000	10.000	83.989	83.889	-0.04%	
20.000	20.000	107.986	107.845	-0.06%	
30.000	30.000	131.982	131.849	-0.06%	
40.000	40.000	155.979	155.919	-0.03%	
50.000	50.000	179.976	179.910	-0.03%	
60.000	60.000	203.973	203.898	-0.03%	
70.000	70.000	227.970	227.955	-0.01%	
80.000	80.000	251.966	251.921	-0.02%	
90.000	90.000	275.963	275.941	-0.01%	
100.000	100.000	299.960	299.957	0.00%	
90.000	90.000	275.963	275.880	-0.03%	
80.000	80.000	251.966	251.807	-0.07%	
70.000	70.000	227.970	227.782	-0.08%	
60.000	60.000	203.973	203.717	-0.11%	
50.000	50.000	179.976	179.734	-0.10%	
40.000	40.000	155.979	155.736	-0.10%	
30.000	30.000	131.982	131.724	-0.11%	
20.000	20.000	107.986	107.744	-0.10%	
10.000	10.000	83.989	83.830	-0.07%	
0.000	0.000	59.992	59.958	-0.01%	

$\bar{x} = 59.970$

CURVEFIT OUTPUT FOR VTAB c2ap05/

DATE: 20-MAY-92
TIME: 16:43:16

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1100110E-04	0.0000000E+00	0.1171033E-01	-0.1171033E-01	0.0000000E+00
2	0.2391900E-01	10.00000	10.00725	-0.7248122E-02	-0.7248122E-01
3	0.4787500E-01	20.00000	20.01012	-0.1012296E-01	-0.5061482E-01
4	0.7187900E-01	30.00000	30.02228	-0.2227798E-01	-0.7425992E-01
5	0.9594900E-01	40.00000	40.05318	-0.5317893E-01	-0.1329473
6	0.1199400	50.00000	50.04443	-0.4443426E-01	-0.8886853E-01
7	0.1439280	60.00000	60.02975	-0.2975353E-01	-0.4958922E-01
8	0.1679850	70.00000	70.04112	-0.4112083E-01	-0.5874404E-01
9	0.1919510	80.00000	80.01398	-0.1397871E-01	-0.1747338E-01
10	0.2159710	90.00000	90.01069	-0.1069391E-01	-0.1188212E-01
11	0.2399870	100.0000	100.0092	-0.9159869E-02	-0.9159869E-02
12	0.2159100	90.00000	89.98530	0.1469672E-01	0.1632969E-01
13	0.1918370	80.00000	79.96654	0.3346124E-01	0.4182655E-01
14	0.1678120	70.00000	69.96913	0.3086873E-01	0.4409818E-01
15	0.1437470	60.00000	59.95442	0.4557757E-01	0.7596263E-01
16	0.1197640	50.00000	49.97116	0.2884289E-01	0.5768577E-01
17	0.9576600E-01	40.00000	39.97694	0.2305618E-01	0.5764046E-01
18	0.7175400E-01	30.00000	29.97016	0.2983556E-01	0.9945185E-01
19	0.4777400E-01	20.00000	19.96797	0.3202584E-01	0.1601292
	0.2386000E-01	10.00000	9.982598	0.1740235E-01	0.1740235
21	-0.1199890E-04	0.0000000E+00	0.2087656E-02	-0.2087656E-02	0.0000000E+00

EGREE OF POLYNOMIAL 3

OEFFICIENTS
0.71077205E-02 0.41837706E+03 -0.12855802E+02 0.24411512E+02

ESS = 0.1651E-01 SD = 0.3117E-01 R2 = 0.999999E+00
2*SD = 0.6233E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880546

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 194495
PROPERTY NO. 4427-01-108
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED (Y-N) ~~N~~ Y
RECAL INT. (MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

			B&W Serial No.
COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME ADS
Date (M-D-Y)	05/15/92
Reviewed By	

Service Notes 0-100 PSIG, C2APD6 ADS ~~14,998~~ → 14,995 →
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880546
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP06

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.995 OHMS
/ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.995 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.995 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE RANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.980	59.947	-0.01%	
10.000	10.000	83.972	83.908	-0.03%	
20.000	20.000	107.964	107.903	-0.03%	
30.000	30.000	131.956	131.903	-0.02%	
40.000	40.000	155.948	155.957	0.00%	
50.000	50.000	179.940	179.938	0.00%	
60.000	60.000	203.932	203.926	0.00%	
70.000	70.000	227.924	227.978	0.02%	
80.000	80.000	251.916	251.956	0.02%	
90.000	90.000	275.908	275.949	0.02%	
100.000	100.000	299.900	299.898	0.00%	
90.000	90.000	275.908	275.871	-0.02%	
80.000	80.000	251.916	251.858	-0.02%	
70.000	70.000	227.924	227.837	-0.04%	
60.000	60.000	203.932	203.794	-0.06%	
50.000	50.000	179.940	179.798	-0.06%	
40.000	40.000	155.948	155.824	-0.05%	
30.000	30.000	131.956	131.815	-0.06%	
20.000	20.000	107.964	107.821	-0.06%	
10.000	10.000	83.972	83.845	-0.05%	
0.000	0.000	59.980	59.951	-0.01%	

$\bar{x} = 59.949$

CURVEFIT OUTPUT FOR VTAB c2ap06 ✓

DATE: 20-MAY-92
TIME: 16:44:21

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.1999435E-05	0.0000000E+00	0.3643884E-02	-0.3643884E-02	0.0000000E+00
2	0.2395900E-01	10.00000	10.00609	-0.6092025E-02	-0.6092025E-01
3	0.4795400E-01	20.00000	20.01453	-0.1452652E-01	-0.7263260E-01
4	0.7195400E-01	30.00000	30.01849	-0.1849046E-01	-0.6163488E-01
5	0.9600800E-01	40.00000	40.04005	-0.4005150E-01	-0.1001287
6	0.1199890	50.00000	50.02796	-0.2796477E-01	-0.5592954E-01
7	0.1439770	60.00000	60.01722	-0.1722201E-01	-0.2870336E-01
8	0.1680290	70.00000	70.03322	-0.3321841E-01	-0.4745487E-01
9	0.1920070	80.00000	80.02015	-0.2014671E-01	-0.2518338E-01
10	0.2160000	90.00000	90.01673	-0.1672867E-01	-0.1858741E-01
11	0.2399490	100.0000	100.0000	-0.2900127E-04	-0.2900127E-04
12	0.2159220	90.00000	89.98422	0.1577701E-01	0.1753001E-01
13	0.1919090	80.00000	79.97932	0.2067647E-01	0.2584558E-01
14	0.1678880	70.00000	69.97450	0.2550184E-01	0.3643120E-01
15	0.1438450	60.00000	59.96225	0.3774510E-01	0.6290850E-01
16	0.1198490	50.00000	49.96966	0.3033805E-01	0.6067610E-01
17	0.9587500E-01	40.00000	39.98465	0.1534951E-01	0.3837378E-01
18	0.7186600E-01	30.00000	29.98182	0.1818078E-01	0.6060260E-01
19	0.4787200E-01	20.00000	19.98034	0.1966398E-01	0.9831992E-01
	0.2389600E-01	10.00000	9.979804	0.2019567E-01	0.2019567
21	0.2000565E-05	0.0000000E+00	0.5314448E-02	-0.5314448E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 3

COEFFICIENTS

0.44789299E-02 0.41764088E+03 -0.85715034E+01 0.20017584E+02

ESS = 0.1014E-01 SD = 0.2442E-01 R2 = 0.999999E+00

2*SD = 0.4884E-01

C2AP07

D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880537

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
Calibrated		✓
For Ind. Only	✓	
Standardize		
Certified & Stand.		
Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 188751
PROPERTY NO. 4427-01-099
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 14 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP07 ADS ~~14,998~~ 14.996 JL
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880537
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS/D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP07

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	APPLIED PRESSURE PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	59.990	0.00%	
10.000	10.000	83.978	83.835	-0.06%	
20.000	20.000	107.971	107.786	-0.08%	
30.000	30.000	131.965	131.769	-0.08%	
40.000	40.000	155.958	155.793	-0.07%	
50.000	50.000	179.952	179.793	-0.07%	
60.000	60.000	203.946	203.803	-0.06%	
70.000	70.000	227.939	227.865	-0.03%	
80.000	80.000	251.933	251.861	-0.03%	
90.000	90.000	275.926	275.899	-0.01%	
100.000	100.000	299.920	299.910	0.00%	
90.000	90.000	275.926	275.797	-0.05%	
80.000	80.000	251.933	251.691	-0.10%	
70.000	70.000	227.939	227.648	-0.12%	
60.000	60.000	203.946	203.607	-0.14%	
50.000	50.000	179.952	179.599	-0.15%	
40.000	40.000	155.958	155.625	-0.14%	
30.000	30.000	131.965	131.614	-0.15%	
20.000	20.000	107.971	107.650	-0.13%	
10.000	10.000	83.978	83.774	-0.08%	
0.000	0.000	59.984	59.952	-0.01%	

$\bar{z} = 59.971$

CURVEFIT OUTPUT FOR VTAB c2ap07 ✓

DATE: 20-MAY-92
TIME: 16:45:25

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1899900E-04	0.0000000E+00	0.1616980E-01	-0.1616980E-01	0.0000000E+00
2	0.2386400E-01	10.00000	10.00419	-0.4191907E-02	-0.4191907E-01
3	0.4781500E-01	20.00000	20.01887	-0.1887076E-01	-0.9435379E-01
4	0.7179800E-01	30.00000	30.03159	-0.3158789E-01	-0.1052930
5	0.9582200E-01	40.00000	40.04852	-0.4852169E-01	-0.1213042
6	0.1198220	50.00000	50.04505	-0.4504749E-01	-0.9009498E-01
7	0.1438320	60.00000	60.03783	-0.3782853E-01	-0.6304756E-01
8	0.1678940	70.00000	70.04682	-0.4681656E-01	-0.6688080E-01
9	0.1918900	80.00000	80.02543	-0.2542685E-01	-0.3178356E-01
10	0.2159280	90.00000	90.02107	-0.2107370E-01	-0.2341523E-01
11	0.2399390	100.0000	100.0076	-0.7559560E-02	-0.7559559E-02
12	0.2158260	90.00000	89.97866	0.2134324E-01	0.2371472E-01
13	0.1917200	80.00000	79.95474	0.4526231E-01	0.5657789E-01
14	0.1676770	70.00000	69.95657	0.4343131E-01	0.6204473E-01
15	0.1436360	60.00000	59.95628	0.4371986E-01	0.7286643E-01
16	0.1196280	50.00000	49.96428	0.3572271E-01	0.7144543E-01
17	0.9565400E-01	40.00000	39.97851	0.2148773E-01	0.5371932E-01
18	0.7164300E-01	30.00000	29.96692	0.3307942E-01	0.1102647
19	0.4767900E-01	20.00000	19.96205	0.3794962E-01	0.1897481
	0.2380300E-01	10.00000	9.978664	0.2133580E-01	0.2133580
21	-0.1900100E-04	0.0000000E+00	0.2372668E-03	-0.2372668E-03	0.0000000E+00

EGREE OF POLYNOMIAL 3

OEFFICIENTS
0.82039605E-02 0.41927728E+03 -0.17652054E+02 0.30016025E+02

SS = 0.2182E-01 SD = 0.3582E-01 R2 = 0.999999E+00
2*SD = 0.7165E-01

C1AP08

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880549

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	201306
PROPERTY NO.	4427-01-111
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	X
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD,	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SAROVL
Charge Number	44160-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A D S
Date (M-D-Y)	05 14 92
Reviewed By	

Service Notes 0-100 PSIG, C1AP08 ADS ~~15,000~~ 15,001 Ω

SEE ATTACHED DATA SHEET, CABLE 1274

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880549
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C2AP08

:ADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15.001 OHMS
ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15.001 OHMS
RESISTOR MEASURING ACCURACY N.A.

)WER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 15.001 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE :RANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.004	59.996	0.00%	
10.000	10.000	84.006	83.915	-0.04%	
20.000	20.000	108.007	107.872	-0.06%	
30.000	30.000	132.009	131.850	-0.07%	
40.000	40.000	156.010	155.880	-0.05%	
50.000	50.000	180.012	179.872	-0.06%	
60.000	60.000	204.014	203.869	-0.06%	
70.000	70.000	228.015	227.923	-0.04%	
80.000	80.000	252.017	251.936	-0.03%	
90.000	90.000	276.018	275.967	-0.02%	
100.000	100.000	300.020	299.998	-0.01%	
90.000	90.000	276.018	275.938	-0.03%	
80.000	80.000	252.017	251.848	-0.07%	
70.000	70.000	228.015	227.791	-0.09%	
60.000	60.000	204.014	203.713	-0.13%	
50.000	50.000	180.012	179.699	-0.13%	
40.000	40.000	156.010	155.720	-0.12%	
30.000	30.000	132.009	131.710	-0.12%	
20.000	20.000	108.007	107.759	-0.10%	
10.000	10.000	84.006	83.854	-0.06%	
0.000	0.000	60.004	59.996	0.00%	

$\bar{x} = 59.996$

CURVEFIT OUTPUT FOR VTAB c2ap08 ✓

DATE: 20-MAY-92
TIME: 16:46:25

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.1422405E-08	0.0000000E+00	0.2329075E-02	-0.2329075E-02	0.0000000E+00
2	0.2391900E-01	10.00000	10.01047	-0.1046717E-01	-0.1046717
3	0.4787600E-01	20.00000	20.02036	-0.2035911E-01	-0.1017956
4	0.7185400E-01	30.00000	30.02664	-0.2663677E-01	-0.8878925E-01
5	0.9588400E-01	40.00000	40.04398	-0.4397677E-01	-0.1099419
6	0.1198760	50.00000	50.03665	-0.3664684E-01	-0.7329367E-01
7	0.1438730	60.00000	60.02437	-0.2436946E-01	-0.4061577E-01
8	0.1679270	70.00000	70.03056	-0.3056211E-01	-0.4366016E-01
9	0.1919400	80.00000	80.01625	-0.1625266E-01	-0.2031583E-01
10	0.2159710	90.00000	90.00778	-0.7782277E-02	-0.8646974E-02
11	0.2400020	100.0000	99.99947	0.5334210E-03	0.5334210E-03
12	0.2159420	90.00000	89.99573	0.4274978E-02	0.4749976E-02
13	0.1918520	80.00000	79.97966	0.2033762E-01	0.2542202E-01
14	0.1677950	70.00000	69.97566	0.2433732E-01	0.3476760E-01
15	0.1437170	60.00000	59.95946	0.4054000E-01	0.6756666E-01
16	0.1197030	50.00000	49.96462	0.3538037E-01	0.7076073E-01
17	0.9572400E-01	40.00000	39.97731	0.2269086E-01	0.5672715E-01
18	0.7171400E-01	30.00000	29.96825	0.3175421E-01	0.1058474
19	0.4776300E-01	20.00000	19.97318	0.2682494E-01	0.1341247
20	0.2385800E-01	10.00000	9.984962	0.1503761E-01	0.1503761
21	-0.1422405E-08	0.0000000E+00	0.2329075E-02	-0.2329075E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 3

COEFFICIENTS

0.23296709E-02 0.41873770E+03 -0.13887114E+02 0.21640320E+02

ESS = 0.1276E-01 SD = 0.2740E-01 R2 = 0.999999E+00

2*SD = 0.5480E-01

D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
Calibrated		✓
For Ind. Only	✓	
Standardize		
Certified & Stand.		
Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880547

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 195582
PROPERTY NO. 4427-01-109
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
eviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	089016
FLUKE	8840A	DMM	289019 4

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	089016
COMPAQ	PORTABLE	COMPUTER	289019 4

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0010
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME ASE
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP09 14.993 ℞
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880547
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 73
Facility I. D. Name C2AP09

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.993 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.993 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.993 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.972	59.954	-0.01%	
10.000	10.000	83.961	83.840	-0.05%	
20.000	20.000	107.950	107.805	-0.06%	
30.000	30.000	131.938	131.786	-0.06%	
40.000	40.000	155.927	155.812	-0.05%	
50.000	50.000	179.916	179.781	-0.06%	
60.000	60.000	203.905	203.793	-0.05%	
70.000	70.000	227.894	227.864	-0.01%	
80.000	80.000	251.882	251.858	-0.01%	
90.000	90.000	275.871	275.886	0.01%	
100.000	100.000	299.860	299.892	0.01%	
90.000	90.000	275.871	275.818	-0.02%	
80.000	80.000	251.882	251.749	-0.06%	
70.000	70.000	227.894	227.739	-0.06%	
60.000	60.000	203.905	203.709	-0.08%	
50.000	50.000	179.916	179.706	-0.09%	
40.000	40.000	155.927	155.714	-0.09%	
30.000	30.000	131.938	131.713	-0.09%	
20.000	20.000	107.950	107.736	-0.09%	
10.000	10.000	83.961	83.831	-0.05%	
0.000	0.000	59.972	59.940	-0.01%	

$\bar{Z} = 59.947$

CURVEFIT OUTPUT FOR VTAB c2ap09 ✓

DATE: 20-MAY-92
TIME: 16:47:23

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.7001046E-05	0.0000000E+00	0.7347121E-02	-0.7347121E-02	0.0000000E+00
2	0.2389300E-01	10.00000	9.997588	0.2412280E-02	0.2412280E-01
3	0.4785800E-01	20.00000	20.00824	-0.8236585E-02	-0.4118292E-01
4	0.7183900E-01	30.00000	30.01469	-0.1468530E-01	-0.4895101E-01
5	0.9586500E-01	40.00000	40.03079	-0.3078522E-01	-0.7696304E-01
6	0.1198340	50.00000	50.01581	-0.1580840E-01	-0.3161681E-01
7	0.1438460	60.00000	60.01321	-0.1321040E-01	-0.2201733E-01
8	0.1679170	70.00000	70.03142	-0.3141790E-01	-0.4488271E-01
9	0.1919110	80.00000	80.01563	-0.1562731E-01	-0.1953414E-01
0	0.2159390	90.00000	90.01383	-0.1382833E-01	-0.1536481E-01
1	0.2399450	100.0000	100.0045	-0.4511975E-02	-0.4511976E-02
2	0.2158710	90.00000	89.98553	0.1446837E-01	0.1607596E-01
3	0.1918020	80.00000	79.97027	0.2972727E-01	0.3715909E-01
4	0.1677920	70.00000	69.97940	0.2059974E-01	0.2942820E-01
5	0.1437520	60.00000	59.97824	0.2175545E-01	0.3625908E-01
6	0.1197590	50.00000	49.98457	0.1542561E-01	0.3085122E-01
7	0.9576700E-01	40.00000	39.98995	0.1005347E-01	0.2513368E-01
8	0.7176600E-01	30.00000	29.98424	0.1576038E-01	0.5253459E-01
9	0.4778900E-01	20.00000	19.97943	0.2056960E-01	0.1028480
	0.2388400E-01	10.00000	9.993826	0.6174022E-02	0.6174022E-01
1	-0.6998954E-05	0.0000000E+00	0.1487635E-02	-0.1487635E-02	0.0000000E+00

EGREE OF POLYNOMIAL 3

OEFFICIENTS
0.44169406E-02 0.41853469E+03 -0.12565750E+02 0.21589198E+02

SS = 0.6200E-02 SD = 0.1910E-01 R2 = 0.100000E+01
2*SD = 0.3819E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880548

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 195586
PROPERTY NO. 4427-01-110
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DA160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROVL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, C2AP10 15,002 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880548
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 75
Facility I. D. Name C2AP10

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.997 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.997 OHMS
RESISTOR MEASURING ACCURACY N.A.
OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.997 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.988	59.962	-0.01%	
10.000	10.000	83.983	83.920	-0.03%	
20.000	20.000	107.978	107.870	-0.05%	
30.000	30.000	131.974	131.854	-0.05%	
40.000	40.000	155.969	155.872	-0.04%	
50.000	50.000	179.964	179.866	-0.04%	
60.000	60.000	203.959	203.856	-0.04%	
70.000	70.000	227.954	227.909	-0.02%	
80.000	80.000	251.950	251.908	-0.02%	
90.000	90.000	275.945	275.951	0.00%	
100.000	100.000	299.940	299.949	0.00%	
90.000	90.000	275.945	275.853	-0.04%	
80.000	80.000	251.950	251.794	-0.06%	
70.000	70.000	227.954	227.792	-0.07%	
60.000	60.000	203.959	203.728	-0.10%	
50.000	50.000	179.964	179.738	-0.09%	
40.000	40.000	155.969	155.812	-0.07%	
30.000	30.000	131.974	131.830	-0.06%	
20.000	20.000	107.978	107.858	-0.05%	
10.000	10.000	83.983	83.956	-0.01%	
0.000	0.000	59.988	59.938	-0.02%	

$\bar{z} = 59.950$

CURVEFIT OUTPUT FOR VTAB c2ap10

DATE: 20-MAY-92
TIME: 16:48:34

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1199846E-04	0.0000000E+00	-0.2134769E-02	0.2134769E-02	0.0000000E+00
2	0.2397000E-01	10.00000	10.00266	-0.2660673E-02	-0.2660673E-01
3	0.4792000E-01	20.00000	19.99936	0.6400015E-03	0.3200008E-02
4	0.7190400E-01	30.00000	30.00549	-0.5486208E-02	-0.1828736E-01
5	0.9592200E-01	40.00000	40.02102	-0.2101902E-01	-0.5254756E-01
6	0.1199160	50.00000	50.02177	-0.2176939E-01	-0.4353879E-01
7	0.1439060	60.00000	60.01608	-0.1608172E-01	-0.2680287E-01
8	0.1679590	70.00000	70.03185	-0.3185081E-01	-0.4550115E-01
9	0.1919580	80.00000	80.02035	-0.2035468E-01	-0.2544335E-01
10	0.2160010	90.00000	90.02238	-0.2238442E-01	-0.2487158E-01
11	0.2399990	100.0000	100.0009	-0.9157941E-03	-0.9157941E-03
12	0.2159030	90.00000	89.98163	0.1837443E-01	0.2041604E-01
13	0.1918440	80.00000	79.97292	0.2708140E-01	0.3385175E-01
14	0.1678420	70.00000	69.98314	0.1685687E-01	0.2408124E-01
15	0.1437780	60.00000	59.96277	0.3723084E-01	0.6205140E-01
16	0.1197880	50.00000	49.96843	0.3156862E-01	0.6313723E-01
17	0.9586200E-01	40.00000	39.99600	0.3995087E-02	0.9987717E-02
18	0.7188000E-01	30.00000	29.99548	0.4524210E-02	0.1508070E-01
19	0.4790800E-01	20.00000	19.99435	0.5647596E-02	0.2823798E-01
20	0.2400600E-01	10.00000	10.01769	-0.1769059E-01	-0.1769059
21	-0.1200154E-04	0.0000000E+00	-0.1215949E-01	0.1215949E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.71464861E-02 0.41769666E+03 -0.41444587E+01

ESS = 0.7414E-02 SD = 0.2030E-01 R2 = 0.100000E+01

C3AP01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880554

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	201322
PROPERTY NO.	4427-01-116
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
Calibrated		✓
For Ind. Only	✓	
Standardize		
Certified & Stand.		
Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

INSTRUMENT CONDITION	
AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	8 5 1 4 9 2
Reviewed By	

Service Notes 0-100 PSIG, C3AP01 ~~ADS 14,998~~ 14,996

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880554
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 70
Facility I. D. Name C3AP01

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	59.980	0.00%	
10.000	10.000	83.978	83.879	-0.04%	
20.000	20.000	107.971	107.801	-0.07%	
30.000	30.000	131.965	131.780	-0.08%	
40.000	40.000	155.958	155.826	-0.06%	
50.000	50.000	179.952	179.801	-0.06%	
60.000	60.000	203.946	203.803	-0.06%	
70.000	70.000	227.939	227.879	-0.03%	
80.000	80.000	251.933	251.888	-0.02%	
90.000	90.000	275.926	275.927	0.00%	
100.000	100.000	299.920	299.936	0.01%	
90.000	90.000	275.926	275.870	-0.02%	
80.000	80.000	251.933	251.775	-0.07%	
70.000	70.000	227.939	227.778	-0.07%	
60.000	60.000	203.946	203.709	-0.10%	
50.000	50.000	179.952	179.705	-0.10%	
40.000	40.000	155.958	155.698	-0.11%	
30.000	30.000	131.965	131.679	-0.12%	
20.000	20.000	107.971	107.726	-0.10%	
10.000	10.000	83.978	83.802	-0.07%	
0.000	0.000	59.984	59.956	-0.01%	

$\bar{x} = 59.968$

CURVEFIT OUTPUT FOR VTAB c3ap01

DATE: 20-MAY-92
TIME: 16:49:39

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1200158E-04	0.0000000E+00	0.9188135E-02	-0.9188135E-02	0.0000000E+00
2	0.2391100E-01	10.00000	10.01293	-0.1292795E-01	-0.1292795
3	0.4783300E-01	20.00000	20.00978	-0.9784686E-02	-0.4892343E-01
4	0.7181200E-01	30.00000	30.01638	-0.1637691E-01	-0.5458970E-01
5	0.9585800E-01	40.00000	40.03928	-0.3927994E-01	-0.9819985E-01
6	0.1198330	50.00000	50.02348	-0.2348111E-01	-0.4696221E-01
7	0.1438350	60.00000	60.01232	-0.1232400E-01	-0.2053999E-01
8	0.1679110	70.00000	70.02785	-0.2784801E-01	-0.3978287E-01
9	0.1919200	80.00000	80.01391	-0.1391169E-01	-0.1738961E-01
10	0.2159590	90.00000	90.01338	-0.1338221E-01	-0.1486913E-01
11	0.2399680	100.0000	100.0038	-0.3814291E-02	-0.3814291E-02
12	0.2159020	90.00000	89.98967	0.1033108E-01	0.1147898E-01
13	0.1918070	80.00000	79.96691	0.3308860E-01	0.4136075E-01
14	0.1678100	70.00000	69.98584	0.1416251E-01	0.2023216E-01
15	0.1437410	60.00000	59.97321	0.2678608E-01	0.4464347E-01
16	0.1197370	50.00000	49.98352	0.1648253E-01	0.3296506E-01
17	0.9573000E-01	40.00000	39.98595	0.1404683E-01	0.3511708E-01
18	0.7171100E-01	30.00000	29.97426	0.2574496E-01	0.8581652E-01
19	0.4775800E-01	20.00000	19.97847	0.2153412E-01	0.1076706
	0.2383400E-01	10.00000	9.980725	0.1927522E-01	0.1927522
21	-0.1199842E-04	0.0000000E+00	-0.8669987E-03	0.8669987E-03	0.0000000E+00

DEGREE OF POLYNOMIAL 3

COEFFICIENTS

0.41599066E-02 0.41896391E+03 -0.16601765E+02 0.30229825E+02

ESS = 0.8112E-02 SD = 0.2184E-01 R2 = 0.100000E+01

2*SD = 0.4369E-01

XD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0890536

MANUFACTURER SENSOTEC
MODEL TJE/128008
ITEM TRANSDCR, PRESS
MANUF. SER. NO. 233156
PROPERTY NO. 4427-12-196
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED			
COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44160-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, C3AP02 ADS ~~14,998~~ 15,004

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS,

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0890536
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYNE

Ambient Temperature (F) 73
Facility I. D. Name C3AP02

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.998 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	59.983	0.00%	
10.000	10.000	83.989	83.913	-0.03%	
20.000	20.000	107.986	107.892	-0.04%	
30.000	30.000	131.982	131.901	-0.03%	
40.000	40.000	155.979	155.936	-0.02%	
50.000	50.000	179.976	179.934	-0.02%	
60.000	60.000	203.973	203.909	-0.03%	
70.000	70.000	227.970	227.963	0.00%	
80.000	80.000	251.966	251.965	0.00%	
90.000	90.000	275.963	275.980	0.01%	
100.000	100.000	299.960	299.943	-0.01%	
90.000	90.000	275.963	275.910	-0.02%	
80.000	80.000	251.966	251.860	-0.04%	
70.000	70.000	227.970	227.830	-0.06%	
60.000	60.000	203.973	203.779	-0.08%	
50.000	50.000	179.976	179.796	-0.08%	
40.000	40.000	155.979	155.830	-0.06%	
30.000	30.000	131.982	131.840	-0.06%	
20.000	20.000	107.986	107.847	-0.06%	
10.000	10.000	83.989	83.877	-0.05%	
0.000	0.000	59.992	59.958	-0.01%	

2 = 59.971

CURVEFIT OUTPUT FOR VTAB c3ap02

DATE: 20-MAY-92
TIME: 16:50:35

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1199900E-04	0.0000000E+00	0.9631241E-02	-0.9631241E-02	0.0000000E+00
2	0.2394200E-01	10.00000	10.00062	-0.6196465E-03	-0.6196465E-02
3	0.4792100E-01	20.00000	20.00509	-0.5092571E-02	-0.2546286E-01
4	0.7193000E-01	30.00000	30.01605	-0.1604761E-01	-0.5349205E-01
5	0.9596500E-01	40.00000	40.03276	-0.3275858E-01	-0.8189645E-01
6	0.1199630	50.00000	50.02993	-0.2993472E-01	-0.5986943E-01
7	0.1439380	60.00000	60.01438	-0.1438240E-01	-0.2397066E-01
8	0.1679920	70.00000	70.02953	-0.2953204E-01	-0.4218863E-01
9	0.1919940	80.00000	80.02180	-0.2179846E-01	-0.2724808E-01
10	0.2160090	90.00000	90.01921	-0.1920689E-01	-0.2134099E-01
11	0.2399720	100.0000	99.99566	0.4343399E-02	0.4343399E-02
12	0.2159390	90.00000	89.99007	0.9934540E-02	0.1103838E-01
13	0.1918890	80.00000	79.97809	0.2191277E-01	0.2739096E-01
14	0.1678590	70.00000	69.97416	0.2583969E-01	0.3691385E-01
15	0.1438080	60.00000	59.96025	0.3974966E-01	0.6624943E-01
16	0.1198250	50.00000	49.97246	0.2754391E-01	0.5508782E-01
17	0.9585900E-01	40.00000	39.98859	0.1140771E-01	0.2851927E-01
18	0.7186900E-01	30.00000	29.99062	0.9380517E-02	0.3126839E-01
19	0.4787600E-01	20.00000	19.98632	0.1367630E-01	0.6838151E-01
20	0.2390600E-01	10.00000	9.985595	0.1440521E-01	0.1440521
21	-0.1300100E-04	0.0000000E+00	-0.8104490E-03	0.8104490E-03	0.0000000E+00

DEGREE OF POLYNOMIAL 3

COEFFICIENTS

0.46196485E-02 0.41766761E+03 -0.69021855E+01 0.11576528E+02

ESS = 0.8486E-02 SD = 0.2234E-01 R2 = 0.100000E+01

2*SD = 0.4469E-01

C3AP03 ✓

:D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
Calibrated		✓
For Ind. Only	✓	
Standardize		
Certified & Stand.		
Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880552

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 201314
PROPERTY NO. 4427-01-114
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD.	0701023
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. BLKWS/D. SYME ADS
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, C3AP03 15,000 Ω
SEE ~~ATTACHED~~ DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880552
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S.ELKINS / D. SYME

Ambient Temperature (F) 72
Facility I. D. Name C3AP03

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15

CALIBRATION ACCURACY 0.17%
LIMITED

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.000	59.985	-0.01%	
10.000	10.000	84.000	83.952	-0.02%	
20.000	20.000	108.000	107.936	-0.03%	
30.000	30.000	132.000	131.933	-0.03%	
40.000	40.000	156.000	155.977	-0.01%	
50.000	50.000	180.000	179.963	-0.02%	
60.000	60.000	204.000	203.929	-0.03%	
70.000	70.000	228.000	227.978	-0.01%	
80.000	80.000	252.000	251.959	-0.02%	
90.000	90.000	276.000	275.978	-0.01%	
100.000	100.000	300.000	300.031	0.01%	
90.000	90.000	276.000	275.966	-0.01%	
80.000	80.000	252.000	251.893	-0.04%	
70.000	70.000	228.000	227.855	-0.06%	
60.000	60.000	204.000	203.780	-0.09%	
50.000	50.000	180.000	179.790	-0.09%	
40.000	40.000	156.000	155.837	-0.07%	
30.000	30.000	132.000	131.835	-0.07%	
20.000	20.000	108.000	107.869	-0.05%	
10.000	10.000	84.000	83.955	-0.02%	
0.000	0.000	60.000	59.982	-0.01%	

$\bar{Z} = 59.984$

CURVEFIT OUTPUT FOR VTAB c3ap03 /

DATE: 20-MAY-92
TIME: 16:51:30

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1001463E-05	0.0000000E+00	-0.1396875E-02	0.1396875E-02	0.0000000E+00
2	0.2396800E-01	10.00000	10.00288	-0.2883222E-02	-0.2883222E-01
3	0.4795200E-01	20.00000	20.00994	-0.9939246E-02	-0.4969623E-01
4	0.7194900E-01	30.00000	30.01809	-0.1809413E-01	-0.6031378E-01
5	0.9599300E-01	40.00000	40.04151	-0.4151164E-01	-0.1037791
6	0.1199790	50.00000	50.03642	-0.3642255E-01	-0.7284509E-01
7	0.1439450	60.00000	60.01868	-0.1868246E-01	-0.3113743E-01
8	0.1679940	70.00000	70.03118	-0.3117564E-01	-0.4453662E-01
9	0.1919750	80.00000	80.01103	-0.1103112E-01	-0.1378890E-01
10	0.2159940	90.00000	90.00237	-0.2369634E-02	-0.2632927E-02
11	0.2400470	100.0000	100.0035	-0.3507793E-02	-0.3507793E-02
12	0.2159820	90.00000	89.99738	0.2621001E-02	0.2912224E-02
13	0.1919090	80.00000	79.98357	0.1642930E-01	0.2053663E-01
14	0.1678710	70.00000	69.97998	0.2002278E-01	0.2860397E-01
15	0.1437960	60.00000	59.95663	0.4336533E-01	0.7227555E-01
16	0.1198060	50.00000	49.96435	0.3565068E-01	0.7130136E-01
17	0.9585300E-01	40.00000	39.98316	0.1683872E-01	0.4209680E-01
18	0.7185100E-01	30.00000	29.97723	0.2276881E-01	0.7589603E-01
19	0.4788500E-01	20.00000	19.98199	0.1800974E-01	0.9004868E-01
20	0.2397100E-01	10.00000	10.00414	-0.4135208E-02	-0.4135209E-01
21	-0.1998537E-05	0.0000000E+00	-0.2649402E-02	0.2649402E-02	0.0000000E+00

EGREE OF POLYNOMIAL 2

COEFFICIENTS
0.18149949E-02 0.41750899E+03 -0.37565059E+01

ESS = 0.9926E-02 SD = 0.2348E-01 R2 = 0.999999E+00
2*SD = 0.4697E-01

CHAP 01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880539

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	188757
PROPERTY NO.	4427-01-101
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 14 92
Reviewed By	

Service Notes 0-100 PSIG, C4AP01 15,000 ~

SEE ATTACHED DATA SHEET.

LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880539
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S.ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name C4AP01

LADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15 OHMS
'ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15 OHMS
RESISTOR MEASURING ACCURACY N.A.

OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 15 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.000	59.989	0.00%	
10.000	10.000	84.000	83.885	-0.05%	
20.000	20.000	108.000	107.840	-0.07%	
30.000	30.000	132.000	131.828	-0.07%	
40.000	40.000	156.000	155.864	-0.06%	
50.000	50.000	180.000	179.848	-0.06%	
60.000	60.000	204.000	203.848	-0.06%	
70.000	70.000	228.000	227.919	-0.03%	
80.000	80.000	252.000	251.890	-0.05%	
90.000	90.000	276.000	275.944	-0.02%	
100.000	100.000	300.000	299.979	-0.01%	
90.000	90.000	276.000	275.849	-0.06%	
80.000	80.000	252.000	251.748	-0.11%	
70.000	70.000	228.000	227.678	-0.13%	
60.000	60.000	204.000	203.642	-0.15%	
50.000	50.000	180.000	179.627	-0.16%	
40.000	40.000	156.000	155.677	-0.13%	
30.000	30.000	132.000	131.668	-0.14%	
20.000	20.000	108.000	107.716	-0.12%	
10.000	10.000	84.000	83.807	-0.08%	
0.000	0.000	60.000	59.961	-0.02%	

$\bar{I} = 59.975$

CURVEFIT OUTPUT FOR VTAB c4ap01

DATE: 20-MAY-92
TIME: 16:52:35

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1400176E-04	0.0000000E+00	0.1829549E-01	-0.1829549E-01	0.0000000E+00
2	0.2391000E-01	10.00000	10.00777	-0.7766683E-02	-0.7766683E-01
3	0.4786500E-01	20.00000	20.01425	-0.1424552E-01	-0.7122760E-01
4	0.7185300E-01	30.00000	30.02683	-0.2682714E-01	-0.8942381E-01
5	0.9588900E-01	40.00000	40.05173	-0.5173359E-01	-0.1293340
6	0.1198730	50.00000	50.04726	-0.4725892E-01	-0.9451785E-01
7	0.1438730	60.00000	60.04176	-0.4175999E-01	-0.6959999E-01
8	0.1679440	70.00000	70.05810	-0.5809900E-01	-0.8299857E-01
9	0.1919150	80.00000	80.02513	-0.2513398E-01	-0.3141747E-01
10	0.2159690	90.00000	90.01896	-0.1896370E-01	-0.2107078E-01
11	0.2400040	100.0000	99.99718	0.2821052E-02	0.2821052E-02
12	0.2158740	90.00000	89.97951	0.2049119E-01	0.2276799E-01
13	0.1917730	80.00000	79.96611	0.3388639E-01	0.4235798E-01
14	0.1677030	70.00000	69.95785	0.4214670E-01	0.6020958E-01
15	0.1436670	60.00000	59.95601	0.4399340E-01	0.7332233E-01
16	0.1196520	50.00000	49.95519	0.4480953E-01	0.8961906E-01
17	0.9570200E-01	40.00000	39.97377	0.2623035E-01	0.6557588E-01
18	0.7169300E-01	30.00000	29.96007	0.3993133E-01	0.1331044
19	0.4774100E-01	20.00000	19.96247	0.3753200E-01	0.1876600
20	0.2383200E-01	10.00000	9.975172	0.2482799E-01	0.2482799
21	-0.1399824E-04	0.0000000E+00	0.6585912E-02	-0.6585912E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.12439965E-01 0.41819927E+03 -0.66796461E+01

ESS = 0.2398E-01 SD = 0.3650E-01 R2 = 0.999999E+00
2*SD = 0.7301E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880553

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 201321
PROPERTY NO. 4427-01-115
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00.10
Requested By	S. SPROUL
Charge Number	44260-101-002
Work Order No.	0296
Name	S.ELKINS/D.SYME ADS
Date (M-D-Y)	05/18/92
Reviewed By	

Service Notes 0-100 PSIG, C4AP02 ADS ~~15,000~~ 14,997

SEE ATTACHED DATA SHEET.

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880553
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 73
Facility I. D. Name C4AP02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.997 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.997 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.997 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.988	59.962	-0.01%	
10.000	10.000	83.983	83.864	-0.05%	
20.000	20.000	107.978	107.779	-0.08%	
30.000	30.000	131.974	131.746	-0.09%	
40.000	40.000	155.969	155.753	-0.09%	
50.000	50.000	179.964	179.771	-0.08%	
60.000	60.000	203.959	203.761	-0.08%	
70.000	70.000	227.954	227.858	-0.04%	
80.000	80.000	251.950	251.896	-0.02%	
90.000	90.000	275.945	275.974	0.01%	
100.000	100.000	299.940	300.036	0.04%	
90.000	90.000	275.945	275.870	-0.03%	
80.000	80.000	251.950	251.801	-0.06%	
70.000	70.000	227.954	227.731	-0.09%	
60.000	60.000	203.959	203.644	-0.13%	
50.000	50.000	179.964	179.657	-0.13%	
40.000	40.000	155.969	155.675	-0.12%	
30.000	30.000	131.974	131.694	-0.12%	
20.000	20.000	107.978	107.789	-0.08%	
10.000	10.000	83.983	83.859	-0.05%	
0.000	0.000	59.988	59.977	0.00%	

$\bar{x} = 59.970$

CURVEFIT OUTPUT FOR VTAB c4ap02 ✓

DATE: 20-MAY-92
TIME: 16:53:30

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.7998896E-05	0.0000000E+00	0.3236739E-03	-0.3236739E-03	0.0000000E+00
2	0.2389400E-01	10.00000	10.00058	-0.5834413E-03	-0.5834413E-02
3	0.4780900E-01	20.00000	19.99640	0.3599191E-02	0.1799596E-01
4	0.7177600E-01	30.00000	30.00404	-0.4036394E-02	-0.1345465E-01
5	0.9578300E-01	40.00000	40.01842	-0.1842234E-01	-0.4605585E-01
6	0.1198010	50.00000	50.02743	-0.2742973E-01	-0.5485946E-01
7	0.1437910	60.00000	60.01482	-0.1481670E-01	-0.2469449E-01
8	0.1678880	70.00000	70.03674	-0.3673649E-01	-0.5248069E-01
9	0.1919260	80.00000	80.02412	-0.2411994E-01	-0.3014993E-01
10	0.2160040	90.00000	90.01811	-0.1811174E-01	-0.2012416E-01
11	0.2400660	100.0000	99.99545	0.4546843E-02	0.4546843E-02
12	0.2159000	90.00000	89.97497	0.2503372E-01	0.2781524E-01
13	0.1918310	80.00000	79.98467	0.1533130E-01	0.1916413E-01
14	0.1677610	70.00000	69.98394	0.1605639E-01	0.2293770E-01
15	0.1436740	60.00000	59.96613	0.3386798E-01	0.5644663E-01
16	0.1196870	50.00000	49.97995	0.2005388E-01	0.4010776E-01
17	0.9570500E-01	40.00000	39.98590	0.1409880E-01	0.3524699E-01
18	0.7172400E-01	30.00000	29.98233	0.1766593E-01	0.5888642E-01
19	0.4781900E-01	20.00000	20.00058	-0.5784688E-03	-0.2892344E-02
20	0.2388900E-01	10.00000	9.998493	0.1507456E-02	0.1507456E-01
21	0.7001104E-05	0.0000000E+00	0.6602559E-02	-0.6602559E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.36719508E-02 0.41859230E+03 -0.86410493E+01

ESS = 0.6847E-02 SD = 0.1950E-01 R2 = 0.100000E+01
2*SD = 0.3901E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880538

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 188753
PROPERTY NO. 4427-01-100
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS. STD.	0700 1234
FLUKE	8840A	DMM	0860 4044

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890 1666
COMPAQ	PORTABLE	COMPUTER	2890 1944

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	8.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S E
Date (M-D-Y)	05 18 92
Reviewed By	

Service Notes 0-100 PSIG, CHAP03 14.994 Ω
SEE ATTACHED DATA SHEET
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880538
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A
NAME: S.ELKINS / D.SYME

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

Ambient Temperature (F) 75
Facility I. D. Name C4AP03

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.994 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.994 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.994 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.976	59.985	0.00%	
10.000	10.000	83.966	83.876	-0.04%	
20.000	20.000	107.957	107.819	-0.06%	
30.000	30.000	131.947	131.792	-0.06%	
40.000	40.000	155.938	155.800	-0.06%	
50.000	50.000	179.928	179.764	-0.07%	
60.000	60.000	203.918	203.770	-0.06%	
70.000	70.000	227.909	227.821	-0.04%	
80.000	80.000	251.899	251.816	-0.03%	
90.000	90.000	275.890	275.873	-0.01%	
100.000	100.000	299.880	299.874	0.00%	
90.000	90.000	275.890	275.704	-0.08%	
80.000	80.000	251.899	251.648	-0.10%	
70.000	70.000	227.909	227.634	-0.11%	
60.000	60.000	203.918	203.599	-0.13%	
50.000	50.000	179.928	179.593	-0.14%	
40.000	40.000	155.938	155.604	-0.14%	
30.000	30.000	131.947	131.625	-0.13%	
20.000	20.000	107.957	107.692	-0.11%	
10.000	10.000	83.966	83.787	-0.07%	
0.000	0.000	59.976	59.915	-0.03%	

$\bar{z} = 59.950$

CURVEFIT OUTPUT FOR VTAB c4ap03 √

DATE: 20-MAY-92
TIME: 16:54:27

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.3499846E-04	0.0000000E+00	0.2363186E-01	-0.2363186E-01	0.0000000E+00
2	0.2392600E-01	10.00000	10.01405	-0.1405007E-01	-0.1405007
3	0.4786900E-01	20.00000	20.01875	-0.1875373E-01	-0.9376866E-01
4	0.7184200E-01	30.00000	30.02851	-0.2851170E-01	-0.9503900E-01
5	0.9585000E-01	40.00000	40.04538	-0.4538123E-01	-0.1134531
6	0.1198140	50.00000	50.03641	-0.3640533E-01	-0.7281066E-01
7	0.1438200	60.00000	60.03744	-0.3743990E-01	-0.6239984E-01
8	0.1678710	70.00000	70.04969	-0.4969394E-01	-0.7099134E-01
9	0.1918660	80.00000	80.03113	-0.3112706E-01	-0.3890882E-01
10	0.2159230	90.00000	90.03082	-0.3082205E-01	-0.3424672E-01
11	0.2399240	100.0000	99.99973	0.2725967E-03	0.2725967E-03
12	0.2157540	90.00000	89.96060	0.3939934E-01	0.4377705E-01
13	0.1916980	80.00000	79.96127	0.3873146E-01	0.4841432E-01
14	0.1676840	70.00000	69.97188	0.2812371E-01	0.4017673E-01
15	0.1436490	60.00000	59.96623	0.3377311E-01	0.5628852E-01
16	0.1196430	50.00000	49.96514	0.3486115E-01	0.6972231E-01
17	0.9565400E-01	40.00000	39.96363	0.3636555E-01	0.9091388E-01
18	0.7167500E-01	30.00000	29.95881	0.4119209E-01	0.1373070
19	0.4774200E-01	20.00000	19.96571	0.3429416E-01	0.1714708
20	0.2383700E-01	10.00000	9.976847	0.2315296E-01	0.2315296
21	-0.3500154E-04	0.0000000E+00	-0.5650727E-02	0.5650727E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS

0.89912173E-02 0.41832266E+03 -0.65129419E+01

ESS = 0.2206E-01 SD = 0.3501E-01 R2 = 0.999999E+00

2*SD = 0.7001E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
For Ind. Only	✓	
4 Standardize		
Certified & Stand.		
6 Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880536

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 179672
PROPERTY NO. 4427-01-098
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance	N
Operates within previously defined limits	N
Deviates from Mfg or previously defined limits	Y
Inoperative (Describe below)	Y

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SEROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S E
Date (M-D-Y)	0 5 / 1 5 9 2
Reviewed By	

Service Notes 0-100 PSIG, IPAP01 15.004 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS,

B-55

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880536
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

NAME: S.Elkins / D. Syme

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 70
Facility I. D. Name IPAP01

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15.004 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15.004 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15.004
CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.016	59.969	-0.02%	
10.000	10.000	84.022	83.941	-0.03%	
20.000	20.000	108.029	107.981	-0.02%	
30.000	30.000	132.035	132.020	-0.01%	
40.000	40.000	156.042	156.112	0.03%	
50.000	50.000	180.048	180.082	0.01%	
60.000	60.000	204.054	204.096	0.02%	
70.000	70.000	228.061	228.137	0.03%	
80.000	80.000	252.067	252.096	0.01%	
90.000	90.000	276.074	276.080	0.00%	
100.000	100.000	300.080	300.060	-0.01%	
90.000	90.000	276.074	276.060	-0.01%	
80.000	80.000	252.067	252.088	0.01%	
70.000	70.000	228.061	228.122	0.03%	
60.000	60.000	204.054	204.058	0.00%	
50.000	50.000	180.048	180.047	0.00%	
40.000	40.000	156.042	156.063	0.01%	
30.000	30.000	132.035	131.988	-0.02%	
20.000	20.000	108.029	108.003	-0.01%	
10.000	10.000	84.022	83.964	-0.02%	
0.000	0.000	60.016	59.947	-0.03%	

Z: 59.950

CURVEFIT OUTPUT FOR VTAB ipap01 ✓

DATE: 20-MAY-92
TIME: 16:57:21

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.1100026E-04	0.0000000E+00	0.8575692E-02	-0.8575692E-02	0.0000000E+00
2	0.2398300E-01	10.00000	9.989323	0.1067663E-01	0.1067663
3	0.4802300E-01	20.00000	19.99551	0.4488489E-02	0.2244245E-01
4	0.7206200E-01	30.00000	29.99979	0.2080978E-03	0.6936595E-03
5	0.9615400E-01	40.00000	40.02602	-0.2602338E-01	-0.6505846E-01
6	0.1201240	50.00000	50.00276	-0.2757861E-02	-0.5515722E-02
7	0.1441380	60.00000	60.00046	-0.4612405E-03	-0.7687341E-03
8	0.1681790	70.00000	70.01345	-0.1345037E-01	-0.1921481E-01
9	0.1921380	80.00000	79.99769	0.2310596E-02	0.2888246E-02
0	0.2161220	90.00000	89.99912	0.8763262E-03	0.9736958E-03
1	0.2401020	100.0000	100.0070	-0.7043519E-02	-0.7043519E-02
2	0.2161020	90.00000	89.99078	0.9219621E-02	0.1024402E-01
3	0.1921300	80.00000	79.99435	0.5645424E-02	0.7056780E-02
4	0.1681640	70.00000	70.00720	-0.7201372E-02	-0.1028768E-01
5	0.1441000	60.00000	59.98464	0.1536205E-01	0.2560342E-01
6	0.1200890	50.00000	49.98819	0.1181135E-01	0.2362270E-01
7	0.9610500E-01	40.00000	40.00563	-0.5630498E-02	-0.1407625E-01
8	0.7203000E-01	30.00000	29.98647	0.1352512E-01	0.4508373E-01
9	0.4804500E-01	20.00000	20.00467	-0.4667694E-02	-0.2333847E-01
	0.2400600E-01	10.00000	9.998898	0.1102171E-02	0.1102171E-01
1	-0.1099974E-04	0.0000000E+00	-0.5857472E-03	0.5857472E-03	0.0000000E+00

EGREE OF POLYNOMIAL 3

OEFFICIENTS
0.39948631E-02 0.41642907E+03 -0.36843736E+01 0.16616281E+02

SS = 0.1912E-02 SD = 0.1060E-01 R2 = 0.100000E+01
2*SD = 0.2121E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 088055

MANUFACTURER SENSOTEC
MODEL TJE/127810
ITEM TRANSMITR, PRES
MANUF. SER. NO. 201695
PROPERTY NO. 4427-01-118
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP 160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By S. SAROVL	
Charge Number 4H260-102-002	
Work Order No. 0296	
Name S. ELKINS/D. SYME	AD5
Date (M-D-Y)	05/18/92
Reviewed By	

Service Notes 0-100 PSIG, RTAP01 15,000 Ω
SEE ATTACHED DATA SHEET
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS,

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880556
DATE: 18-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S.ELKINS / D. SYME

Ambient Temperature (F) 69.4
Facility I. D. Name RTAP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.000	59.987	-0.01%	
10.000	10.000	84.000	83.962	-0.02%	
20.000	20.000	108.000	107.942	-0.02%	
30.000	30.000	132.000	131.928	-0.03%	
40.000	40.000	156.000	155.955	-0.02%	
50.000	50.000	180.000	179.954	-0.02%	
60.000	60.000	204.000	203.946	-0.02%	
70.000	70.000	228.000	228.017	0.01%	
80.000	80.000	252.000	252.001	0.00%	
90.000	90.000	276.000	276.049	0.02%	
100.000	100.000	300.000	300.080	0.03%	
90.000	90.000	276.000	276.021	0.01%	
80.000	80.000	252.000	251.987	-0.01%	
70.000	70.000	228.000	227.915	-0.04%	
60.000	60.000	204.000	203.846	-0.06%	
50.000	50.000	180.000	179.851	-0.06%	
40.000	40.000	156.000	155.876	-0.05%	
30.000	30.000	132.000	131.889	-0.05%	
20.000	20.000	108.000	107.912	-0.04%	
10.000	10.000	84.000	83.987	-0.01%	
0.000	0.000	60.000	60.016	0.01%	

$\bar{E} = 60.002$

CURVEFIT OUTPUT FOR VTAB rtap01 ✓

DATE: 20-MAY-92
TIME: 16:59:03

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	-0.1499914E-04	0.0000000E+00	-0.7821622E-02	0.7821622E-02	0.0000000E+00
2	0.2396000E-01	10.00000	9.999426	0.5737799E-03	0.5737799E-02
3	0.4794000E-01	20.00000	20.00403	-0.4028742E-02	-0.2014371E-01
4	0.7192600E-01	30.00000	30.00640	-0.6399893E-02	-0.2133298E-01
5	0.9595300E-01	40.00000	40.02112	-0.2112105E-01	-0.5280263E-01
6	0.1199520	50.00000	50.01943	-0.1942840E-01	-0.3885681E-01
7	0.1439440	60.00000	60.01008	-0.1008120E-01	-0.1680200E-01
8	0.1680150	70.00000	70.02887	-0.2886986E-01	-0.4124266E-01
9	0.1919990	80.00000	80.00670	-0.6704547E-02	-0.8380683E-02
10	0.2160470	90.00000	90.00641	-0.6411162E-02	-0.7123513E-02
11	0.2400780	100.0000	99.99429	0.5705875E-02	0.5705875E-02
12	0.2160190	90.00000	89.99477	0.5229109E-02	0.5810121E-02
13	0.1919850	80.00000	80.00088	-0.8816412E-03	-0.1102051E-02
14	0.1679130	70.00000	69.98643	0.1357433E-01	0.1939191E-01
15	0.1438440	60.00000	59.96845	0.3155057E-01	0.5258428E-01
16	0.1198490	50.00000	49.97653	0.2347266E-01	0.4694531E-01
17	0.9587400E-01	40.00000	39.98820	0.1179924E-01	0.2949810E-01
18	0.7188700E-01	30.00000	29.99014	0.9859604E-02	0.3286535E-01
19	0.4791000E-01	20.00000	19.99152	0.8484485E-02	0.4242242E-01
20	0.2398500E-01	10.00000	10.00986	-0.9858837E-02	-0.9858838E-01
21	0.1400086E-04	0.0000000E+00	0.4285936E-02	-0.4285936E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.15594505E-02 0.41750199E+03 -0.41152162E+01

ESS = 0.4179E-02 SD = 0.1524E-01 R2 = 0.100000E+01
2*SD = 0.3047E-01

D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

TFAP01

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880555

MANUFACTURER	SENSOTEC
MODEL	TJE/127810
ITEM	TRANSMITR, PRES
MANUF. SER. NO.	201323
PROPERTY NO.	4427-01-117
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-100 PSI	PRESS, STD.	0700123
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME ASE
Date (M-D-Y)	05 15 92
Reviewed By	

Service Notes 0-100 PSIG, TFAP01 ADS 15.000 → 15.001

SEE ATTACHED DATA SHEET.

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

B-61

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC TJE
100 PSI
TOLERANCE: 0.10%

B&W S.N. 0880555
DATE: 15-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-100 PSI
B&W Ser. No. 0700123
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 70
Facility I. D. Name TFAP01

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15.001 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15.001 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15.001 CALIBRATION ACCURACY 0.17%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.004	59.977	-0.01%	
10.000	10.000	84.006	83.799	-0.09%	
20.000	20.000	108.007	107.741	-0.11%	
30.000	30.000	132.009	131.729	-0.12%	
40.000	40.000	156.010	155.770	-0.10%	
50.000	50.000	180.012	179.729	-0.12%	
60.000	60.000	204.014	203.747	-0.11%	
70.000	70.000	228.015	227.833	-0.08%	
80.000	80.000	252.017	251.861	-0.06%	
90.000	90.000	276.018	275.940	-0.03%	
100.000	100.000	300.020	300.044	0.01%	
90.000	90.000	276.018	275.894	-0.05%	
80.000	80.000	252.017	251.790	-0.09%	
70.000	70.000	228.015	227.704	-0.13%	
60.000	60.000	204.014	203.652	-0.15%	
50.000	50.000	180.012	179.667	-0.14%	
40.000	40.000	156.010	155.664	-0.14%	
30.000	30.000	132.009	131.665	-0.14%	
20.000	20.000	108.007	107.677	-0.14%	
10.000	10.000	84.006	83.763	-0.10%	
0.000	0.000	60.004	59.972	-0.01%	

$\bar{x} = 59.975$

CURVEFIT OUTPUT FOR VTAB tfap01 ✓

DATE: 20-MAY-92
TIME: 16:58:20

	VOLTAGE(V)	OBS. PRESS. (PSIA)	CALC. PRESS. (PSIA)	DIFF.(PSIA)	% DIFFERENCE
1	0.2001764E-05	0.0000000E+00	0.1448882E-01	-0.1448882E-01	0.0000000E+00
2	0.2382400E-01	10.00000	9.990581	0.9418871E-02	0.9418871E-01
3	0.4776600E-01	20.00000	20.00103	-0.1034499E-02	-0.5172496E-02
4	0.7175400E-01	30.00000	30.01626	-0.1625932E-01	-0.5419772E-01
5	0.9579500E-01	40.00000	40.04062	-0.4061591E-01	-0.1015398
6	0.1197540	50.00000	50.01936	-0.1935856E-01	-0.3871712E-01
7	0.1437720	60.00000	60.01275	-0.1275441E-01	-0.2125735E-01
8	0.1678580	70.00000	70.02600	-0.2600398E-01	-0.3714854E-01
9	0.1918860	80.00000	80.00825	-0.8252842E-02	-0.1031605E-01
10	0.2159650	90.00000	90.00632	-0.6324233E-02	-0.7026925E-02
11	0.2400690	100.0000	100.0109	-0.1093845E-01	-0.1093845E-01
12	0.2159190	90.00000	89.98723	0.1277172E-01	0.1419080E-01
13	0.1918150	80.00000	79.97877	0.2123493E-01	0.2654367E-01
14	0.1677290	70.00000	69.97239	0.2760528E-01	0.3943611E-01
15	0.1436770	60.00000	59.97324	0.2675557E-01	0.4459262E-01
16	0.1196920	50.00000	49.99355	0.6450562E-02	0.1290112E-01
17	0.9568900E-01	40.00000	39.99644	0.3556500E-02	0.8891250E-02
18	0.7169000E-01	30.00000	29.98956	0.1044340E-01	0.3481133E-01
19	0.4770200E-01	20.00000	19.97430	0.2570481E-01	0.1285241
20	0.2378800E-01	10.00000	9.975517	0.2448255E-01	0.2448255
21	-0.2998236E-05	0.0000000E+00	0.1239318E-01	-0.1239318E-01	0.0000000E+00

EGREE OF POLYNOMIAL 3

COEFFICIENTS
0.13649825E-01 0.41912847E+03 -0.15212809E+02 0.18379541E+02

ESS = 0.7324E-02 SD = 0.2076E-01 R2 = 0.100000E+01
2*SD = 0.4151E-01

BYDYU1

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880524

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-22
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	168680
PROPERTY NO.	4427-01-128
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT. (MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION	
AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30	PSI STD.	0810341
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S E
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-25 PSI, BFDP01 ADS ~~15,003~~ → 14,999 →
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880524
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S.ELKINS / D. SYME

Ambient Temperature (F) 73
Facility I. D. Name BFDF01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.992	0.00%	
2.500	2.500	83.994	83.961	-0.01%	
5.000	5.000	107.993	107.976	-0.01%	
7.500	7.500	131.991	131.949	-0.02%	
10.000	10.000	155.990	156.010	0.01%	
12.500	12.500	179.988	180.112	0.05%	
15.000	15.000	203.986	204.109	0.05%	
17.500	17.500	227.985	228.117	0.06%	
20.000	20.000	251.983	252.123	0.06%	
22.500	22.500	275.982	276.001	0.01%	
25.000	25.000	299.980	299.957	-0.01%	
22.500	22.500	275.982	275.994	0.01%	
20.000	20.000	251.983	252.110	0.05%	
17.500	17.500	227.985	228.114	0.05%	
15.000	15.000	203.986	204.123	0.06%	
12.500	12.500	179.988	180.133	0.06%	
10.000	10.000	155.990	156.122	0.06%	
7.500	7.500	131.991	131.920	-0.03%	
5.000	5.000	107.993	107.992	0.00%	
2.500	2.500	83.994	83.951	-0.02%	
0.000	0.000	59.996	59.943	-0.02%	

$\bar{z} = 59.968$

CURVEFIT OUTPUT FOR VTAB bfdp01

DATE: 1-JUN-92
TIME: 14:15:07

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.2400158E-04	0.0000000E+00	0.8583078E-02	-0.8583078E-02	0.0000000E+00
2	0.2399300E-01	2.500000	2.499657	0.3434070E-03	0.1373628E-01
3	0.4800800E-01	5.000000	4.996559	0.3440609E-02	0.6881218E-01
4	0.7198100E-01	7.500000	7.490142	0.9857857E-02	0.1314381
5	0.9604200E-01	10.00000	9.993930	0.6070017E-02	0.6070017E-01
6	0.1201440	12.50000	12.50304	-0.3040558E-02	-0.2432446E-01
7	0.1441410	15.00000	15.00227	-0.2270506E-02	-0.1513670E-01
8	0.1681490	17.50000	17.50369	-0.3694781E-02	-0.2111303E-01
9	0.1921550	20.00000	20.00596	-0.5959487E-02	-0.2979743E-01
10	0.2160330	22.50000	22.49592	0.4077488E-02	0.1812217E-01
11	0.2399890	25.00000	24.99506	0.4938031E-02	0.1975213E-01
12	0.2160260	22.50000	22.49519	0.4807590E-02	0.2136707E-01
13	0.1921420	20.00000	20.00460	-0.4604148E-02	-0.2302074E-01
14	0.1681460	17.50000	17.50338	-0.3382142E-02	-0.1932652E-01
15	0.1441550	15.00000	15.00373	-0.3728878E-02	-0.2485919E-01
16	0.1201650	12.50000	12.50523	-0.5227199E-02	-0.4181759E-01
17	0.9615400E-01	10.00000	10.00559	-0.5587167E-02	-0.5587167E-01
18	0.7195200E-01	7.500000	7.487125	0.1287496E-01	0.1716662
19	0.4802400E-01	5.000000	4.998223	0.1776697E-02	0.3553393E-01
20	0.2398300E-01	2.500000	2.498617	0.1382915E-02	0.5531659E-01
21	-0.2499842E-04	0.0000000E+00	0.3491629E-02	-0.3491629E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.60891419E-02 0.10390712E+03 0.90993490E+00

ESS = 0.6354E-03 SD = 0.5942E-02 R2 = 0.999999E+00
2*SD = 0.1188E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880525

MANUFACTURER SENSOTEC
MODEL Z1309-22
ITEM TRANSMITR, D-P
MANUF. SER. NO. 190605
PROPERTY NO. 4427-01-129
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRESS, STD.	0810341
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	0 5 1 4 9 2
Reviewed By	

Service Notes 0-25 PSID, BFDP02 ADS ~~15,003~~ 14.999 SL
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880525
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S.ELKINS /D.SYNE

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 68
Facility I. D. Name BFDF02

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.996	0.00%	
2.500	2.500	83.994	84.094	0.04%	
5.000	5.000	107.993	108.092	0.04%	
7.500	7.500	131.991	132.147	0.06%	
10.000	10.000	155.990	156.251	0.11%	
12.500	12.500	179.988	180.315	0.14%	
15.000	15.000	203.986	204.316	0.14%	
17.500	17.500	227.985	228.240	0.11%	
20.000	20.000	251.983	252.196	0.09%	
22.500	22.500	275.982	276.061	0.03%	
25.000	25.000	299.980	299.888	-0.04%	
22.500	22.500	275.982	276.000	0.01%	
20.000	20.000	251.983	252.155	0.07%	
17.500	17.500	227.985	228.202	0.09%	
15.000	15.000	203.986	204.272	0.12%	
12.500	12.500	179.988	180.316	0.14%	
10.000	10.000	155.990	156.266	0.12%	
7.500	7.500	131.991	132.175	0.08%	
5.000	5.000	107.993	108.120	0.05%	
2.500	2.500	83.994	84.084	0.04%	
0.000	0.000	59.996	60.009	0.01%	

$\bar{x} = 60.003$

CURVEFIT OUTPUT FOR VTAB bfdp02

DATE: 20-MAY-92
TIME: 16:32:13

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.7001243E-05	0.0000000E+00	0.3832620E-02	-0.3832620E-02	0.0000000E+00
2	0.2409100E-01	2.500000	2.501942	-0.1941508E-02	-0.7766030E-01
3	0.4808900E-01	5.000000	4.992438	0.7561557E-02	0.1512311
4	0.7214400E-01	7.500000	7.491609	0.8390619E-02	0.1118749
5	0.9624800E-01	10.00000	9.998641	0.1358578E-02	0.1358578E-01
6	0.1203120	12.50000	12.50428	-0.4279320E-02	-0.3423456E-01
7	0.1443130	15.00000	15.00611	-0.6110485E-02	-0.4073657E-01
8	0.1682370	17.50000	17.50265	-0.2651525E-02	-0.1515157E-01
9	0.1921930	20.00000	20.00527	-0.5269195E-02	-0.2634598E-01
10	0.2160580	22.50000	22.50110	-0.1103922E-02	-0.4906321E-02
11	0.2398850	25.00000	24.99568	0.4323538E-02	0.1729415E-01
12	0.2159970	22.50000	22.49472	0.5279007E-02	0.2346225E-01
13	0.1921520	20.00000	20.00098	-0.9836976E-03	-0.4918488E-02
14	0.1681990	17.50000	17.49868	0.1316055E-02	0.7520317E-02
15	0.1442690	15.00000	15.00152	-0.1521470E-02	-0.1014313E-01
16	0.1203130	12.50000	12.50438	-0.4383501E-02	-0.3506801E-01
17	0.9626300E-01	10.00000	10.00020	-0.2024197E-03	-0.2024197E-02
18	0.7217200E-01	7.500000	7.494520	0.5479977E-02	0.7306636E-01
19	0.4811700E-01	5.000000	4.995346	0.4654130E-02	0.9308259E-01
20	0.2408100E-01	2.500000	2.500904	-0.9042870E-03	-0.3617148E-01
21	0.5998757E-05	0.0000000E+00	0.5179512E-02	-0.5179512E-02	0.0000000E+00

GREE OF POLYNOMIAL 2

OEFFICIENTS
0.45579981E-02 0.10360710E+03 0.23864897E+01

SS = 0.3897E-03 SD = 0.4653E-02 R2 = 0.100000E+01
2*SD = 0.9306E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880531

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1311-03
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	197071
PROPERTY NO.	4427-01-135
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-50 PSI	PRESS. STD.	0740199
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAR	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A S E
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-50 PSID, C2D P01 ~~AD2 15,000~~ 14,998
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880531
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 71
Facility I. D. Name C2DP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.998 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	60.009	0.01%	
5.000	5.000	83.989	83.864	-0.05%	
10.000	10.000	107.986	107.823	-0.07%	
15.000	15.000	131.982	131.892	-0.04%	
20.000	20.000	155.979	155.964	-0.01%	
25.000	25.000	179.976	180.000	0.01%	
30.000	30.000	203.973	203.910	-0.03%	
35.000	35.000	227.970	227.961	0.00%	
40.000	40.000	251.966	251.894	-0.03%	
45.000	45.000	275.963	275.955	0.00%	
50.000	50.000	299.960	299.919	-0.02%	
45.000	45.000	275.963	275.990	0.01%	
40.000	40.000	251.966	251.974	0.00%	
35.000	35.000	227.970	227.983	0.01%	
30.000	30.000	203.973	203.930	-0.02%	
25.000	25.000	179.976	179.978	0.00%	
20.000	20.000	155.979	155.990	0.00%	
15.000	15.000	131.982	131.912	-0.03%	
10.000	10.000	107.986	107.850	-0.06%	
5.000	5.000	83.989	83.893	-0.04%	
0.000	0.000	59.992	60.009	0.01%	

E = 60.009

CURVEFIT OUTPUT FOR VTAB c2dp01

DATE: 20-MAY-92
TIME: 16:20:07

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.1039743E-08	0.0000000E+00	0.1835668E-01	-0.1835668E-01	0.0000000E+00
2	0.2385500E-01	5.000000	4.987400	0.1260039E-01	0.2520078
3	0.4781400E-01	10.00000	9.978106	0.2189406E-01	0.2189406
4	0.7188300E-01	15.00000	14.99173	0.8274508E-02	0.5516339E-01
5	0.9595500E-01	20.00000	20.00597	-0.5969945E-02	-0.2984972E-01
6	0.1199910	25.00000	25.01272	-0.1271553E-01	-0.5086211E-01
7	0.1439010	30.00000	29.99322	0.6784933E-02	0.2261644E-01
8	0.1679520	35.00000	35.00309	-0.3085179E-02	-0.8814798E-02
9	0.1918850	40.00000	39.98838	0.1162434E-01	0.2906084E-01
10	0.2159460	45.00000	45.00033	-0.3287941E-03	-0.7306535E-03
11	0.2399100	50.00000	49.99208	0.7923363E-02	0.1584673E-01
12	0.2159810	45.00000	45.00762	-0.7619362E-02	-0.1693192E-01
13	0.1919650	40.00000	40.00504	-0.5039818E-02	-0.1259954E-01
14	0.1679740	35.00000	35.00767	-0.7667822E-02	-0.2190806E-01
15	0.1439210	30.00000	29.99738	0.2618895E-02	0.8729649E-02
16	0.1199690	25.00000	25.00813	-0.8132886E-02	-0.3253154E-01
17	0.9598100E-01	20.00000	20.01139	-0.1138580E-01	-0.5692898E-01
18	0.7190300E-01	15.00000	14.99589	0.4108469E-02	0.2738980E-01
19	0.4784100E-01	10.00000	9.983730	0.1626990E-01	0.1626990
20	0.2388400E-01	5.000000	4.993440	0.6559633E-02	0.1311927
21	0.1039743E-08	0.0000000E+00	0.1835668E-01	-0.1835668E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 1

COEFFICIENTS
0.18356463E-01 0.20830195E+03

ESS = 0.2501E-02 SD = 0.1147E-01 R2 = 0.999999E+00
2*SD = 0.2295E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880522

INSTRUMENT STATUS	AS RECD	AS LEFT
. Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER SENSOTEC
MODEL Z1309-15
ITEM TRANSMITR, D-P
MANUF. SER. NO. 195043
PROPERTY NO. 4427-01-126
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-10 PSI	PRESS. STD.	0810225
FLUKE	8840A	DMM	0850453

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	002.5
Requested By	SCOTT SPROUL
Charge Number	44260-102-002
Work Order No.	0381
Name	Dawey Pyne ADS
Date (M-D-Y)	06 18 92
Reviewed By	

Service Notes 0-10 PSI C2DP02, REPLACES 0880519, 14.999 SL
SEE ATTACHED DATA SHEET. LIMITED DUE TO NOT MEETING
4:1 RATIO SPECS.

B-73

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880522
DATE: 18-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

NAME: Danny Lynn
C. Akins

Ambient Temperature (F) 70
Facility I. D. Name C2DP02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850453
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.996	0.00%	
1.000	1.000	83.994	84.117	0.05%	
2.000	2.000	107.993	108.195	0.08%	
3.000	3.000	131.991	132.284	0.12%	
4.000	4.000	155.990	156.326	0.14%	
5.000	5.000	179.988	180.346	0.15%	
6.000	6.000	203.986	204.347	0.15%	
7.000	7.000	227.985	228.361	0.16%	
8.000	8.000	251.983	252.273	0.12%	
9.000	9.000	275.982	276.122	0.06%	
10.000	10.000	299.980	299.942	-0.02%	
9.000	9.000	275.982	276.110	0.05%	
8.000	8.000	251.983	252.272	0.12%	
7.000	7.000	227.985	228.371	0.16%	
6.000	6.000	203.986	204.380	0.16%	
5.000	5.000	179.988	180.399	0.17%	
4.000	4.000	155.990	156.398	0.17%	
3.000	3.000	131.991	132.358	0.15%	
2.000	2.000	107.993	108.290	0.12%	
1.000	1.000	83.994	84.189	0.08%	
0.000	0.000	59.996	60.075	0.03%	

$\bar{x} = 66.036$

CURVEFIT OUTPUT FOR VTAB C2DP02

DATE: 22-JUN-92
TIME: 10:33:32

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.3999986E-04	0.0000000E+00	-0.7997043E-03	0.7997043E-03	0.0000000E+00
2	0.2408100E-01	1.000000	0.9985279	0.1472057E-02	0.1472057
3	0.4815900E-01	2.000000	1.997373	0.2626740E-02	0.1313370
4	0.7224800E-01	3.000000	2.997974	0.2026220E-02	0.6754067E-01
5	0.9629000E-01	4.000000	3.997917	0.2082592E-02	0.5206481E-01
6	0.1203100	5.000000	4.998238	0.1761641E-02	0.3523282E-01
7	0.1443110	6.000000	5.999058	0.9417380E-03	0.1569563E-01
8	0.1683250	7.000000	7.001711	-0.1711004E-02	-0.2444292E-01
9	0.1922370	8.000000	8.001388	-0.1387843E-02	-0.1734804E-01
10	0.2160860	9.000000	8.999706	0.2940264E-03	0.3266960E-02
11	0.2399060	10.00000	9.998081	0.1918737E-02	0.1918737E-01
12	0.2160740	9.000000	8.999203	0.7966661E-03	0.8851846E-02
13	0.1922360	8.000000	8.001346	-0.1346010E-02	-0.1682512E-01
14	0.1683350	7.000000	7.002129	-0.2128802E-02	-0.3041145E-01
15	0.1443440	6.000000	6.000435	-0.4352199E-03	-0.7253665E-02
16	0.1203630	5.000000	5.000447	-0.4469898E-03	-0.8939796E-02
17	0.9636200E-01	4.000000	4.000914	-0.9139415E-03	-0.2284854E-01
18	0.7232200E-01	3.000000	3.001050	-0.1049568E-02	-0.3498559E-01
19	0.4825400E-01	2.000000	2.001317	-0.1316786E-02	-0.6583928E-01
20	0.2415300E-01	1.000000	1.001513	-0.1512837E-02	-0.1512837
21	0.3900014E-04	0.0000000E+00	0.2471122E-02	-0.2471122E-02	0.0000000E+00

EGREE OF POLYNOMIAL 2

COEFFICIENTS
0.85640284E-03 0.41402864E+02 0.11194405E+01

ESS = 0.5019E-04 SD = 0.1670E-02 R2 = 0.100000E+01
2*SD = 0.3340E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0P80532

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1311-03
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	197074
PROPERTY NO.	4427-01-136
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-50 PSI	PRESS. STD.	0740199
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

			B&W Serial No.
COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A S E
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-50 PSID, C2DP03 ADS ~~15.001~~ 14.995
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880532
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

NAME: S.ELKINS/D.SYME

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 72
Facility I. D. Name C2DP03

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.995 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.995 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.995
CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.980	59.989	0.00%	
5.000	5.000	83.972	83.637	-0.14%	
10.000	10.000	107.964	107.610	-0.15%	
15.000	15.000	131.956	131.680	-0.12%	
20.000	20.000	155.948	155.759	-0.08%	
25.000	25.000	179.940	179.763	-0.07%	
30.000	30.000	203.932	203.771	-0.07%	
35.000	35.000	227.924	227.779	-0.06%	
40.000	40.000	251.916	251.841	-0.03%	
45.000	45.000	275.908	275.829	-0.03%	
50.000	50.000	299.900	299.841	-0.02%	
45.000	45.000	275.908	275.851	-0.02%	
40.000	40.000	251.916	251.780	-0.06%	
35.000	35.000	227.924	227.820	-0.04%	
30.000	30.000	203.932	203.801	-0.05%	
25.000	25.000	179.940	179.800	-0.06%	
20.000	20.000	155.948	155.791	-0.07%	
15.000	15.000	131.956	131.723	-0.10%	
10.000	10.000	107.964	107.663	-0.13%	
5.000	5.000	83.972	83.707	-0.11%	
0.000	0.000	59.980	60.006	0.01%	

$\bar{x}$: 59.998

CURVEFIT OUTPUT FOR VTAB c2dp03 ✓

DATE: 20-MAY-92
TIME: 16:23:54

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.8998178E-05	0.0000000E+00	0.3175356E-01	-0.3175356E-01	0.0000000E+00
2	0.2363900E-01	5.000000	4.967323	0.3267722E-01	0.6535445
3	0.4761200E-01	10.00000	9.968403	0.3159668E-01	0.3159668
4	0.7168200E-01	15.00000	14.98737	0.1263004E-01	0.8420025E-01
5	0.9576100E-01	20.00000	20.00586	-0.5857808E-02	-0.2928904E-01
6	0.1197650	25.00000	25.00637	-0.6369452E-02	-0.2547781E-01
7	0.1437730	30.00000	30.00537	-0.5372568E-02	-0.1790856E-01
8	0.1677810	35.00000	35.00203	-0.2033682E-02	-0.5810520E-02
9	0.1918430	40.00000	40.00758	-0.7583628E-02	-0.1895907E-01
10	0.2158310	45.00000	44.99540	0.4602146E-02	0.1022699E-01
11	0.2398430	50.00000	49.98586	0.1413922E-01	0.2827845E-01
12	0.2158530	45.00000	44.99997	0.2876938E-04	0.6393195E-04
13	0.1917820	40.00000	39.99490	0.5103056E-02	0.1275764E-01
14	0.1678220	35.00000	35.01056	-0.1056480E-01	-0.3018514E-01
15	0.1438030	30.00000	30.01162	-0.1161777E-01	-0.3872592E-01
16	0.1198020	25.00000	25.01408	-0.1407548E-01	-0.5630193E-01
17	0.9579300E-01	20.00000	20.01253	-0.1252560E-01	-0.6262802E-01
18	0.7172500E-01	15.00000	14.99633	0.3665980E-02	0.2443987E-01
19	0.4766500E-01	10.00000	9.979457	0.2054277E-01	0.2054277
20	0.2370900E-01	5.000000	4.981929	0.1807091E-01	0.3614182
21	0.8001822E-05	0.0000000E+00	0.3530244E-01	-0.3530244E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.33632002E-01 0.20875780E+03 -0.20316335E+01

ESS = 0.6256E-02 SD = 0.1864E-01 R2 = 0.999999E+00
2*SD = 0.3729E-01

C3DP01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880533

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
2 Calibrated	✓	✓
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1311-03
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	200013
PROPERTY NO.	4427-01-137
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
eviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT	
Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
Ashcroft	Digigauge	Press. STD.	07401999
Fluke	8840A	D.M.M.	08504544

OTHER EQUIPMENT USED

Cooper	DP-160	Thermometer	08901666
Compaq	Portable	computer	28901944

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.5
Requested By	Scott Sproul
Charge Number	44260-102-002
Work Order No.	0342
Name	Dewey Lyne A D S
Date (M-D-Y)	06 02 92
Reviewed By	

Service Notes 0-50 PSI C3DP01 14.998Ω
See attached data sheet
Limited to data provided, does not meet 4:1 ratio specs.
ZERO SHIFT FROM BACK FILLING. RECALIBRATED

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880533
DATE: 02-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

NAME: Dewey Lyne

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

Ambient Temperature (F) 75
Facility I. D. Name C3DP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.998 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	60.003	0.00%	
5.000	5.000	83.989	83.873	-0.05%	
10.000	10.000	107.986	107.812	-0.07%	
15.000	15.000	131.982	131.828	-0.06%	
20.000	20.000	155.979	155.882	-0.04%	
25.000	25.000	179.976	179.876	-0.04%	
30.000	30.000	203.973	203.855	-0.05%	
35.000	35.000	227.970	227.882	-0.04%	
40.000	40.000	251.966	251.871	-0.04%	
45.000	45.000	275.963	275.950	-0.01%	
50.000	50.000	299.960	299.929	-0.01%	
45.000	45.000	275.963	275.954	0.00%	
40.000	40.000	251.966	251.882	-0.04%	
35.000	35.000	227.970	227.852	-0.05%	
30.000	30.000	203.973	203.911	-0.03%	
25.000	25.000	179.976	179.875	-0.04%	
20.000	20.000	155.979	155.904	-0.03%	
15.000	15.000	131.982	131.834	-0.06%	
10.000	10.000	107.986	107.803	-0.08%	
5.000	5.000	83.989	83.853	-0.06%	
0.000	0.000	59.992	59.979	-0.01%	

$\bar{z} = 59.991$

AS RECEIVED ✓ AS LEFT ____

RANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880533
DATE: 02-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

NAME: Dewey Lyons

Ambient Temperature (F) 75
Facility I. D. Name C3DP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.998 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	59.886	-0.04%	
5.000	5.000	83.989	83.766	-0.09%	
10.000	10.000	107.986	107.699	-0.12%	
15.000	15.000	131.982	131.747	-0.10%	
20.000	20.000	155.979	155.804	-0.07%	
25.000	25.000	179.976	179.799	-0.07%	
30.000	30.000	203.973	203.833	-0.06%	
35.000	35.000	227.970	227.794	-0.07%	
40.000	40.000	251.966	251.806	-0.07%	
45.000	45.000	275.963	275.842	-0.05%	
50.000	50.000	299.960	299.835	-0.05%	
45.000	45.000	275.963	275.852	-0.05%	
40.000	40.000	251.966	251.786	-0.08%	
35.000	35.000	227.970	227.826	-0.06%	
30.000	30.000	203.973	203.805	-0.07%	
25.000	25.000	179.976	179.760	-0.09%	
20.000	20.000	155.979	155.785	-0.08%	
15.000	15.000	131.982	131.723	-0.11%	
10.000	10.000	107.986	107.687	-0.12%	
5.000	5.000	83.989	83.737	-0.10%	
0.000	0.000	59.992	59.833	-0.07%	

= 59.886 mV

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CURVEFIT OUTPUT FOR VTAB C3DP01

DATE: 2-JUN-92
TIME: 10:59:48

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.1200164E-04	0.0000000E+00	0.1526318E-01	-0.1526318E-01	0.0000000E+00
2	0.2388200E-01	5.000000	4.994711	0.5288517E-02	0.1057703
3	0.4782100E-01	10.00000	9.986931	0.1306854E-01	0.1306854
4	0.7183700E-01	15.00000	14.99358	0.6423436E-02	0.4282291E-01
5	0.9589100E-01	20.00000	20.00650	-0.6504673E-02	-0.3252336E-01
6	0.1198850	25.00000	25.00529	-0.5294533E-02	-0.2117813E-01
7	0,1438640	30.00000	29.99933	0.6711251E-03	0.2237084E-02
8	0.1678910	35.00000	35.00173	-0.1725153E-02	-0.4929008E-02
9	0.1918800	40.00000	39.99458	0.5422764E-02	0.1355691E-01
10	0.2159590	45.00000	45.00452	-0.4520565E-02	-0.1004570E-01
11	0.2399380	50.00000	49.99202	0.7975764E-02	0.1595153E-01
12	0.2159630	45.00000	45.00535	-0.5352679E-02	-0.1189484E-01
13	0.1918910	40.00000	39.99687	0.3133699E-02	0.7834246E-02
14	0.1678610	35.00000	34.99548	0.4519795E-02	0.1291370E-01
15	0.1439200	30.00000	30.01099	-0.1098992E-01	-0.3663306E-01
16	0.1198840	25.00000	25.00509	-0.5086232E-02	-0.2034493E-01
17	0.9591300E-01	20.00000	20.01109	-0.1108879E-01	-0.5544395E-01
18	0.7184300E-01	15.00000	14.99483	0.5172813E-02	0.3448542E-01
19	0.4781200E-01	10.00000	9.985055	0.1494509E-01	0.1494509
20	0.2386200E-01	5.000000	4.990540	0.9459980E-02	0.1891996
21	-0.1199836E-04	0.0000000E+00	0.1025580E-01	-0.1025580E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 2

)EFFICIENTS
0.12759145E-01 0.20864083E+03 -0.14173950E+01

ESS = 0.1433E-02 SD = 0.8924E-02 R2 = 0.100000E+01
2*SD = 0.1785E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880520

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR,D-P
MANUF. SER. NO.	187402
PROPERTY NO.	4427-01-124
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
For Ind. Only	✓	
4 Standardize		
Certified & Stand.		
6 Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-10 PSI	PRESS, STD.	0810215
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	H4260-102-002
Work Order No.	0296
Name	S.ELKINS/D.SYME A S E
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-10 PSID, C3DP02, ADS ~~15,000~~ 14,994 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880520
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 71
Facility I. D. Name C3DP02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.994 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.994 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.994 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.976	59.976	0.00%	
1.000	1.000	83.966	84.054	0.04%	
2.000	2.000	107.957	108.065	0.04%	
3.000	3.000	131.947	132.021	0.03%	
4.000	4.000	155.938	156.051	0.05%	
5.000	5.000	179.928	180.062	0.06%	
6.000	6.000	203.918	204.013	0.04%	
7.000	7.000	227.909	228.024	0.05%	
8.000	8.000	251.899	251.971	0.03%	
9.000	9.000	275.890	275.877	-0.01%	
10.000	10.000	299.880	299.734	-0.06%	
9.000	9.000	275.890	275.817	-0.03%	
8.000	8.000	251.899	251.904	0.00%	
7.000	7.000	227.909	227.901	0.00%	
6.000	6.000	203.918	203.909	0.00%	
5.000	5.000	179.928	179.938	0.00%	
4.000	4.000	155.938	155.955	0.01%	
3.000	3.000	131.947	131.959	0.00%	
2.000	2.000	107.957	107.958	0.00%	
1.000	1.000	83.966	83.973	0.00%	
0.000	0.000	59.976	59.914	-0.03%	

$\bar{Z} = 59.945$

CURVEFIT OUTPUT FOR VTAB c3dp02 ✓

DATE: 20-MAY-92
TIME: 16:27:54

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.3100153E-04	0.0000000E+00	0.9125592E-03	-0.9125592E-03	0.0000000E+00
2	0.2410900E-01	1.000000	1.002852	-0.2852121E-02	-0.2852121
3	0.4812000E-01	2.000000	2.002458	-0.2457680E-02	-0.1228840
4	0.7207600E-01	3.000000	3.000225	-0.2253522E-03	-0.7511741E-02
5	0.9610600E-01	4.000000	4.001529	-0.1528528E-02	-0.3821320E-01
6	0.1201170	5.000000	5.002494	-0.2493558E-02	-0.4987117E-01
7	0.1440680	6.000000	6.001409	-0.1409008E-02	-0.2348347E-01
8	0.1680790	7.000000	7.003280	-0.3279673E-02	-0.4685248E-01
9	0.1920260	8.000000	8.002931	-0.2931480E-02	-0.3664350E-01
10	0.2159320	9.000000	9.001322	-0.1321582E-02	-0.1468424E-01
11	0.2397890	10.00000	9.998113	0.1886666E-02	0.1886666E-01
12	0.2158720	9.000000	8.998815	0.1184771E-02	0.1316412E-01
13	0.1919590	8.000000	8.000134	-0.1339801E-03	-0.1674751E-02
14	0.1679560	7.000000	6.998146	0.1853717E-02	0.2648167E-01
15	0.1439640	6.000000	5.997071	0.2929456E-02	0.4882427E-01
16	0.1199930	5.000000	4.997323	0.2676890E-02	0.5353780E-01
17	0.9601000E-01	4.000000	3.997527	0.2472588E-02	0.6181470E-01
18	0.7201400E-01	3.000000	2.997642	0.2357531E-02	0.7858437E-01
19	0.4801300E-01	2.000000	1.998002	0.1997859E-02	0.9989295E-01
20	0.2402800E-01	1.000000	0.9994808	0.5192345E-03	0.5192345E-01
21	-0.3099847E-04	0.0000000E+00	-0.1666811E-02	0.1666811E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.37718993E-03 0.41602750E+02 0.39320188E+00

ESS = 0.8957E-04 SD = 0.2231E-02 R2 = 0.100000E+01
2*SD = 0.4461E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880534

MANUFACTURER SENSOTEC
MODEL Z1311-03
ITEM TRANSMITR, D-P
MANUF. SER. NO. 200017
PROPERTY NO. 4427-01-138
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-50 PSI	PRESS, STD.	0740199
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SARDUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-50 PSID, CHDP01 14,994 Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880334
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

NAME: S.ELKINS/D.SYME

Ambient Temperature (F) 72
Facility I. D. Name C4DP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.994 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.994 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.994
CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.976	59.997	0.01%	
5.000	5.000	83.966	83.561	-0.17%	
10.000	10.000	107.957	107.488	-0.20%	
15.000	15.000	131.947	131.532	-0.17%	
20.000	20.000	155.938	155.610	-0.14%	
25.000	25.000	179.928	179.617	-0.13%	
30.000	30.000	203.918	203.650	-0.11%	
35.000	35.000	227.909	227.703	-0.09%	
40.000	40.000	251.899	251.780	-0.05%	
45.000	45.000	275.890	275.828	-0.03%	
50.000	50.000	299.880	299.839	-0.02%	
45.000	45.000	275.890	275.945	0.02%	
40.000	40.000	251.899	251.929	0.01%	
35.000	35.000	227.909	227.977	0.03%	
30.000	30.000	203.918	203.917	0.00%	
25.000	25.000	179.928	179.948	0.01%	
20.000	20.000	155.938	155.904	-0.01%	
15.000	15.000	131.947	131.803	-0.06%	
10.000	10.000	107.957	107.768	-0.08%	
5.000	5.000	83.966	83.763	-0.08%	
0.000	0.000	59.976	60.021	0.02%	

Z=61.009

CURVEFIT OUTPUT FOR VTAB c4dp01

DATE: 20-MAY-92
TIME: 16:28:51

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.1199896E-04	0.0000000E+00	0.3438477E-01	-0.3438477E-01	0.0000000E+00
2	0.2355200E-01	5.000000	4.953110	0.4689038E-01	0.9378077
3	0.4747900E-01	10.00000	9.944888	0.5511197E-01	0.5511197
4	0.7152300E-01	15.00000	14.95832	0.4168396E-01	0.2778930
5	0.9560100E-01	20.00000	19.97606	0.2393876E-01	0.1196938
6	0.1196080	25.00000	24.97625	0.2375151E-01	0.9500605E-01
7	0.1436410	30.00000	29.97909	0.2091125E-01	0.6970418E-01
8	0.1676940	35.00000	34.98333	0.1667491E-01	0.4764260E-01
9	0.1917710	40.00000	39.98978	0.1021787E-01	0.2554469E-01
10	0.2158190	45.00000	44.98744	0.1255985E-01	0.2791079E-01
11	0.2398300	50.00000	49.97465	0.2535202E-01	0.5070404E-01
12	0.2159360	45.00000	45.01175	-0.1174833E-01	-0.2610741E-01
13	0.1919200	40.00000	40.02076	-0.2075584E-01	-0.5188960E-01
14	0.1679680	35.00000	35.04031	-0.4031495E-01	-0.1151856
15	0.1439080	30.00000	30.03465	-0.3465340E-01	-0.1155113
16	0.1199390	25.00000	25.04517	-0.4517002E-01	-0.1806801
17	0.9589500E-01	20.00000	20.03731	-0.3731235E-01	-0.1865618
18	0.7179400E-01	15.00000	15.01481	-0.1480664E-01	-0.9871095E-01
19	0.4775900E-01	10.00000	10.00329	-0.3286912E-02	-0.3286912E-01
20	0.2375400E-01	5.000000	4.995263	0.4736601E-02	0.9473201E-01
21	0.1200104E-04	0.0000000E+00	0.3939586E-01	-0.3939586E-01	0.0000000E+00

GREE OF POLYNOMIAL 2

COEFFICIENTS
0.36890099E-01 0.20879528E+03 -0.23925242E+01

ESS = 0.1955E-01 SD = 0.3295E-01 R2 = 0.999996E+00
2*SD = 0.6590E-01

C4DP02

D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880521

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified		
2 Calibrated	✓	✓
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	187436
PROPERTY NO.	4427-01-125
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
Ashcroft	7780	Press. STD.	08102255
Fluke	8840A	D.V.M.	08504544

OTHER EQUIPMENT USED

Cooper	DP160 Thermometer	08901666
Compaq	Portable Computer	28901944

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0011.5
Requested By	Scott Sproul
Charge Number	44260·102·002
Work Order No.	0342
Name	Dewey Dyne ADS
Date (M-D-Y)	06 02 92
Reviewed By	

Service Notes 0-10 PSI C4DP02

Calibration Limited to data provided
See attached data sheet
HAD ZERO SHIFT FROM BACK FILLING. RECALIBRATED

B-89

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880521
DATE: 01-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_09.03A
NAME: Danny Lyons

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

Ambient Temperature (F) 75
Facility I. D. Name C4DP02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.993 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.993 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.993
CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.972	59.961	0.00%	
1.000	1.000	83.961	84.029	0.03%	
2.000	2.000	107.950	108.071	0.05%	
3.000	3.000	131.938	132.073	0.06%	
4.000	4.000	155.927	156.045	0.05%	
5.000	5.000	179.916	180.053	0.06%	
6.000	6.000	203.905	204.037	0.06%	
7.000	7.000	227.894	228.033	0.06%	
8.000	8.000	251.882	251.993	0.05%	
9.000	9.000	275.871	275.894	0.01%	
10.000	10.000	299.860	299.777	-0.03%	
9.000	9.000	275.871	275.893	0.01%	
8.000	8.000	251.882	251.990	0.04%	
7.000	7.000	227.894	228.030	0.06%	
6.000	6.000	203.905	204.041	0.06%	
5.000	5.000	179.916	180.058	0.06%	
4.000	4.000	155.927	156.094	0.07%	
3.000	3.000	131.938	132.088	0.06%	
2.000	2.000	107.950	108.091	0.06%	
1.000	1.000	83.961	84.033	0.03%	
0.000	0.000	59.972	60.006	0.01%	

$\bar{z} = 59.984$

AS RECEIVED ✓ AS LEFT ____

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880521
DATE: 01-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

NAME: Denny Lyons

Ambient Temperature (F) 75
Facility I. D. Name C4DP02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.993 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.993 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.993 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.972	62.033	0.86%	YES
1.000	1.000	83.961	86.036	0.87%	YES
2.000	2.000	107.950	110.044	0.87%	YES
3.000	3.000	131.938	134.026	0.87%	YES
4.000	4.000	155.927	157.963	0.85%	YES
5.000	5.000	179.916	181.948	0.85%	YES
6.000	6.000	203.905	205.837	0.81%	YES
7.000	7.000	227.894	229.809	0.80%	YES
8.000	8.000	251.882	253.708	0.76%	YES
9.000	9.000	275.871	277.577	0.71%	YES
10.000	10.000	299.860	301.414	0.65%	YES
9.000	9.000	275.871	277.560	0.70%	YES
8.000	8.000	251.882	253.697	0.76%	YES
7.000	7.000	227.894	229.787	0.79%	YES
6.000	6.000	203.905	205.846	0.81%	YES
5.000	5.000	179.916	181.912	0.83%	YES
4.000	4.000	155.927	157.960	0.85%	YES
3.000	3.000	131.938	134.020	0.87%	YES
2.000	2.000	107.950	110.060	0.88%	YES
1.000	1.000	83.961	86.047	0.87%	YES
0.000	0.000	59.972	62.052	0.87%	YES

CURVEFIT OUTPUT FOR VTAB C4DP02

DATE: 2-JUN-92
TIME: 11:00:54

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.2299854E-04	0.0000000E+00	-0.9825019E-03	0.9825019E-03	0.0000000E+00
2	0.2404500E-01	1.000000	0.9999127	0.8732024E-04	0.8732024E-02
3	0.4808700E-01	2.000000	2.000318	-0.3178341E-03	-0.1589170E-01
4	0.7208900E-01	3.000000	2.999648	0.3520218E-03	0.1173406E-01
5	0.9606100E-01	4.000000	3.998317	0.1683112E-02	0.4207779E-01
6	0.1200690	5.000000	4.999074	0.9256676E-03	0.1851335E-01
7	0.1440530	6.000000	5.999420	0.5803080E-03	0.9671800E-02
8	0.1680490	7.000000	7.000854	-0.8540446E-03	-0.1220064E-01
9	0.1920090	8.000000	8.001373	-0.1373305E-02	-0.1716631E-01
10	0.2159100	9.000000	9.000014	-0.1355261E-04	-0.1505845E-03
11	0.2397930	10.00000	9.998485	0.1514960E-02	0.1514960E-01
12	0.2159090	9.000000	8.999972	0.2824197E-04	0.3137997E-03
13	0.1920060	8.000000	8.001248	-0.1247995E-02	-0.1559993E-01
14	0.1680460	7.000000	7.000729	-0.7288076E-03	-0.1041154E-01
15	0.1440570	6.000000	5.999587	0.4134235E-03	0.6890392E-02
16	0.1200740	5.000000	4.999283	0.7171846E-03	0.1434369E-01
17	0.9611000E-01	4.000000	4.000359	-0.3588205E-03	-0.8970513E-02
18	0.7210400E-01	3.000000	3.000273	-0.2726917E-03	-0.9089722E-02
19	0.4810700E-01	2.000000	2.001150	-0.1150295E-02	-0.5751473E-01
20	0.2404900E-01	1.000000	1.000079	-0.7907353E-04	-0.7907353E-02
21	0.2200146E-04	0.0000000E+00	0.8883218E-03	-0.8883218E-03	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
-0.26364184E-04 0.41573860E+02 0.51113723E+00

ESS = 0.1523E-04 SD = 0.9199E-03 R2 = 0.100000E+01
2*SD = 0.1840E-02

IPDP04

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880526

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated	✓	✓
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-22
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	195498
PROPERTY NO.	4427-01-130
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30PSI	PRESS, STD.	0810341
FLUKE	8840A	DMM	0850454

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.5
Requested By	SCOTT SPROUL
Charge Number	44160-102-002
Work Order No.	0341
Name	Dewey Lyne ADS
Date (M-D-Y)	06 03 92
Reviewed By	

Service Notes RESET ZERO & RECALIBRATED. HAD ZERO SHIFT IPDP04
0-25 PSI SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

B-93

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880526
DATE: 03-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: Dewey Lynn
MARK JOHNSON

Ambient Temperature (F) 75
Facility I. D. Name IPDP04

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.33%
LIMITED

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	59.942	-0.02%	
2.500	2.500	83.978	84.004	0.01%	
5.000	5.000	107.971	108.020	0.02%	
7.500	7.500	131.965	132.049	0.03%	
10.000	10.000	155.958	156.127	0.07%	
12.500	12.500	179.952	180.234	0.12%	
15.000	15.000	203.946	204.239	0.12%	
17.500	17.500	227.939	228.197	0.11%	
20.000	20.000	251.933	252.234	0.13%	
22.500	22.500	275.926	276.132	0.09%	
25.000	25.000	299.920	300.013	0.04%	
22.500	22.500	275.926	276.107	0.08%	
20.000	20.000	251.933	252.236	0.13%	
17.500	17.500	227.939	228.228	0.12%	
15.000	15.000	203.946	204.232	0.12%	
12.500	12.500	179.952	180.234	0.12%	
10.000	10.000	155.958	156.199	0.10%	
7.500	7.500	131.965	132.044	0.03%	
5.000	5.000	107.971	108.076	0.04%	
2.500	2.500	83.978	83.974	0.00%	
0.000	0.000	59.984	59.960	-0.01%	

CURVEFIT OUTPUT FOR VTAB IPDP04

DATE: 3-JUN-92
TIME: 11:32:07

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.8999916E-05	0.0000000E+00	0.4157776E-02	-0.4157776E-02	0.0000000E+00
2	0.2405300E-01	2.500000	2.500937	-0.9373786E-03	-0.3749514E-01
3	0.4806900E-01	5.000000	4.994678	0.5322285E-02	0.1064457
4	0.7209800E-01	7.500000	7.491502	0.8498427E-02	0.1133124
5	0.9617600E-01	10.00000	9.995156	0.4843617E-02	0.4843617E-01
6	0.1202830	12.50000	12.50357	-0.3570983E-02	-0.2856787E-01
7	0.1442880	15.00000	15.00311	-0.3106469E-02	-0.2070979E-01
8	0.1682460	17.50000	17.49947	0.5263774E-03	0.3007871E-02
9	0.1922830	20.00000	20.00580	-0.5804808E-02	-0.2902404E-01
10	0.2161810	22.50000	22.49936	0.6372504E-03	0.2832224E-02
11	0.2400620	25.00000	24.99286	0.7139690E-02	0.2855876E-01
12	0.2161560	22.50000	22.49675	0.3246689E-02	0.1442973E-01
13	0.1922850	20.00000	20.00601	-0.6013420E-02	-0.3006710E-01
14	0.1682770	17.50000	17.50270	-0.2704866E-02	-0.1545638E-01
15	0.1442810	15.00000	15.00238	-0.2377337E-02	-0.1584891E-01
16	0.1202830	12.50000	12.50357	-0.3570983E-02	-0.2856787E-01
17	0.9624800E-01	10.00000	10.00265	-0.2645627E-02	-0.2645627E-01
18	0.7209300E-01	7.500000	7.490982	0.9018151E-02	0.1202420
19	0.4812500E-01	5.000000	5.000495	-0.4945902E-03	-0.9891805E-02
20	0.2402300E-01	2.500000	2.497823	0.2176637E-02	0.8706547E-01
21	0.9000084E-05	0.0000000E+00	0.6024886E-02	-0.6024886E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.50913221E-02 0.10372832E+03 0.15016764E+01

ESS = 0.4520E-03 SD = 0.5011E-02 R2 = 0.100000E+01
2*SD = 0.1002E-01

1PDP05

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880527

MANUFACTURER SENSOTEC
MODEL Z1309-22
ITEM TRANSMITR, D-P
MANUF. SER. NO. 195503
PROPERTY NO. 4427-01-131
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT

Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRESS. STD.	0810341
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By	S. SPROVL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S L
Date (M-D-Y)	05/14/92
Reviewed By	

Service Notes 0-25 PSID, IPDP05 14.993 ~

SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPES.

B-96

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880527
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name IPDP05

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.993 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.993 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.993

CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.972	59.975	0.00%	
2.500	2.500	83.961	84.033	0.03%	
5.000	5.000	107.950	108.136	0.08%	
7.500	7.500	131.938	132.211	0.11%	
10.000	10.000	155.927	156.284	0.15%	
12.500	12.500	179.916	180.386	0.20%	
15.000	15.000	203.905	204.356	0.19%	
17.500	17.500	227.894	228.268	0.16%	
20.000	20.000	251.882	252.187	0.13%	
22.500	22.500	275.871	275.986	0.05%	
25.000	25.000	299.860	299.753	-0.04%	
22.500	22.500	275.871	275.906	0.01%	
20.000	20.000	251.882	252.080	0.08%	
17.500	17.500	227.894	228.165	0.11%	
15.000	15.000	203.905	204.243	0.14%	
12.500	12.500	179.916	180.288	0.16%	
10.000	10.000	155.927	156.278	0.15%	
7.500	7.500	131.938	132.159	0.09%	
5.000	5.000	107.950	108.113	0.07%	
2.500	2.500	83.961	84.027	0.03%	
0.000	0.000	59.972	59.970	0.00%	

$\bar{Z} = 59.973$

B-97

CURVEFIT OUTPUT FOR VTAB ipdp05 ✓

DATE: 20-MAY-92
TIME: 16:36:00

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.1998520E-05	0.0000000E+00	0.7038651E-02	-0.7038651E-02	0.0000000E+00
2	0.2406000E-01	2.500000	2.497584	0.2416009E-02	0.9664034E-01
3	0.4816300E-01	5.000000	4.996507	0.3493234E-02	0.6986468E-01
4	0.7223800E-01	7.500000	7.496242	0.3757500E-02	0.5010000E-01
5	0.9631100E-01	10.00000	9.999484	0.5161397E-03	0.5161397E-02
6	0.1204130	12.50000	12.50946	-0.9460645E-02	-0.7568516E-01
7	0.1443830	15.00000	15.00938	-0.9382544E-02	-0.6255030E-01
8	0.1682950	17.50000	17.50692	-0.6923481E-02	-0.3956275E-01
9	0.1922140	20.00000	20.00886	-0.8860791E-02	-0.4430396E-01
10	0.2160130	22.50000	22.50188	-0.1884290E-02	-0.8374621E-02
11	0.2397800	25.00000	24.99518	0.4822544E-02	0.1929017E-01
12	0.2159330	22.50000	22.49350	0.6502052E-02	0.2889801E-01
13	0.1921070	20.00000	19.99766	0.2339616E-02	0.1169808E-01
14	0.1681920	17.50000	17.49616	0.3842435E-02	0.2195677E-01
15	0.1442700	15.00000	14.99759	0.2411289E-02	0.1607526E-01
16	0.1203150	12.50000	12.49925	0.7525890E-03	0.6020712E-02
17	0.9630500E-01	10.00000	9.998859	0.1140515E-02	0.1140515E-01
18	0.7218600E-01	7.500000	7.490839	0.9160724E-02	0.1221430
19	0.4814000E-01	5.000000	4.994120	0.5879576E-02	0.1175915
20	0.2405400E-01	2.500000	2.496962	0.3037606E-02	0.1215042
21	-0.3001480E-05	0.0000000E+00	0.6521424E-02	-0.6521424E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.68319136E-02 0.10344546E+03 0.32036882E+01

ESS = 0.6532E-03 SD = 0.6024E-02 R2 = 0.999999E+00
2*SD = 0.1205E-01

IPDP06

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880528

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated	✓	✓
For Ind. Only		
Standardize		
Certified & Stand.		
Calibrated & Stand.		
Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-22
ITEM	TRANSMITR,D-P
MANUF. SER. NO.	201803
PROPERTY NO.	4427-01-132
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
eviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRESS. STD.	0810341
FLUKE	8840A	DMM	0850454

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	1890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.5
Requested By	SCOTT SPROUL
Charge Number	44260-102-002
Work Order No.	0341
Name	Dawn Lynn ADS
Date (M-D-Y)	06 03 92
Reviewed By	

Service Notes RESET ZERO & RECALIBRATED, HAD ZERO SHIFT, IPDP06
0-25 PSI SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880528
DATE: 03-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: Danny Lynn
MARK JOHNSON

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

Ambient Temperature (F) 75
Facility I. D. Name IPDP06

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.997 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.997 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.997
CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.988	59.976	0.00%	
2.500	2.500	83.983	84.021	0.02%	
5.000	5.000	107.978	108.079	0.04%	
7.500	7.500	131.974	132.097	0.05%	
10.000	10.000	155.969	156.191	0.09%	
12.500	12.500	179.964	180.272	0.13%	
15.000	15.000	203.959	204.230	0.11%	
17.500	17.500	227.954	228.190	0.10%	
20.000	20.000	251.950	252.128	0.07%	
22.500	22.500	275.945	275.980	0.01%	
25.000	25.000	299.940	299.850	-0.04%	
22.500	22.500	275.945	275.982	0.02%	
20.000	20.000	251.950	252.122	0.07%	
17.500	17.500	227.954	228.194	0.10%	
15.000	15.000	203.959	204.230	0.11%	
12.500	12.500	179.964	180.269	0.13%	
10.000	10.000	155.969	156.241	0.11%	
7.500	7.500	131.974	132.129	0.06%	
5.000	5.000	107.978	108.122	0.06%	
2.500	2.500	83.983	84.055	0.03%	
0.000	0.000	59.988	59.981	0.00%	

B-100

CURVEFIT OUTPUT FOR VTAB IPDP06

DATE: 3-JUN-92
TIME: 11:32:27

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.2999197E-05	0.0000000E+00	0.4433861E-02	-0.4433861E-02	0.0000000E+00
2	0.2404200E-01	2.500000	2.497615	0.2384979E-02	0.9539918E-01
3	0.4810000E-01	5.000000	4.994821	0.5178856E-02	0.1035771
4	0.7211800E-01	7.500000	7.490546	0.9453641E-02	0.1260486
5	0.9621200E-01	10.00000	9.996850	0.3149694E-02	0.3149694E-01
6	0.1202930	12.50000	12.50449	-0.4485556E-02	-0.3588445E-01
7	0.1442510	15.00000	15.00197	-0.1974749E-02	-0.1316499E-01
8	0.1682110	17.50000	17.50233	-0.2328290E-02	-0.1330451E-01
9	0.1921490	20.00000	20.00304	-0.3038327E-02	-0.1519164E-01
10	0.2160010	22.50000	22.49740	0.2598895E-02	0.1155065E-01
11	0.2398710	25.00000	24.99628	0.3718677E-02	0.1487471E-01
12	0.2160030	22.50000	22.49761	0.2389632E-02	0.1062058E-01
13	0.1921430	20.00000	20.00241	-0.2411199E-02	-0.1205599E-01
14	0.1682150	17.50000	17.50275	-0.2745933E-02	-0.1569104E-01
15	0.1442510	15.00000	15.00197	-0.1974749E-02	-0.1316499E-01
16	0.1202900	12.50000	12.50417	-0.4172989E-02	-0.3338391E-01
17	0.9626200E-01	10.00000	10.00205	-0.2054194E-02	-0.2054194E-01
18	0.7215000E-01	7.500000	7.493873	0.6126721E-02	0.8168962E-01
19	0.4814300E-01	5.000000	4.999287	0.7130842E-03	0.1426168E-01
20	0.2407600E-01	2.500000	2.501142	-0.1142311E-02	-0.4569244E-01
21	0.2000803E-05	0.0000000E+00	0.4952024E-02	-0.4952024E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

)EFFICIENTS
0.47446754E-02 0.10363253E+03 0.23132344E+01

ESS = 0.3192E-03 SD = 0.4211E-02 R2 = 0.100000E+01
2*SD = 0.8422E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 0880529

MANUFACTURER	SENSOTEC
MODEL	Z1309-22
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	201804
PROPERTY NO.	4427-01-133
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRES, STD.	0810347
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS/D. SYME A D S
Date (M-D-Y)	0 5 1 4 9 2
Reviewed By	

Service Notes 0-25 PSID, TFD P01 ADS ~~14.997~~ 14.995

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

B-102

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880529
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

RESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 70
Facility I. D. Name TFDP01

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.995 OHMS
ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.995 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.995 CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.980	59.996	0.01%	
2.500	2.500	83.972	84.071	0.04%	
5.000	5.000	107.964	108.055	0.04%	
7.500	7.500	131.956	132.099	0.06%	
10.000	10.000	155.948	156.109	0.07%	
12.500	12.500	179.940	180.203	0.11%	
15.000	15.000	203.932	204.141	0.09%	
17.500	17.500	227.924	228.115	0.08%	
20.000	20.000	251.916	252.038	0.05%	
22.500	22.500	275.908	275.939	0.01%	
25.000	25.000	299.900	299.796	-0.04%	
22.500	22.500	275.908	275.757	-0.06%	
20.000	20.000	251.916	251.949	0.01%	
17.500	17.500	227.924	227.999	0.03%	
15.000	15.000	203.932	204.022	0.04%	
12.500	12.500	179.940	180.071	0.05%	
10.000	10.000	155.948	156.069	0.05%	
7.500	7.500	131.956	131.996	0.02%	
5.000	5.000	107.964	108.009	0.02%	
2.500	2.500	83.972	83.961	0.00%	
0.000	0.000	59.980	59.975	0.00%	

E = 59.986

B-103

CURVEFIT OUTPUT FOR VTAB tfdp01

DATE: 20-MAY-92
TIME: 16:33:18

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.1000098E-04	0.0000000E+00	0.4584974E-02	-0.4584974E-02	0.0000000E+00
2	0.2408500E-01	2.500000	2.505641	-0.5640680E-02	-0.2256272
3	0.4806900E-01	5.000000	4.999105	0.8949766E-03	0.1789953E-01
4	0.7211300E-01	7.500000	7.500673	-0.6729063E-03	-0.8972084E-02
5	0.9612300E-01	10.00000	10.00057	-0.5674768E-03	-0.5674768E-02
6	0.1202170	12.50000	12.51108	-0.1108059E-01	-0.8864474E-01
7	0.1441550	15.00000	15.00720	-0.7196686E-02	-0.4797791E-01
8	0.1681290	17.50000	17.50892	-0.8922446E-02	-0.5098541E-01
9	0.1920520	20.00000	20.00718	-0.7177541E-02	-0.3588770E-01
10	0.2159530	22.50000	22.50498	-0.4981944E-02	-0.2214197E-01
11	0.2398100	25.00000	25.00003	-0.2887305E-04	-0.1154922E-03
12	0.2157710	22.50000	22.48595	0.1404517E-01	0.6242299E-01
13	0.1919630	20.00000	19.99788	0.2120068E-02	0.1060034E-01
14	0.1680130	17.50000	17.49681	0.3186813E-02	0.1821036E-01
15	0.1440360	15.00000	14.99478	0.5216525E-02	0.3477683E-01
16	0.1200850	12.50000	12.49732	0.2678471E-02	0.2142776E-01
17	0.9608300E-01	10.00000	9.996401	0.3598828E-02	0.3598828E-01
18	0.7201000E-01	7.500000	7.489953	0.1004733E-01	0.1339644
19	0.4802300E-01	5.000000	4.994321	0.5679084E-02	0.1135817
20	0.2397500E-01	2.500000	2.494209	0.5791041E-02	0.2316416
21	-0.1099902E-04	0.0000000E+00	0.2404185E-02	-0.2404185E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.35464012E-02 0.10384708E+03 0.16156422E+01

ESS = 0.8167E-03 SD = 0.6736E-02 R2 = 0.999999E+00
2*SD = 0.1347E-01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880535

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER SENSOTEC
MODEL Z1311-03
ITEM TRANSMITR, D-P
MANUF. SER. NO. 200018
PROPERTY NO. 4427-01-139
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) ~~N~~ Y
RECAL INT.(MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-50 PSI	PRESS. STD.	0740199
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S.ELKINS/D.SYME ADS
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-50 PSID, TFDP01 15.003 ↵
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

B-105

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880535
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

NAME: S.ELKINS/D.SYME

Ambient Temperature (F) 72
Facility I. D. Name ~~TFBF01~~ TFDF02

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 15.003 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 15.003 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 15.003
CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	60.012	60.026	0.01%	
5.000	5.000	84.017	83.756	-0.11%	
10.000	10.000	108.022	107.699	-0.13%	
15.000	15.000	132.026	131.729	-0.12%	
20.000	20.000	156.031	155.777	-0.11%	
25.000	25.000	180.036	179.879	-0.07%	
30.000	30.000	204.041	203.860	-0.08%	
35.000	35.000	228.046	227.882	-0.07%	
40.000	40.000	252.050	251.938	-0.05%	
45.000	45.000	276.055	276.045	0.00%	
50.000	50.000	300.060	300.067	0.00%	
45.000	45.000	276.055	276.121	0.03%	
40.000	40.000	252.050	252.079	0.01%	
35.000	35.000	228.046	228.079	0.01%	
30.000	30.000	204.041	204.090	0.02%	
25.000	25.000	180.036	180.031	0.00%	
20.000	20.000	156.031	156.045	0.01%	
15.000	15.000	132.026	131.969	-0.02%	
10.000	10.000	108.022	107.910	-0.05%	
5.000	5.000	84.017	83.895	-0.05%	
0.000	0.000	60.012	60.028	0.01%	

$\bar{x} = 60.027$

CURVEFIT OUTPUT FOR VTAB tfdp02

DATE: 20-MAY-92
TIME: 16:34:12

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.9995630E-06	0.0000000E+00	0.2202867E-01	-0.2202867E-01	0.0000000E+00
2	0.2372900E-01	5.000000	4.970099	0.2990092E-01	0.5980185
3	0.4767200E-01	10.00000	9.960648	0.3935163E-01	0.3935163
4	0.7170200E-01	15.00000	14.96738	0.3262269E-01	0.2174846
5	0.9575000E-01	20.00000	19.97590	0.2410328E-01	0.1205164
6	0.1198520	25.00000	24.99370	0.6304434E-02	0.2521774E-01
7	0.1438330	30.00000	29.98435	0.1565124E-01	0.5217078E-01
8	0.1678550	35.00000	34.98158	0.1842031E-01	0.5262944E-01
9	0.1919110	40.00000	39.98392	0.1607700E-01	0.4019249E-01
10	0.2160180	45.00000	44.99490	0.5096632E-02	0.1132585E-01
11	0.2400400	50.00000	49.98626	0.1374457E-01	0.2748914E-01
12	0.2160940	45.00000	45.01070	-0.1069793E-01	-0.2377317E-01
13	0.1920520	40.00000	40.01324	-0.1323757E-01	-0.3309393E-01
14	0.1680520	35.00000	35.02255	-0.2255298E-01	-0.6443708E-01
15	0.1440630	30.00000	30.03220	-0.3220431E-01	-0.1073477
16	0.1200040	25.00000	25.02533	-0.2533422E-01	-0.1013369
17	0.9601800E-01	20.00000	20.03170	-0.3170251E-01	-0.1585125
18	0.7194200E-01	15.00000	15.01737	-0.1737222E-01	-0.1158148
19	0.4788300E-01	10.00000	10.00462	-0.4619425E-02	-0.4619424E-01
20	0.2386800E-01	5.000000	4.999077	0.9229065E-03	0.1845813E-01
21	0.1000437E-05	0.0000000E+00	0.2244578E-01	-0.2244578E-01	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.22237132E-01 0.20855562E+03 -0.16951483E+01

ESS = 0.9981E-02 SD = 0.2355E-01 R2 = 0.999998E+00
2*SD = 0.4709E-01

a McDermott company

RESEARCH & DEVELOPMENT DIVISION

INSTRUMENT SERVICE LOG

3-30-90

RD-43A

REV. DATE 7-20-88

B&W Ser. No. 08805

R. E. L.

MAR 1990

Manufacturer	MARLIN	Model	125-304-E
Manuf. Ser. No.	M-26026	Item	THERMOCPL,E
Property No.		Cal Stat	(CERTIFIED)
A & I No.		Scheduled	Y
Tech. Procedure	-VEND	Interval	12
Section	46 NSSC	Last Serviced	14-Dec-1988
Location	115 HTF-6 MEGAWATT FACILITY	Status	

Repair Parts

Item	Cost
Cert	
TOTAL $	70

Service Notes

PO filed with 0890137

PO #5370A195328UD

Item 3

MS 3/6/90

Standards Used

Manuf.	Model	Item	B&W Serial No.

Auxiliary Equip. Used

Auxiliary Equip. Used	B&W Serial No.

Calibration Data

Attached

Instrument Service Code

New Equip / Copy to Q.A.		5 Rep & Cal			
Cert		6 Repair			
Calib		7 Vendor Cert / Copy to Q.A.	X		
Maint		8 Post Cert			
Rep & Cert		9 Other			
Man-Hours	001	Out of Tolerance Y/N	N		

Requested By J. Oyster

Charge No. 4427-14 W.O. No. 71

Name R. E. Lammers

Date 02 23 90 Revd. MS

B-108

MARLIN JOB NO. 853400

NBS - Traceable

Certification

for

CERTIFICATION NO. M-33321

BABCOCK & WILCOX COMPANY
P.O.5370A195328
Cat. No. 125-304-E-1U-0-T(48")-2PF-15"
Thermocouple
REFERENCE M-26026

TEMP °F	M-33321 DEV.°F	Change from M-26026	E (volts)
50	+0.1	(+0.1)	0.5943×10^{-3}
100	+0.3	(+0.2)	2.2915
150	+0.5	(+0.9)	4.0259
200	+0.5	(+0.7)	5.8975
250	+0.6	(+0.5)	7.7828
300	+0.7	(+0.3)	9.7353
350	+0.8	(+0.0)	11.7458

STANDARD : TYPE N N.I.S.T. 244669A DATED: 09/19/89
PROCEDURE: MCP 103 REV.1: 08/25/87
CONDITIONS: AMBIENT 75 F (+/-2) R.H. < 50 %
CONFORMS TO: MIL-STD-45662 Rev.08/01/88

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 02/23/1990

B-109

CURVEFIT OUTPUT FOR VTAB iptc01

DATE: 26-MAY-92
TIME: 14:38:23

	VOLTAGE(V)	OBS. TEMP(F)	CALC. TEMP(F)	DIFFERENCE	% DIFFERENCE
1	0.5943000E-03	50.00000	50.00411	-0.4106501E-02	-0.8213002E-02
2	0.2291500E-02	100.0000	99.98105	0.1895481E-01	0.1895481E-01
3	0.4059000E-02	150.0000	150.0351	-0.3505160E-01	-0.2336773E-01
4	0.5887500E-02	200.0000	199.9677	0.3227923E-01	0.1613962E-01
5	0.7782800E-02	250.0000	250.0147	-0.1468064E-01	-0.5872255E-02
6	0.9735300E-02	300.0000	299.9975	0.2537544E-02	0.8458481E-03
7	0.1174580E-01	350.0000	349.9999	0.6714703E-04	0.1918487E-04

DEGREE OF POLYNOMIAL 4

COEFFICIENTS
0.32008676E+02 0.30509978E+05 -0.39316611E+06 0.10652030E+08 -0.17819216E+09

ESS = 0.2869E-02 SD = 0.3787E-01 R2 = 0.100000E+01
2*SD = 0.7575E-01

TEMPERATURES(F) FOR TYPE J TC

ACTUAL	DEFAULT FIT	THIS FIT	DIFFERENCE THIS FIT-ACTUAL
50.00	50.66	-60.18	-110.18
100.00	100.23	-13.69	-113.69
150.00	150.06	32.01	-117.99
200.00	200.01	76.78	-123.22
250.00	250.01	120.53	-129.47
300.00	300.01	163.23	-136.77
350.00	349.99	204.89	-145.11
400.00	400.00	245.57	-154.43
450.00	450.01	285.30	-164.70
500.00	500.00	324.09	-175.91
550.00	550.00	362.01	-187.99
600.00	600.01	399.11	-200.89
650.00	649.99	435.37	-214.63

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

JPTC02 RD-45A
3-30-90 REV. DATE 7-20-88

B&W Ser. No. 088058

Manufacturer MARLIN
Manuf. Ser. No. M-26029
Property No.
A & I No.
Tech. Procedure -VEND
Section 46 NSSC
Location 115 HTF-6 MEGAWATT FACILITY

R E L
MAR 1990

Model 125-304-E
Item THERMOCPL.E
Cal Stat (CERTIFIED)
Scheduled Y
Interval 12
Last Serviced 14-Dec-1988
Status

Repair Parts

Item	Cost
Cert	
TOTAL $	70

Standards Used

Manuf.	Model	Item	B&W Serial No.

Service Notes

P.O. filed with 0890137

PO # 5370A195328 UP
ITEM #3
MS 3/5/90

Auxiliary Equip. Used

Item	B&W Serial No.

Calibration Data

Attached

Instrument Service Code

0 New Equip / Copy to Q.A.		5 Rep & Cal	
1 Cert		6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	X
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours 001		Out of Tolerance Y / N	N

Requested By J. Oyster
Charge No. 4427-14 W.O. No. 71
Name R.E. Lammers
Date 02 23 90 Revd. MS

B-111

MARLIN JOB NO. 853400

NBS - Traceable

Certification

for

CERTIFICATION NO. M-33323

BABCOCK & WILCOX COMPANY
P.O.5370A195328
Cat. No. 125-304-E-1U-0-T(48")-2PF-15"
Thermocouple
REFERENCE M-26029

TEMP °F	M-33323 DEV.°F	Change from M-26029	E (volts)
50	+0.1	(-0.2)	0.5943×10^{-3}
100	+0.3	(+0.1)	2.2915
150	+0.4	(+0.8)	4.0554
200	+0.6	(+0.8)	5.8912
250	+0.7	(+0.6)	7.7866
300	+0.7	(+0.3)	9.7353
350	+0.8	(+0.2)	11.7458

STANDARD : TYPE N N.I.S.T. 244669A
PROCEDURE: MCP 103
CONDITIONS: AMBIENT 75 F (+/-2)
CONFORMS TO: MIL-STD-45662

DATED: 09/19/89
REV.1: 08/25/87
R.H. < 50 %
Rev.08/01/88

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 02/23/199(

B-112

CURVEFIT OUTPUT FOR VTAB iptc02

DATE: 26-MAY-92
TIME: 14:47:34

	VOLTAGE(V)	OBS. TEMP(F)	CALC. TEMP(F)	DIFFERENCE	% DIFFERENCE
1	0.5943000E-03	50.00000	49.98833	0.1166553E-01	0.2333106E-01
2	0.2291500E-02	100.0000	100.0442	-0.4419972E-01	-0.4419972E-01
3	0.4055400E-02	150.0000	149.9458	0.5423580E-01	0.3615720E-01
4	0.5891200E-02	200.0000	200.0070	-0.7009688E-02	-0.3504844E-02
5	0.7786600E-02	250.0000	250.0376	-0.3756695E-01	-0.1502678E-01
6	0.9735300E-02	300.0000	299.9699	0.3007622E-01	0.1002541E-01
7	0.1174580E-01	350.0000	350.0072	-0.7201196E-02	-0.2057484E-02

DEGREE OF POLYNOMIAL 4

COEFFICIENTS

0.31906911E+02 0.30688495E+05 -0.45405448E+06 0.17495795E+08 -0.42394605E+09

ESS = 0.7448E-02 SD = 0.6102E-01 R2 = 0.100000E+01

2*SD = 0.1220E+00

TEMPERATURES(F) FOR TYPE J TC

ACTUAL	DEFAULT FIT	THIS FIT	DIFFERENCE THIS FIT-ACTUAL
50.00	50.66	-61.50	-111.50
100.00	100.23	-14.21	-114.21
150.00	150.06	31.91	-118.09
200.00	200.01	76.83	-123.17
250.00	250.01	120.58	-129.42
300.00	300.01	163.22	-136.78
350.00	349.99	204.82	-145.18
400.00	400.00	245.49	-154.51
450.00	450.01	285.25	-164.75
500.00	500.00	324.09	-175.91
550.00	550.00	362.00	-188.00
600.00	600.01	398.95	-201.05
650.00	649.99	434.79	-215.21

a McDermott company

INSTRUMENT SERVICE LOG

IPICUS
3-30-90

REV. DATE 7-20-88

B&W Ser. No. 0880

Manufacturer MARLIN
Manuf. Ser. No. M-26030
Property No.
A & I No.
Tech. Procedure -VEND
Section 46 NSSC
Location 115 HTF-6 MEGAWATT FACILITY

REL
MAR 1990

Model 125-304-E
Item THERMOCPL,E
Cal Stat (CERTIFIED)
Scheduled Y
Interval 12
Last Serviced 14-Dec-1988
Status

Repair Parts

Item	Cost
Cert	
TOTAL $	70

Service Notes

P.O. filed with 0890137

P.O. #5370A195328UD
Item 23
3/5/90

Instrument Service Code

0 New Equip / Copy to Q.A.		5 Rep & Cal	
1 Cert		6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	X
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours	001	Out of Tolerance Y/N	N

Requested By J. Oyster
Charge No. 4427-14 W.O. No. 71
Name R. E. Lammers
Date 022390 Revd. 3/7/90

Standards Used

Manuf.	Model	Item	B&W Serial No.

Auxiliary Equip. Used

	B&W Serial No.

Calibration Data

Attached

B-114

ARLIN JOB NO. 853400

NBS - Traceable

Certification

for

CERTIFICATION NO. M-33322

BABCOCK & WILCOX COMPANY
P.O.5370A195328
Cat. No. 125-304-E-1U-0-T(48")-2PF-15"
Thermocouple
REFERENCE M-26030

TEMP °F	M-33322 DEV.°F	Change from M 26030	E (volts)
50	+0.1	(+0.2)	0.5943×10^{-3}
100	+0.3	(0.0)	2.2915
150	+0.5	(+0.8)	4.059
200	+0.6	(+0.8)	5.8912
250	+0.6	(+0.6)	7.7828
300	+0.6	(0.2)	9.7314
350	+0.6	(-0.2)	11.7457

STANDARD : TYPE N N.I.S.T. 244669A
PROCEDURE: MCP 103
CONDITIONS: AMBIENT 75 F (+/-2)
CONFORMS TO: MIL-STD-45662

DATED: 09/19/89
REV.1: 08/25/87
R.H. < 50 %
Rev.08/01/88

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 02/23/1990

B-115

CURVEFIT OUTPUT FOR VTAB iptc03

DATE: 26-MAY-92
TIME: 14:50:01

	VOLTAGE(V)	OBS. TEMP(F)	CALC. TEMP(F)	DIFFERENCE	% DIFFERENCE
1	0.5943000E-03	50.00000	49.99809	0.1907110E-02	0.3814219E-02
2	0.2291500E-02	100.0000	100.0067	-0.6713872E-02	-0.6713872E-02
3	0.4059000E-02	150.0000	149.9935	0.6507279E-02	0.4338186E-02
4	0.5891200E-02	200.0000	199.9967	0.3287547E-02	0.1643774E-02
5	0.7782800E-02	250.0000	250.0103	-0.1032342E-01	-0.4129367E-02
6	0.9731400E-02	300.0000	299.9931	0.6876622E-02	0.2292207E-02
7	0.1174570E-01	350.0000	350.0015	-0.1541266E-02	-0.4403618E-03

DEGREE OF POLYNOMIAL 4

COEFFICIENTS

0.31932508E+02 0.30665102E+05 -0.46103999E+06 0.20123609E+08 -0.58411532E+(

ESS = 0.2581E-03 SD = 0.1136E-01 R2 = 0.100000E+01
2*SD = 0.2272E-01

TEMPERATURES(F) FOR TYPE J TC

ACTUAL	DEFAULT FIT	THIS FIT	DIFFERENCE THIS FIT-ACTUAL
50.00	50.66	-61.54	-111.54
100.00	100.23	-14.18	-114.18
150.00	150.06	31.93	-118.07
200.00	200.01	76.81	-123.19
250.00	250.01	120.53	-129.47
300.00	300.01	163.17	-136.83
350.00	349.99	204.82	-145.18
400.00	400.00	245.56	-154.44
450.00	450.01	285.37	-164.63
500.00	500.00	324.19	-175.81
550.00	550.00	361.92	-188.08
600.00	600.01	398.43	-201.57
650.00	649.99	433.45	-216.55

MSTCC-3 LMP 4-15-91

ROW #	1	0.90000000000D+01	-0.10000000000D-05	0.63897000000D-07
ROW #	2	-0.10000000000D-05	0.63897000000D-07	-0.51091000000D-13
ROW #	3	0.63897000000D-07	-0.51091000000D-13	0.80265664500D-15
ROW #	4	0.28800000000D+03	-0.19900000000D-02	0.20457480000D-05

REVERSED CURVEFIT AROUND 32F

	OBSERVED	CALCULATED	DIFFERENCE	PERCENT	X(I)
1	28.00000	28.00437	-0.4373553E-02	-0.1561983E-01	0.1300000E-03
2	29.00000	28.99133	0.8671130E-02	0.2990045E-01	0.9800000E-04
3	30.00000	30.00726	-0.7257809E-02	-0.2419270E-01	0.6500000E-04
4	31.00000	30.99059	0.9411080E-02	0.3035832E-01	0.3300000E-04
5	32.00000	32.00278	-0.2780397E-02	-0.8688740E-02	0.0000000E+00
6	33.00000	33.01307	-0.1307439E-01	-0.3961937E-01	-0.3300000E-04
7	34.00000	33.99094	0.9058685E-02	0.2664319E-01	-0.6500000E-04
8	35.00000	34.99750	0.2502153E-02	0.7149009E-02	-0.9800000E-04
9	36.00000	36.00216	-0.2156898E-02	-0.5991384E-02	-0.1310000E-03

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.32002780E+02 -0.30643719E+05 -0.87120348E+06 ← used this one LMP 4-15-91

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

WSTC01 RD-45A
3-30-90 REV. DATE 7-20-88
B&W Ser. No. 0880

Manufacturer MARLIN
Manuf. Ser. No. M-26028
Property No.
A & I No.
Tech. Procedure -VEND
Section 46 NSSC
Location 115 HTF-6 MEGAWATT FACILITY

R.E.L
MAR 1990

Model 125-304-E
Item THERMOCPL.E
Cal Stat (CERTIFIED)
Scheduled Y
Interval 12
Last Serviced 14-Dec-1988
Status

Repair Parts

Item	Cost
Cert	
TOTAL $	70

Service Notes

P.O. filed with 0890137

P.O. # 5370A195328UD
ITEM 23
gmb
3/5/90

Standards Used

Manuf.	Model	Item	B&W Serial No.

Auxiliary Equip. Used

	B&W Serial No.

Calibration Data

Attached

B-118

Instrument Service Code

0 New Equip / Copy to Q.A.		5 Rep & Cal	
1 Cert		6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	X
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours	0 0 1	Out of Tolerance Y / N	N

Requested By J. Oyster
Charge No. 4427-14 W.O. No. 71
Name R.B. Lammers
Date 12/3/90 Revd. MB

MARLIN JOB NO. 853400

NBS - Traceable

Certification

for

CERTIFICATION NO. M-33324

BABCOCK & WILCOX COMPANY
P.O.5370A195328
Cat. No. 125-304-E-1U-0-T(48")-2PF-15'
Thermocouple
REFERENCE M-26028

TEMP °F	M-33324 DEV.°F	Change from M-2608A	E (volts)
50	+0.2	(-0.2)	0.5976×10^{-3}
100	+0.4	(0.0)	2.295
150	+0.5	(+0.3)	4.059
200	+0.6	(+0.5)	5.891.2
250	+0.7	(+0.3)	7.7864
300	+0.7	(+0.1)	9.7353
350	+0.7	(0.0)	11.7458

STANDARD : TYPE N N.I.S.T. 244669A DATED: 09/19/89
PROCEDURE: MCP 103 REV.1: 08/25/87
CONDITIONS: AMBIENT 75 F (+/-2) R.H. < 50 %
CONFORMS TO: MIL-STD-45662 Rev.08/01/88

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 02/23/1990

B-119

CURVEFIT OUTPUT FOR VTAB wstc01

DATE: 26-MAY-92
TIME: 15:01:48

	VOLTAGE(V)	OBS. TEMP(F)	CALC. TEMP(F)	DIFFERENCE	% DIFFERENCE
1	0.5976000E-03	50.00000	49.99189	0.8105829E-02	0.1621166E-01
2	0.2295000E-02	100.0000	100.0286	-0.2859184E-01	-0.2859184E-01
3	0.4059000E-02	150.0000	149.9722	0.2778905E-01	0.1852603E-01
4	0.5891200E-02	200.0000	199.9863	0.1371056E-01	0.6855278E-02
5	0.7786600E-02	250.0000	250.0436	-0.4359120E-01	-0.1743648E-01
6	0.9735300E-02	300.0000	299.9709	0.2912607E-01	0.9708689E-02
7	0.1174580E-01	350.0000	350.0065	-0.6548458E-02	-0.1870988E-02

DEGREE OF POLYNOMIAL 4

COEFFICIENTS
0.31846369E+02 0.30612890E+05 -0.42488239E+06 0.14232950E+08 -0.30780354E+0

ESS = 0.4635E-02 SD = 0.4814E-01 R2 = 0.100000E+01
2*SD = 0.9628E-01

TEMPERATURES(F) FOR TYPE J TC

ACTUAL	DEFAULT FIT	THIS FIT	DIFFERENCE THIS FIT-ACTUAL
50.00	50.66	-61.01	-111.01
100.00	100.23	-14.09	-114.09
150.00	150.06	31.85	-118.15
200.00	200.01	76.71	-123.29
250.00	250.01	120.48	-129.52
300.00	300.01	163.16	-136.84
350.00	349.99	204.80	-145.20
400.00	400.00	245.50	-154.50
450.00	450.01	285.26	-164.74
500.00	500.00	324.09	-175.91
550.00	550.00	362.01	-187.99
600.00	600.01	399.04	-200.96
650.00	649.99	435.08	-214.92

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880504

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified	✓	✓
2 Calibrated		
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	✓
Calibration 2	
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER MARLIN
MODEL PRT1-MC-48
ITEM SENSOR,TMP,RES
MANUF. SER. NO. M-25373
PROPERTY NO. 4427-01-062
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED(Y-N) Y
RECAL INT.(MOS.) 12

R.E.L
MAR 0 2 1992

TECH. PROCEDURE VEND

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	✓
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT	
Limited (Describe below)	
Meets Manufacturer's Tolerance	✓
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.

OTHER EQUIPMENT USED

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	0000
TOTAL LABOR HOURS	000.5
Requested By	J R Oyster
Charge Number	4032-50
Work Order No.	—
Name	ALM
Date (M-D-Y)	02/11/92
Reviewed By	RJL

Service Notes

Previous Hours = 12.5
Current Hours = 00.0
Remaining Hours = 7987.5

B-121

THE BABCOCK & WILCOX CO)ANY
ALLIANCE RESEARCH CENTER
LONG HAND MEMORANDUM

To R.E. LAMMERS , INSTRUMENT DEPT.

From J.R. OYSTER , N.S.S. & C. SECTION

File No. or Ref. SRP

Subj. SRP TEMPERATURE SENSOR RE-CERTIFICATION

Date Feb. 11, 1992

Please extend the certification on the RTD units listed below. These instruments were used (or spares) during Sav. River Flow Excursion Testing on the HTF/NPR Test facility. No additional hours should be added, as they have not been used since the last reporting period.

DESCRIPTION	B&W #	LOCATION
MARLIN, TEMPERATURE SENSOR, PRT-MC-48 (calibration due 2-27-92)	880504	INSTALLED @ V7 BFRTO1 -- 0.0 SINCE LAST UPDAT
MARLIN, TEMPERATURE SENSOR, PRT-MC-12 (calibration due 2-27-92)	880505	SPARE -- NO ADDITI HOURS

Please update thier service logs and foward copies to me. These units could be used on up coming tests scheduled to start this year in the Upflow Test Loop. Use charge #4032-50 for the update.

Thank you,

J.R. Oyster

cc: D.P. BIRMINGHAM
M.T. CHILDERSON
R.M. PRIVETTE
K.T. REYNOLDS
K.H. SCHULZE

B-122

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

RD-45A
REV. DATE 7-20-88

B&W Ser. No. 0880504

R.E.L
MAR 01 1991

Manufacturer	MARLIN	Model	PRT1-MC-48
Manuf. Ser. No.	M-25373	Item	SENSOR,TMP,RES
Property No.	4427-01-062	Cal Stat	(CERTIFIED)
A & I No.		Scheduled	Y
Tech. Procedure	-VEND	Interval	12
Section 46	NSSC	Last Serviced	13-Feb-1990
Location 115	HTF-6 MEGAWATT FACILITY	Status	

Repair Parts

Item	Cost
TOTAL $	0 0 0 0

Standards Used

Manuf.	Model	Item	B&W Serial No.

Service Notes

Previous Hours = 12.5
Current Hours = 0000
Remaining Hours = 7987.5

Auxiliary Equip. Used

Auxiliary Equip. Used	B&W Serial No.

Calibration Data

Attached

Instrument Service Code

0 New Equip / Copy to Q.A.	X	5 Rep & Cal	
1 Cert	X	6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours	0 0 1	Out of Tolerance Y / N	N

Requested By J.R. Oyster
Charge No. 4427-14 W.O. No.
Name Fred White
Date 0 2 2 7 9 1 Revd.

B123

THE BABCOCK & WILCOX COMPANY
ALLIANCE RESEARCH CENTER
LONG HAND MEMORANDUM

R.E. LAMMERS - INSTRUMENT

om J.R. OYSTER

RC-3

File No. or Ref.

Date 2-19-91

bj.

Also please re-certify the following three RTD units for another 12 month period. The location and hours of usage are as noted:

DESCRIPTION	B&W #	LOCATION
MARLIN, TEMPERATURE SENSOR PRT1-MC-48	880503	(SPARE) NO ADDITIONAL HOURS
MARLIN, TEMPERATURE SENSOR PRT1-MC-12	880505	(SPARE) NO ADDITIONAL HOURS
MARLIN TEMPERATURE SENSOR PRT1-MC-48 (TEMP. RANGE 75 to 220 °F) VTAB = BFRT01	880504	SAV. RIVER FLOW EXC. — NOT USED SINCE LAST CERT. UPDATE. — TOTAL HOURS = 12½

Please update the above instruments and change their instrument service logs to reflect as noted. Use this charge number for these updates (*4427-14).

J.R. Oyster
J.R. OYSTER

cc: D.P. BIRMINGHAM
J.E. BLAKE
M.T. CHILDERSON
R.J. LEPUCKI
K.T. REYNOLDS

B-184

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION

INSTRUMENT SERVICE LOG

RD-45A

REV. DATE 7-20-88

B&W Ser. No. 0880504

Manufacturer MARLIN
Manuf. Ser. No. M-25373
Property No. 4427-01-062
A & I No.
Tech. Procedure -VEND
Section 46 NSSC
Location 115 HTF-6 MEGAWATT FACILITY

R. E. L.
FEB 24 1990

Model PRT1-MC-48
Item SENSOR,TMP,RES
Cal Stat (CERTIFIED)
Scheduled Y
Interval 12
Last Serviced 14-Nov-1989
Status

Repair Parts

Item	Cost
TOTAL $	0 0 0 0

Service Notes

Previous Hours = 0004
Current Hours = 0012.5
Remaining Hours = 7987.5

Standards Used

Manuf.	Model	Item	B&W Serial No.

Auxiliary Equip. Used

B&W Serial No.

Calibration Data

See Attachment

Instrument Service Code

New Equip / Copy to Q.A.		5 Rep & Cal	
Cert	X	6 Repair	
Calib		7 Vendor Cert / Copy to Q.A.	
Maint		8 Post Cert	
Rep & Cert		9 Other	
Man-Hours	0 0 1	Out of Tolerance Y / N	N

Requested By J. R. OYSTER
Charge No. 4427-12 W.O. No.
Name Fred White

B-125

BABCOCK & WILCOX COMPANY
ALLIANCE RESEARCH CENTER
LONG HAND MEMORANDUM

To R. E. LAMMERS, INSTRUMENT DEPT.

From J. R. OYSTER, NSS&C SECTION

RC-

File No. or Ref. SRP - INT.

Subj. INSTRUMENT (RTD) CERTIFICATION EXTENSION SRP-1,277

Date 13 FEB. 90

Please extend the recently due certification on the following instrument, located in the SRP flow excursion, outlet plenum.

SRP IDENTIFICATION -- BFRTO1
B&W No. -- 880504
MANUF. -- MARLIN
INST. -- RTD, UNGRD. 1/16 INCH S.S. SHEATH

This instrument is silver soldered into position and is not easily removed. It has approximately 12½ hours at a temperature range of 75 to 220 degrees F.
Please update the instrument service logs to reflect the hours of operation and send copies to J.R. Oyster.

cc: D.P. BIRMINGHAM
J.F. BLAKE
G.W. ROBERTS
G.C. RUSH

Jay R. Oyster
J.R. OYSTER

B-126

BABCOCK & WILCOX
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

RECD 11/7/88

RD-45A

REV. DATE 7-20-88

B&W Ser. No. 088050

BFRT001

Manufacturer MARLIN
Manuf. Ser. No. M-25373
Property No. 4427-01-062
A & I No.
Tech. Procedure - VEND
Section 46 HT TR&FL MECH
Location 115 HTF-6 MEGAWATT FACILITY

Model PRT1-MC-48
Item SENSOR, TMP, RES
Cal Stat ~~(NOT CALIBRATED)~~
Scheduled ~~N-Y~~ CERTIFIED
Interval 12
Last Serviced
Status

Repair Parts

Item	Cost
VENDOR CERT	
TOTAL $	0137

Service Notes

CALIBRATED BY MARLIN
PO 99975-0M

Standards Used

Manuf.	Model	Item	B&W Serial No.

Auxiliary Equip. Used

	B&W Serial No.

Calibration Data

		ATTACHED		

Instrument Service Code

0 New Equip / Copy to Q.A.		5 Rep & Cal	
1 Cert		6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	X
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours	001	Out of Tolerance Y / N	N

Requested By R. LEPUCKI
Charge No. 4427.01 W.O. No. -
Name Fred White
Date 10/26/88 Revd.

B-127

MARLIN JOB NO. 880300

NBS - Traceable
Certification
for

CERTIFICATION NO. M-25373

REPORT of CALIBRATION

FOR

PLATINUM RESISTANCE THERMOMETER

-*****-

The above platinum resistance thermometer was calibrated on 10/20/88 for use with a continuous current of 1.0 milliamps through the thermometer.

The following values were found for constants in the formulas given in the International Practical Temperature Scale of 1968 (IPTS-68):

Alpha = .003848543 Delta = 1.495581

A = 3.906101E-03 B = -5.755807E-07

The pertinent formulas are given in the discussion on the following pages.

The resistance at zero degrees Celsius was found to be 100.090 ohms.

All observations were made by comparison with platinum resistance thermometer standards calibrated at regular intervals by the National Bureau of Standards. The most recent calibration is dated 07/21/86 N.B.S. No. 237502.

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 10/20/88

B-128

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

MTC 11/7/88

RD-45A

REV. DATE 7-20-88

B&W Ser. No. 0880504

BFRT001

Manufacturer	MARLIN	Model	PRT1-MC-48
Manuf. Ser. No.	M-25373	Item	SENSOR,TMP,RES
Property No.	4427-01-062	Cal Stat	~~(NOT CALIBRATED)~~ CERTIFIED
A & I No.		Scheduled	~~N~~ Y
Tech. Procedure	- VEND	Interval	12
Section	46 HT TR&FL MECH	Last Serviced	
Location	115 HTF-6 MEGAWATT FACILITY	Status	

Repair Parts

Item	Cost
Vendor cert	
TOTAL $	0 1 3 7

Standards Used

Manuf.	Model	Item	B&W Serial No.

Service Notes

Calibrated By Marlin
PO 99975.OM

Auxiliary Equip. Used

Auxiliary Equip. Used	B&W Serial No.

Calibration Data

ATTACHED

Instrument Service Code

...w ...uip / Copy to Q.A.		5 Rep & Cal	
...rt		6 Repair	
...lib		7 Vendor Cert / Copy to Q.A.	X
...int		8 Post Cert	
...p & Cert		9 Other	
Hours	0 0 1	Out of Tolerance Y / N	N

...ested By R. Lefucki

...rge No. 4427.01 W.O. No. –

...e Fred White

1 0 2 6 8 8 Revd. R-100

MARLIN JOB NO. 880300

NBS - Traceable
Certification
for

CERTIFICATION NO. M-25373

REPORT of CALIBRATION

FOR

PLATINUM RESISTANCE THERMOMETER

-*****-

The above platinum resistance thermometer was calibrated on 10/20/88 for use with a continuous current of 1.0 milliamps through the thermometer.

The following values were found for constants in the formulas given in the International Practical Temperature Scale of 1968 (IPTS-68):

Alpha = .003848543 Delta = 1.495581

A = 3.906101E-03 B = -5.755807E-07

The pertinent formulas are given in the discussion on the following pages.

The resistance at zero degrees Celsius was found to be 100.090 ohms.

All observations were made by comparison with platinum resistance thermometer standards calibrated at regular intervals by the National Bureau of Standards. The most recent calibration is dated 07/21/86 N.B.S. No. 237502.

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 10/20/88

B-130

MARLIN JOB NO. B80300

NBS - Traceable

Certification

for

CERTIFICATION NO. M-25373

REPORT of CALIBRATION

FOR

PLATINUM RESISTANCE THERMOMETER

-****-

The above platinum resistance thermometer was calibrated on 10/20/88 for use with a continuous current of 1.0 milliamps through the thermometer.

The following values were found for constants in the formulas given in the International Practical Temperature Scale of 1968 (IPTS-68):

Alpha = .003848543 Delta = 1.495581

A = 3.906101E-03 B = -5.755807E-07

The pertinent formulas are given in the discussion on the following pages.

The resistance at zero degrees Celsius was found to be 100.090 ohms. The resistance at 100.042 degrees Celsius was 138.626 ohms and the resistance at 200.258 degrees Celsius was found to be 176.061 ohms.

All observations were made by comparison with platinum resistance thermometer standards calibrated at regular intervals by the National Bureau of Standards. The most recent calibration is dated 07/21/86 N.B.S. No. 237502.

PROCEDURE: Comparison NBS Monograph-126

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 10/26/88

B-131

1988
N.B.S. CERTIFIED LABORATORY STANDARDS

INSTRUMENTS:	GUILDLINE DIRECT CURRENT COMPARATOR MODEL 9975 S/N-48442 (RATIOMETRIC INTERPOLATION DEVICE) LEEDS & NORTHRUP POTENTIOMETER MODEL 7554 S/N-1593149 (CERTIFIED WITH GUILDLINE)
VOLTAGE STANDARD:	EPPLEY LABORATORY VOLTAGE STANDARD MODEL 121 S/N-3554 N.B.S. #237149 07/21/86
RESISTANCE THERMOMETER:	L&N PLATINUM RESISTANCE THERMOMETER MODEL 8167-25-B S/N-1854446 N.B.S. #237502 07/17/86
RESISTANCE STANDARD:	L&N 10 OHM STANDARD RESISTOR MODEL 4025-B S/N-1857462 N.B.S. #234763 04/03/85
THERMOCOUPLES:	ANSI TYPE "S" THERMOCOUPLE N.B.S. #242300A 08/02/88 ANSI TYPE "B" THERMOCOUPLE N.B.S. #242300B 08/02/88 ANSI TYPE "N" THERMOCOUPLE N.B.S. #242300A 08/02/88 ANSI TYPE "T" THERMOCOUPLE N.B.S. #241662 09/16/88
RIBBON FILAMENT LAMP:	G.E. RIBBON FILAMENT LAMP TYPE 20AT24/2 N.B.S. #237148 12/15/86
SHUNT:	G.E. DC CURRENT SHUNT MODEL 50-140-031-ntaa N.B.S. #234763 04/03/85
FIXED POINTS:	TRIPLE POINT OF WATER JARRETT INSTRUMENT COMPANY MODEL B-11 S/N-921 (0.01000 C) MODEL A-13 S/N-705 (0.01000 C) TRIPLE POINT SUCCINONITRILE (58.0805 C) METAL FREEZING POINTS GALLIUM POINT (29.7723 C) TIN POINT (231.9681 C) ZINC POINT (419.58 C)

B-132

PT1-100-14-1259-0-0-°C-48in. -25373

°C	0	1	2	3	4	5	6	7	8	9	10	°C
0	100.090	100.481	100.872	101.262	101.653	102.043	102.434	102.824	103.214	103.604	103.994	0
10	103.994	104.384	104.773	105.163	105.552	105.941	106.331	106.720	107.109	107.497	107.886	10
20	107.886	108.275	108.663	109.052	109.440	109.828	110.216	110.604	110.992	111.379	111.767	20
30	111.767	112.154	112.542	112.929	113.316	113.703	114.090	114.477	114.863	115.250	115.636	30
40	115.636	116.023	116.409	116.795	117.181	117.567	117.952	118.338	118.723	119.109	119.494	40
50	119.494	119.879	120.264	120.649	121.034	121.419	121.803	122.188	122.572	122.956	123.340	50
60	123.340	123.724	124.108	124.492	124.876	125.259	125.643	126.026	126.409	126.792	127.175	60
70	127.175	127.558	127.941	128.323	128.706	129.088	129.470	129.852	130.235	130.616	130.998	70
80	130.998	131.380	131.761	132.143	132.524	132.906	133.287	133.668	134.048	134.429	134.810	80
90	134.810	135.190	135.571	135.951	136.331	136.711	137.091	137.471	137.851	138.231	138.610	90
100	138.610	138.989	139.369	139.748	140.127	140.506	140.885	141.263	141.642	142.020	142.399	100
110	142.399	142.777	143.155	143.533	143.911	144.289	144.666	145.044	145.421	145.799	146.176	110
120	146.176	146.553	146.930	147.307	147.683	148.060	148.437	148.813	149.189	149.565	149.941	120
130	149.941	150.317	150.693	151.069	151.444	151.820	152.195	152.570	152.946	153.321	153.695	130
140	153.695	154.070	154.445	154.819	155.194	155.568	155.942	156.316	156.690	157.064	157.438	140
150	157.438	157.812	158.185	158.559	158.932	159.305	159.678	160.051	160.424	160.796	161.169	150
160	161.169	161.542	161.914	162.286	162.659	163.030	163.402	163.774	164.146	164.517	164.889	160
170	164.889	165.260	165.631	166.002	166.373	166.744	167.115	167.485	167.856	168.226	168.597	170
180	168.597	168.967	169.337	169.707	170.077	170.446	170.816	171.185	171.555	171.924	172.293	180
190	172.293	172.662	173.031	173.400	173.768	174.137	174.505	174.874	175.242	175.610	175.978	190
200	175.978	176.345	176.714	177.081	177.449	177.816	178.183	178.551	178.918	179.285	179.651	200
210	179.651	180.018	180.385	180.751	181.117	181.484	181.850	182.216	182.582	182.948	183.313	210
220	183.313	183.679	184.044	184.410	184.775	185.140	185.505	185.870	186.234	186.599	186.964	220
230	186.964	187.328	187.692	188.056	188.421	188.784	189.148	189.512	189.876	190.239	190.602	230
°C	0	1	2	3	4	5	6	7	8	9	10	°C

TEMPERATURE RANGE: 0° TO 630.74° C

Temperatures between 0° C and 630.74° C on the new International Practical Temperature Scale of 1968 (IPTS-68) are defined by the indications (resistance values) of standard platinum resistance thermometers and the following expressions:

$$t = t' + M(t') \qquad (1)$$

$$t' = \frac{1}{\alpha}\left(\frac{R_t}{R_0} - 1\right) + \delta\left(\frac{t'}{100} - 1\right)\frac{t'}{100} \qquad (2)$$

$$M(t') = .045\left(\frac{t'}{100}\right)\left(\frac{t'}{100} - 1\right)\left(\frac{t'}{419.58} - 1\right)\left(\frac{t'}{630.74} - 1\right) \qquad (3)$$

where t is the temperature, at the outside of the tube protecting the platinum resistor, in ° C on the International Practical Temperature Scale of 1968, and R_t and R_0 are the resistances of the platinum resistor at t° and 0° C respectively, measured with a continuous current through the platinum resistor. The value of this current and the values of the constants α and δ found for this thermometer are given on the previous page. The value of $M(t')$, given by expression (3), is the same for all thermometers and is a function only of the quantity t'. The addition of the small value represented by (3) serves to make the IPTS-68 conform more closely to the thermodynamic scale than can be done with only the simple quadratic of expression (2).

An alternate form which is completely equivalent to expression (2) is

$$R_t = R_0\left(1 + At' + Bt'^2\right) \qquad (4)$$

In some instances expression (4) is less difficult to calculate than (2). The constants A and B used in (4) are related directly to α and δ.

$$A = \alpha\left(1 + \delta/100\right) \qquad (5)$$

$$B = -\alpha\delta/10^4 \qquad (6)$$

CAUTION: THE VALUES OF A, B, AND δ ON THE NEW 1968 SCALE ARE DISTINCLY DIFFERENT FROM THE CORRESPONDING VALUES ON THE OLD 1948 OR 1927 SCALE. THE VALUES OF α AND R_0 ARE ALSO DIFFERENT BUT ONLY TRIVIALLY SO.

Babcock & Wilcox
a McDermott company

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

RD-45A
REV. DATE 7-20-88

IPRT01
2-22-90 QRQ.

B&W Ser. No. 0880505

Manufacturer MARLIN
Manuf. Ser. No. M-25374
Property No. 4427-01-063
A & I No.
Tech. Procedure -VEND
Section 46 NSSC
Location 115 HTF-6 MEGAWATT FACILITY

Model PRT1-MC-12
Item SENSOR,TMP,RES
Cal Stat (CERTIFIED)
Scheduled Y
Interval 12
Last Serviced 14-Nov-1989
Status

Repair Parts

Item	Cost
TOTAL $	0210

Standards Used

Manuf.	Model	Item	B&W Serial No.
∞			

Service Notes

TEST NUMBER M-3317
MARLIN-Po 195332UD
code 03124

Auxiliary Equip. Used

B&W Serial No.

Calibration Data

Attached

Instrument Service Code

0 New Equip / Copy to Q.A.		5 Rep & Cal	
1 Cert		6 Repair	
2 Calib		7 Vendor Cert / Copy to Q.A.	K
3 Maint		8 Post Cert	
4 Rep & Cert		9 Other	
Man-Hours	001	Out of Tolerance Y / N	N

Requested By Jay Oyster

Charge No. 4427-14 W.O. No.

Name Fred White B-135

MARLIN JOB NO. | NBS - Traceable | CERTIFICATION NO.

B53300 | Certification for | M-33317

REPORT of CALIBRATION

FOR

PLATINUM RESISTANCE THERMOMETER

-****-

The above platinum resistance thermometer was calibrated on 02/21/90 for use with a continuous current of 1.0 milliamps through the thermometer.

The following values were found for constants in the formulas given in the International Practical Temperature Scale of 1968 (IPTS-68):

Alpha = .003852554 Delta = 1.566764

A = 3.912915E-03 B = -6.036045E-07

The pertinent formulas are given in the discussion on the following pages.

The resistance at zero degrees Celsius was found to be 100.004 ohms. The resistance at 100.071 degrees Celsius was 138.558 ohms and the resistance at 200.264 degrees Celsius was found to be 175.936 ohms.

All observations were made by comparison with platinum resistance thermometer standards calibrated at regular intervals by the National Bureau of Standards. The most recent calibration is dated 07/21/86 N.B.S. No. 237502.

PROCEDURE: Comparison NBS Monograph-126

F. A. Stary
STANDARDS LABORATORY MANAGER

Date 02/21/90

B-136

:T1-100-14-125S-0-0-MC-12in.

M-33317

°C	0	1	2	3	4	5	6	7	8	9	10	°C
0	100.004	100.395	100.786	101.177	101.568	101.959	102.350	102.740	103.131	103.521	103.911	0
10	103.911	104.301	104.691	105.081	105.470	105.860	106.249	106.639	107.028	107.417	107.806	10
20	107.806	108.195	108.584	108.972	109.361	109.749	110.137	110.525	110.913	111.301	111.689	20
30	111.689	112.077	112.464	112.851	113.239	113.626	114.013	114.400	114.787	115.173	115.560	30
40	115.560	115.946	116.332	116.719	117.105	117.491	117.876	118.262	118.648	119.033	119.418	40
50	119.418	119.804	120.189	120.574	120.959	121.343	121.728	122.112	122.497	122.881	123.265	50
60	123.265	123.649	124.033	124.417	124.800	125.184	125.567	125.951	126.334	126.717	127.100	60
70	127.100	127.483	127.865	128.248	128.630	129.012	129.395	129.777	130.159	130.541	130.922	70
80	130.922	131.304	131.685	132.067	132.448	132.829	133.210	133.591	133.972	134.352	134.733	80
90	134.733	135.113	135.493	135.873	136.254	136.633	137.013	137.393	137.772	138.152	138.531	90
100	138.531	138.910	139.289	139.668	140.047	140.426	140.804	141.183	141.561	141.939	142.317	100
110	142.317	142.695	143.073	143.451	143.829	144.206	144.583	144.961	145.338	145.715	146.092	110
120	146.092	146.468	146.845	147.222	147.598	147.974	148.350	148.726	149.102	149.478	149.854	120
130	149.854	150.229	150.605	150.980	151.355	151.730	152.105	152.480	152.855	153.229	153.604	130
140	153.604	153.978	154.352	154.727	155.101	155.474	155.848	156.222	156.595	156.969	157.342	140
150	157.342	157.715	158.088	158.461	158.834	159.206	159.579	159.951	160.324	160.696	161.068	150
160	161.068	161.440	161.812	162.183	162.555	162.926	163.298	163.669	164.040	164.411	164.782	160
170	164.782	165.152	165.523	165.894	166.264	166.634	167.004	167.374	167.744	168.114	168.484	170
180	168.484	168.853	169.222	169.592	169.961	170.330	170.699	171.068	171.436	171.805	172.173	180
190	172.173	172.542	172.910	173.278	173.646	174.014	174.381	174.749	175.116	175.484	175.851	190
200	175.851	176.218	176.585	176.952	177.319	177.685	178.052	178.418	178.784	179.150	179.516	200
210	179.516	179.882	180.248	180.614	180.979	181.345	181.710	182.075	182.440	182.805	183.170	210
220	183.170	183.535	183.899	184.264	184.628	184.992	185.356	185.720	186.084	186.448	186.811	220
230	186.811	187.175	187.538	187.902	188.265	188.628	188.991	189.353	189.716	190.078	190.441	230
°C	0	1	2	3	4	5	6	7	8	9	10	°C

1989
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
CERTIFIED LABORATORY STANDARDS

INSTRUMENTS:	GUILDLINE DIRECT CURRENT COMPARATOR MODEL 9975 S/N-48442 (RATIOMETRIC INTERPOLATION DEVICE) LEEDS & NORTHRUP POTENTIOMETER MODEL 7556 S/N-1593149 (CERTIFIED WITH GUILDLINE)
VOLTAGE STANDARD:	EPPLEY LABORATORY VOLTAGE STANDARD MODEL 121 S/N-4103 N.I.S.T. #242636 12/14/88
RESISTANCE THERMOMETER:	L&N PLATINUM RESISTANCE THERMOMETER MODEL 8167-25-B S/N-1854446 N.I.S.T. #237502 07/17/86
RESISTANCE STANDARD:	L&N 10 OHM STANDARD RESISTOR MODEL 4025-B S/N-1857462 N.I.S.T. #244720 10/19/89
THERMOCOUPLES:	ANSI TYPE "S" THERMOCOUPLE N.I.S.T. #244669A 09/20/89 ANSI TYPE "B" THERMOCOUPLE N.I.S.T. #244669B 09/20/89 ANSI TYPE "N" THERMOCOUPLE N.I.S.T. #244669A 12/01/89 ANSI TYPE "T" THERMOCOUPLE N.I.S.T. #241662 09/16/88
RIBBON FILAMENT LAMP:	G.E. RIBBON FILAMENT LAMP TYPE 20AT24/2 N.I.S.T. #237148 12/15/86
SHUNT:	G.E. DC CURRENT SHUNT MODEL 50-140-031-ntaa N.I.S.T. #234763 04/03/85
FIXED POINTS:	TRIPLE POINT OF WATER JARRETT INSTRUMENT COMPANY MODEL B-11 S/N-921 (0.01000 C) MODEL A-13 S/N-705 (0.01000 C) TRIPLE POINT SUCCINONITRILE (58.0805 C) METAL FREEZING POINTS GALLIUM POINT (29.7723 C) TIN POINT (231.9681 C) ZINC POINT (419.58 C)

TEMPERATURE RANGE: 0° TO 630.74° C

Temperatures between 0° C and 630.74° C on the new International Practical Temperature Scale of 1968 (IPTS-68) are defined by the indications (resistance values) of standard platinum resistance thermometers and the following expressions:

$$t = t' + M(t') \qquad (1)$$

$$t' = \frac{1}{\alpha}\left(\frac{R_t}{R_0} - 1\right) + \delta\left(\frac{t'}{100} - 1\right)\frac{t'}{100} \qquad (2)$$

$$M(t') = .045\left(\frac{t'}{100}\right)\left(\frac{t'}{100} - 1\right)\left(\frac{t'}{419.58} - 1\right)\left(\frac{t'}{630.74} - 1\right) \qquad (3)$$

where t is the temperature, at the outside of the tube protecting the platinum resistor, in ° C on the International Practical Temperature Scale of 1968, and R_t and R_0 are the resistances of the platinum resistor at t° and 0° C respectively, measured with a continuous current through the platinum resistor. The value of this current and the values of the constants α and δ found for this thermometer are given on the previous page. The value of M(t'), given by expression (3), is the same for all thermometers and is a function only of the quantity t'. The addition of the small value represented by (3) serves to make the IPTS-68 conform more closely to the thermodynamic scale than can be done with only the simple quadratic of expression (2).

An alternate form which is completely equivalent to expression (2) is

$$R_t = R_0(1 + At' + Bt'^2) \qquad (4)$$

In some instances expression (4) is less difficult to calculate than (2). The constants A and B used in (4) are related directly to α and δ.

$$A = \alpha(1 + \delta/100) \qquad (5)$$

$$B = -\alpha\delta/10^4 \qquad (6)$$

CAUTION: THE VALUES OF A, B, AND C ON THE NEW 1968 SCALE ARE DISTINCLY DIFFERENT FROM THE CORRESPONDING VALUES ON THE OLD 1948 OR 1927 SCALE. THE VALUES OF α AND R_0 ARE ALSO DIFFERENT BUT ONLY TRIVIALLY SO.

Post Cert of Ref. Re

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
Certified	X	X
2 Calibrated		
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	X
Calibration 2	
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

• USED IN RTD CIRCUIT

B&W Ser. No. 0760

MANUFACTURER L&N
MODEL 4030-B
ITEM RESISTR,STNDRD
MANUF. SER. NO. 1838925
PROPERTY NO.
ORDER NO.

SECTION 46
LOCATION 181
SCHEDULED(Y-N) Y
RECAL INT.(MOS.) 12

MSRF01

TECH. PROCEDURE A0456-00

INSTRUMENT CONDITION	
AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	X
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	
Meets Manufacturer's Tolerance	X
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that t performance of this instrument was verified u standards whose accuracies are traceable to t National Institute of Standards and Technolog an accepted value of a natural physical const a ratio type of calibration technique, or to consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ESI	SP3632/240D	RESIS.MEAS SYSTEM	0800296
ERTCO	ASTM-17C	THERMOMETER	0820313

OTHER EQUIPMENT USED

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	000
TOTAL LABOR HOURS	001
Requested By	J OYSTER
Charge Number	4032-50
Work Order No.	TR 15
Name	Walter L. Sherrit
Date (M-D-Y)	01/31/9
Reviewed By	

Service Notes

SEE ATTACHED SHEET

Date 1-31-92
Room Temperature 22 °C
Relative Humidity 38 %
By Walter L. Shevest

STANDARD RESISTOR CALIBRATION
OF
L & N CAT. 4030-B
B&W 0760179, MFG S.N. 1838925

THIS RESISTOR HAS A VALUE AT 25.0°C OF:

99.9998 Ω

This value is obtained from the measured value at 22.4 °C, R_t below, plus corrections for deviation from 25.0°C from a Temperature Correction Table furnished by the manufacturer or a calibration laboratory, and/or the formula:

$$R_t = R_{25}\left[1 + \alpha(t-25) + \beta(t-25)^2\right]$$

where: R_t = Resistance at t°C
R_{25} = Resistance at 25°C
α and β = Resistor constants furnished by manufacturer or calibration laboratory.

The α and β values from latest temperature coefficient data are:

α = 0.000 003 609
β = −0.000 000 522

B-141

WS7MU 1

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880506

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		✓
Calibrated		
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	
Maintenance 3	
Repair 4	
Vendor Cert. 5	✓
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	FLOW TECH
MODEL	FT-64CISW
ITEM	METER,TURBINE
MANUF. SER. NO.	640363
PROPERTY NO.	4427-03-095
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)

Meets Manufacturer's Tolerance	N
Operates within previously defined limits	N
Deviates from Mfg or previously defined limits	Y
Inoperative (Describe below)	Y

AS LEFT

Limited (Describe below)	
Meets Manufacturer's Tolerance	✓
Other (Describe Below)	

TECH. PROCEDURE VEND

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.

OTHER EQUIPMENT USED

Vendor Cert/~~Cal/Repair~~	730.00
Repair Parts	—
TOTAL MATERIAL COST	0730
TOTAL LABOR HOURS	00 0.5
Requested By	T W WALTERS
Charge Number	44260-001-00
Work Order No.	—
Name	A L Miller A L M
Date (M-D-Y)	05 08 9
Reviewed By	

Service Notes

PO 01685 29006

Deviation report written because not all data points were within PO specified range. Accepted "as is" by T W Walters.

B-142

Babcock & Wilcox
a McDermott company

☒ ALLIANCE RESEARCH CENTER
1562 BEESON STREET — ALLIANCE, OHIO 44601
ATTN: A L Miller

☐ LYNCHBURG RESEARCH CENTER
MT. ATHOS — LYNCHBURG, VIRGINIA 24505
ATTN:

☒ PURCHASE ORDER DEVIATION REPORT

NITIATOR A.L. MILLER SECTION 184 DATE 5-20-92

VENDOR FISCHER PORTER P.O. NO. 01685 PACK SLIP NO. 119366

☐ SHORTAGE ☐ OVERAGE ☐ WRONG MAT'L ☐ DEFECTIVE MAT'L ☐ CERTIFICATION ☒ OTHER Data Point

MATERIAL RECEIVED		MATERIAL ORDERED	
QTY.	DESCRIPTION	QTY.	DESCRIPTION
1 set	10 point calibration data points NOT All within range specified on PO. Data points supplied were 20 – 500 gpm.	1 set	10 point calibration range 150–450 gpm.

GGESTED CORRECTIVE ACTION: accept "as is" per Tw Walters D Note for future reference and calibration. JW Walters 5/20/92

QUISITIONER OR AGENT) A.L. Miller SIGN 5-20-92 QA/QC: [signature] SIGN 5/20/92

URCHASING DISPOSTION APPROVAL SIGN DATE

ACCEPT/ PAY INVOICE ☐ CREDIT COMING ☐ VENDOR TO REPLACE ☐ RETURN MATERIAL ☐ CHANGE NOTICE ☐ OTHER

☐ MATERIALS SHIP AUTHORIZATION

NITIATOR SECTION DATE

☐ SHIPMENT TO VENDOR (REQUIRES PURCHASING APPROVAL) ☐ OTHER (SHIPMENT TO CUSTOMER, CONTRACTS, ETC)

ATERIAL QTY/DESCRIPTION:

EASON FOR SHIPMENT: ☐ REPAIRS ☐ CALIBRATION ☐ P.O. DEVIATION (SEE ABOVE) ☐ OTHER

XPLAIN:

SPECIAL INSTRUCTIONS: ☐ HAZARDOUS MATERIALS ☐ OTHER APPROVAL SIGN DATE

COMPANY:
STREET:
CITY/STATE: ZIP:
ATTN:

P.O. NO.:
CHARGE NO:
SHIP VIA: ☐ PPD ☐ COLLECT
VALUE:
COPY TO:

ATERIALS HANDLING USE ONLY — CARRIER:

NO. CTNS.	WEIGHT	FREIGHT BILL NO.	DATE SHIPPED	DECLARED VALUE	SIGNATURE

B-143

FISCHER & PORTER

Babcock & Wilcox Company
Alliance Research Center
1562 Beeson Street NE
Alliance, OH 44601-2165

Date: 11 May 1992
Subject: CERTIFICATION
Ref: 92W340593
Customer I.D.#: 0880506

TURBINE FLOWMETER CALIBRATION ACCURACY CERTIFICATE

A. METER IDENTIFICATION:

(1) Customer Purchase Order Number: 01685
(2) F&P Serial Number: 92W340593
(3) Sales Order Number: RA39953FW.001
(4) Model Number: Flow Tech

B. CALIBRATION SPECIFICATIONS:

(1) Date of Calibration: 8 May 1992
(2) Metering Fluid: Water
(3) Flow Range: 500 to 22 Units: GPM

C. ACCURACY: ± 1 % of Rate flow using mV data

D. CALIBRATION FACILITIES:

The Measurement and Test Equipment and associated procedures used in the calibration of this meter are in accordance with MIL-STD 45662, and are traceable to NIST (formerly NBS).

The basis of this traceability is through one or more of the following NIST Test Numbers:

	TEST NUMBER
MASS	39761/737-228509
DC Volt	245417/245243/100081
AC Volt	243344/24516/100082
RESISTANCE	242461/244478/100083
AC RATIO	246699
TEMPERATURE	238455
LENGTH	731/244239-89
PRESSURE	738-229929/738-232442/737-067044 737-067043/523/236557
FREQUENCY	WWVB
SONIC NOZZLES	731-241460-88/9103031004/38126/240257 238455/10379/738-232727/731-243669

Calibration procedure
QE-FTP-344 Rev. 0

Very truly yours,

Charles J. Rongione
Sr. Flow Standards Engineer

CJR:bpl

FISCHER & PORTER COMPANY
125 E. COUNTY LINE RD.
WARMINSTER, PA. U.S.A. 18974-4995
(215) 674-6000 TELEX: 173127 FISHPORT WSTR
FAX: (215) 674-7183

B-144

FISCHER & PORTER CO.
WARMINSTER, PA

Serial No:92W340593 Date :8 MAY 92

Model No :Flow-TECH SIZE :4"

Max Flow : 500 GPM(US) SP GR (60/60): 1

Cust. ID:0880506 MODEL:FT-641SW-LED-5

CALIBRATION DATA

RIG:4L
VISCOSITY: 1.0751 CST
RIG TEMP : 63.14 °F

CALIBRATION FLUID:H2O
FLUID DEN. : .99872

TEST DATA RESULTS

Run #	Rig Std.	Hertz	K-Cyc/Gal	MV	GPM(US)	ΔE	K = ΔE/Q
01	3-T2-C17	435.840000	52.745	300.1000	495.7858	240.1	0.4843
02	3-T2-C17	390.390000	52.747	274.6000	444.0680	214.6	0.4833
03	3-T2-C17	343.380000	52.749	249.1000	390.5821	189.1	0.4841
04	3-T2-C17	298.590000	52.750	224.5000	339.6278	164.5	0.4844
05	3-T2-C17	255.020000	52.751	200.7000	290.0664	140.7	0.4851
06	3-T2-C17	208.250000	52.750	175.1000	236.8700	115.1	0.4857
07	2-T2-C20	365.060000	119.777	148.6000	182.8691	88.6	0.4843
08	2-T2-C20	267.160000	119.825	124.9000	133.7755	64.9	0.4851
09	2-T2-C20	168.820000	120.059	100.9000	84.3687	40.9	0.4848
10	2-T2-C20	43.260000	120.314	70.5000	21.5736	10.5	0.4867
11	3-T2-C17	253.580000	52.751	199.9000	288.4285	139.9	0.4850
12	3-T2-C17	438.560000	52.745	301.4000	498.8811	241.4	0.4837

CALIBRATED BY :NL @ ZERO FLOW = 60.0 MV

TEST EQUIPMENT :

QC #	Description
E-158	RATE/RATIO
T-50	THERMOMETER
E-234	DVM

VAPORT 1,RM 200292

ROW # 1 0.12000000000D+02 0.16503000000D+000

3	0.4841000	0.4842939	-0.1939229E-03	-0.4005844E-01	0.1891000
4	0.4844000	0.4845154	-0.1154352E-03	-0.2383055E-01	0.1645000
5	0.4851000	0.4847297	0.3702562E-03	0.7632574E-01	0.1407000
6	0.4859000	0.4849603	0.9397393E-03	0.1934018	0.1151000
7	0.4845000	0.4851989	-0.6988817E-03	-0.1442480	0.8860000E-(
8	0.4851000	0.4854123	-0.3122898E-03	-0.6437638E-01	0.6490000E-(
9	0.4848000	0.4856284	-0.8283994E-03	-0.1708745	0.4090000E-(
10	0.4867000	0.4859021	0.7978618E-03	0.1639330	0.1050000E-(
11	0.4850000	0.4847369	0.2630525E-03	0.5423763E-01	0.1399000
12	0.4839000	0.4838230	0.7701582E-04	0.1591565E-01	0.2414000

DEGREE OF POLYNOMIAL 1

COEFFICIENTS
0.48599669E+00 -0.90045646E-02

ESS= 0.3856E-05 SD= 0.6209E-03 R2= 0.574853E+00

ROW # 1 0.12000000000D+02 0.16503000000D+01 0.29125573000D+0(

ROW # 2 0.16503000000D+01 0.29125573000D+00 0.57091809129D-01

ROW # 3 0.29125573000D+00 0.57091809129D-01 0.11883638349D-01

ROW # 4 0.58171000000D+01 0.79941770000D+00 0.14103811658D+0(

WSTM01

	OBSERVED	CALCULATED	DIFFERENCE	PERCENT	X(I)
1	0.4843000	0.4838942	0.4057875E-03	0.8378845E-01	0.2401000
2	0.4833000	0.4840774	-0.7773636E-03	-0.1608449	0.2146000
3	0.4841000	0.4842730	-0.1730044E-03	-0.3573733E-01	0.1891000
4	0.4844000	0.4844736	-0.7357662E-04	-0.1518923E-01	0.1645000
5	0.4851000	0.4846787	0.4213110E-03	0.8685034E-01	0.1407000
6	0.4859000	0.4849115	0.9885405E-03	0.2034453	0.1151000
7	0.4845000	0.4851657	-0.6656728E-03	-0.1373938	0.8860000E-0
8	0.4851000	0.4854045	-0.3044520E-03	-0.6276066E-01	0.6490000E-0
9	0.4848000	0.4856572	-0.8572481E-03	-0.1768251	0.4090000E-0
10	0.4867000	0.4859933	0.7066611E-03	0.1451944	0.1050000E-0
11	0.4850000	0.4846858	0.3142275E-03	0.6478917E-01	0.1399000
12	0.4839000	0.4838852	0.1478997E-04	0.3056411E-02	0.2414000

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.48611355E+00 -0.11549258E-01 0.96038351E-02

ESS= 0.3828E-05 SD= 0.6522E-03 R2= 0.577907E+00

ROW # 1 0.12000000000D+02 0.16503000000D+01 0.29125573000D+00
0.57091809129D-01

ROW # 2 0.16503000000D+01 0.29125573000D+00 0.57091809129D-01
0.11883638349D-01

ROW # 3 0.29125573000D+00 0.57091809129D-01 0.11883638349D-01
0.25707406318D-02

ROW # 4 0.57091809129D-01 0.11883638349D-01 0.25707406318D-02
0.57082842921D-03

ROW # 5 0.58171000000D+01 0.79941770000D+00 0.14103811658D+00
0.27640125472D-01

WSTM01

	OBSERVED	CALCULATED	DIFFERENCE	PERCENT	X(I)
1	0.4843000	0.4837945	0.5055212E-03	0.1043818	0.2401000
2	0.4833000	0.4841743	-0.8743194E-03	-0.1809061	0.2146000
3	0.4841000	0.4844304	-0.3304165E-03	-0.6825376E-01	0.1891000
4	0.4844000	0.4845984	-0.1984463E-03	-0.4096743E-01	0.1645000
5	0.4851000	0.4847221	0.3779142E-03	0.7790440E-01	0.1407000
6	0.4859000	0.4848508	0.1049250E-02	0.2159394	0.1151000
7	0.4845000	0.4850222	-0.5222243E-03	-0.1077862	0.8860000E-01
8	0.4851000	0.4852456	-0.1455855E-03	-0.3001145E-01	0.6490000E-01
9	0.4848000	0.4855740	-0.7739984E-03	-0.1596531	0.4090000E-01
10	0.4867000	0.4861907	0.5093306E-03	0.1046498	0.1050000E-01
11	0.4850000	0.4847260	0.2740259E-03	0.5650019E-01	0.1399000
12	0.4839000	0.4837711	0.1289486E-03	0.2664777E-01	0.2414000

DEGREE OF POLYNOMIAL (3) entered this

OEFFICIENTS
0.48646722E+00 -0.28067927E-01 0.16908105E+00 -0.41042531E+00

SS= 0.3656E-05 SD= 0.6761E-03 R2= 0.596831E+00

$K = \frac{\Delta E\ (mv)}{Q\ (gpm)}$

~~Nothing to Report~~ ADS

RD-45A Rev. 11-18-91

C2DP02
OLD 6/22/92

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 088051

INSTRUMENT STATUS	AS RECD	AS LEFT
. Certified		
2 Calibrated	✓	✓
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	187394
PROPERTY NO.	4427-01-123
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED (Y-N)	Y
RECAL INT. (MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)		
Meets Manufacturer's Tolerance	N	
Operates within previously defined limits	N	
Deviates from Mfg or previously defined limits	Y	
Inoperative (Describe below)	Y	
AS LEFT		
Limited (Describe below)		✓
Meets Manufacturer's Tolerance ADS		✓
Other (Describe Below)		

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-10 PSI	PRESS, STD.	0810225
FLUKE	8840A	DMM	0850454

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 2.0
Requested By	SCOTT SPROUL
Charge Number	44260-102-002
Work Order No.	0341
Name	Dewey Dyal ADS
Date (M-D-Y)	06 03 92
Reviewed By	

Service Notes RESET ZERO + CHECKED CALIBRATION. C2DP02
0-10 PSI SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED. DOES NOT MEET 4:1 RATIO SPECS.

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880519
DATE: 03-Jun-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A
NAME: Dawey Lyne

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

Ambient Temperature (F) 75
Facility I. D. Name C2DP02

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.999	0.00%	
1.000	1.000	83.994	84.068	0.03%	
2.000	2.000	107.993	108.135	0.06%	
3.000	3.000	131.991	132.187	0.08%	
4.000	4.000	155.990	156.193	0.08%	
5.000	5.000	179.988	180.210	0.09%	
6.000	6.000	203.986	204.209	0.09%	
7.000	7.000	227.985	228.209	0.09%	
8.000	8.000	251.983	252.185	0.08%	
9.000	9.000	275.982	276.085	0.04%	
10.000	10.000	299.980	299.968	-0.01%	
9.000	9.000	275.982	276.051	0.03%	
8.000	8.000	251.983	252.149	0.07%	
7.000	7.000	227.985	228.180	0.08%	
6.000	6.000	203.986	204.140	0.06%	
5.000	5.000	179.988	180.165	0.07%	
4.000	4.000	155.990	156.128	0.06%	
3.000	3.000	131.991	132.112	0.05%	
2.000	2.000	107.993	108.098	0.04%	
1.000	1.000	83.994	84.063	0.03%	
0.000	0.000	59.996	60.066	0.03%	

CURVEFIT OUTPUT FOR VTAB C2DP02

DATE: 3-JUN-92
TIME: 11:31:43

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.3400101E-04	0.0000000E+00	-0.4470691E-03	0.4470691E-03	0.0000000E+00
2	0.2403500E-01	1.000000	0.9997427	0.2573097E-03	0.2573097E-01
3	0.4810200E-01	2.000000	2.000442	-0.4422066E-03	-0.2211033E-01
4	0.7215400E-01	3.000000	3.001110	-0.1110315E-02	-0.3701051E-01
5	0.9616000E-01	4.000000	4.000455	-0.4550294E-03	-0.1137574E-01
6	0.1201770	5.000000	5.000848	-0.8479087E-03	-0.1695817E-01
7	0.1441760	6.000000	6.001081	-0.1080743E-02	-0.1801237E-01
8	0.1681760	7.000000	7.001945	-0.1944788E-02	-0.2778269E-01
9	0.1921520	8.000000	8.002397	-0.2396633E-02	-0.2995791E-01
10	0.2160520	9.000000	9.000263	-0.2627812E-03	-0.2919791E-02
11	0.2399350	10.00000	9.998003	0.1996830E-02	0.1996830E-01
12	0.2160180	9.000000	8.998843	0.1157193E-02	0.1285770E-01
13	0.1921160	8.000000	8.000894	-0.8940116E-03	-0.1117515E-01
14	0.1681470	7.000000	7.000735	-0.7350553E-03	-0.1050079E-01
15	0.1441070	6.000000	5.998204	0.1795892E-02	0.2993153E-01
16	0.1201320	5.000000	4.998973	0.1027052E-02	0.2054105E-01
17	0.9609500E-01	4.000000	3.997748	0.2251649E-02	0.5629123E-01
18	0.7207900E-01	3.000000	2.997989	0.2010932E-02	0.6703107E-01
19	0.4806500E-01	2.000000	1.998903	0.1096699E-02	0.5483493E-01
20	0.2403000E-01	1.000000	0.9995349	0.4651468E-03	0.4651468E-01
21	0.3299899E-04	0.0000000E+00	0.2336300E-02	-0.2336300E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

)EFFICIENTS
0.96542800E-03 0.41542820E+02 0.51175891E+00

ESS = 0.4032E-04 SD = 0.1497E-02 R2 = 0.100000E+01
2*SD = 0.2993E-02

C2D802 OLD 6/3/92

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880519

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated	✓	✓
3 For Ind. Only		
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	187394
PROPERTY NO.	4427-01-123
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
Ashcroft	Digiguage	Press. STD.	08102255
Fluke	8840A	D.M.M.	08504544

OTHER EQUIPMENT USED

Cooper DP-160 Thermometer	08901166
Compaq Portable Computer	28901944

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.5
Requested By	Scott Sproul
Charge Number	44260-102-002
Work Order No.	0342
Name	Dewey Lyne A D S
Date (M-D-Y)	06 01 92
Reviewed By	

Service Notes 0-10 PSI C2D802
See attached data sheet.
Limited to data provided, does not meet 4:1 ratio specs.
HAD ZERO SHIFT FROM BACK FILLING. RECALIBRATED

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880519.
DATE: 01-Jun-92
PROCEDURE: ARC-TP-015-0E
PROGRAM: T0015_08.03A
NAME: Dawn Lyon

PRESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0850454
TOLERANCE: 0.015%

Ambient Temperature (F) 75
Facility I. D. Name C2DP02

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.993	0.00%	
1.000	1.000	83.994	84.032	0.02%	
2.000	2.000	107.993	108.065	0.03%	
3.000	3.000	131.991	132.130	0.06%	
4.000	4.000	155.990	156.123	0.06%	
5.000	5.000	179.988	180.145	0.07%	
6.000	6.000	203.986	204.160	0.07%	
7.000	7.000	227.985	228.172	0.08%	
8.000	8.000	251.983	252.141	0.07%	
9.000	9.000	275.982	276.055	0.03%	
10.000	10.000	299.980	299.921	-0.02%	
9.000	9.000	275.982	275.977	0.00%	
8.000	8.000	251.983	252.047	0.03%	
7.000	7.000	227.985	228.070	0.04%	
6.000	6.000	203.986	204.046	0.02%	
5.000	5.000	179.988	180.048	0.03%	
4.000	4.000	155.990	156.057	0.03%	
3.000	3.000	131.991	132.021	0.01%	
2.000	2.000	107.993	108.002	0.00%	
1.000	1.000	83.994	83.971	-0.01%	
0.000	0.000	59.996	60.009	0.01%	

$\bar{Z} = 60.001$

CURVEFIT OUTPUT FOR VTAB C2DP02

DATE: 2-JUN-92
TIME: 10:56:34

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.8000762E-05	0.0000000E+00	0.1063804E-02	-0.1063804E-02	0.0000000E+00
2	0.2403100E-01	1.000000	1.000615	-0.6150028E-03	-0.6150028E-01
3	0.4806400E-01	2.000000	2.000371	-0.3714892E-03	-0.1857446E-01
4	0.7212900E-01	3.000000	3.001915	-0.1914775E-02	-0.6382585E-01
5	0.9612200E-01	4.000000	4.000915	-0.9154280E-03	-0.2288570E-01
6	0.1201440	5.000000	5.001578	-0.1577581E-02	-0.3155163E-01
7	0.1441590	6.000000	6.002402	-0.2402240E-02	-0.4003734E-01
8	0.1681710	7.000000	7.003556	-0.3555821E-02	-0.5079745E-01
9	0.1921400	8.000000	8.003369	-0.3369265E-02	-0.4211581E-01
10	0.2160540	9.000000	9.001339	-0.1339246E-02	-0.1488051E-01
11	0.2399200	10.00000	9.997755	0.2245025E-02	0.2245025E-01
12	0.2159760	9.000000	8.998083	0.1916553E-02	0.2129503E-01
13	0.1920460	8.000000	7.999447	0.5526187E-03	0.6907734E-02
14	0.1680690	7.000000	6.999302	0.6979151E-03	0.9970216E-02
15	0.1440450	6.000000	5.997650	0.2349780E-02	0.3916300E-01
16	0.1200470	5.000000	4.997536	0.2463971E-02	0.4927943E-01
17	0.9605600E-01	4.000000	3.998167	0.1833247E-02	0.4583117E-01
18	0.7202000E-01	3.000000	2.997377	0.2622642E-02	0.8742140E-01
19	0.4800100E-01	2.000000	1.997750	0.2249862E-02	0.1124931
20	0.2397000E-01	1.000000	0.9980780	0.1921977E-02	0.1921977
21	0.7999238E-05	0.0000000E+00	0.1728939E-02	-0.1728939E-02	0.0000000E+00

)EGREE OF POLYNOMIAL 2

)EFFICIENTS
0.13964029E-02 0.41570942E+02 0.39363291E+00

:SS = 0.8328E-04 SD = 0.2151E-02 R2 = 0.100000E+01
2*SD = 0.4302E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

C2DP02

Babcock & Wilcox
a McDermott company

B&W Ser. No. 088051

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	187394
PROPERTY NO.	4427-01-123
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-10 PSI	PRESS. STD.	0810225
FLUKE	8840A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	001.0
Requested By	S, SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S, ELKINS / D. SYME A S E
Date (M-D-Y)	05 13 92
Reviewed By	

Service Notes 0-10 PSID, C2DP02 15.003Ω
SEE ATTACHED DATA SHEET.
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

B-154

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880519
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

'RESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

NAME: S. ELKINS / D. SYME

Ambient Temperature (F) 71
Facility I. D. Name c2dp02

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

'ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.999 OHMS
'ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.999 OHMS
RESISTOR MEASURING ACCURACY N.A.
OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.999 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE RANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.996	59.969	-0.01%	
1.000	1.000	83.994	84.067	0.03%	
2.000	2.000	107.993	108.163	0.07%	
3.000	3.000	131.991	132.180	0.08%	
4.000	4.000	155.990	156.156	0.07%	
5.000	5.000	179.988	180.219	0.10%	
6.000	6.000	203.986	204.152	0.07%	
7.000	7.000	227.985	228.198	0.09%	
8.000	8.000	251.983	252.147	0.07%	
9.000	9.000	275.982	276.093	0.05%	
10.000	10.000	299.980	299.935	-0.02%	
9.000	9.000	275.982	275.941	-0.02%	
8.000	8.000	251.983	252.068	0.04%	
7.000	7.000	227.985	228.109	0.05%	
6.000	6.000	203.986	204.100	0.05%	
5.000	5.000	179.988	180.131	0.06%	
4.000	4.000	155.990	156.124	0.06%	
3.000	3.000	131.991	132.151	0.07%	
2.000	2.000	107.993	108.124	0.05%	
1.000	1.000	83.994	84.070	0.03%	
0.000	0.000	59.996	60.071	0.03%	

$\bar{Z} = 60.020$

CURVEFIT OUTPUT FOR VTAB c2dp02 ✓

DATE: 20-MAY-92
TIME: 16:22:29

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.5099974E-04	0.0000000E+00	-0.6090893E-03	0.6090893E-03	0.0000000E+00
2	0.2397400E-01	1.000000	0.9982745	0.1725493E-02	0.1725493
3	0.4797300E-01	2.000000	1.996554	0.3445981E-02	0.1722990
4	0.7197100E-01	3.000000	2.995269	0.4731440E-02	0.1577147
5	0.9597000E-01	4.000000	3.994501	0.5498637E-02	0.1374659
6	0.1201990	5.000000	5.003794	-0.3794076E-02	-0.7588152E-01
7	0.1441320	6.000000	6.001233	-0.1233465E-02	-0.2055776E-01
8	0.1681780	7.000000	7.003860	-0.3859679E-02	-0.5513827E-01
9	0.1921270	8.000000	8.002917	-0.2916996E-02	-0.3646245E-01
10	0.2160730	9.000000	9.002324	-0.2323747E-02	-0.2581941E-01
11	0.2399150	10.00000	9.997861	0.2138565E-02	0.2138565E-01
12	0.2159210	9.000000	8.995978	0.4021599E-02	0.4468444E-01
13	0.1920480	8.000000	7.999621	0.3793510E-03	0.4741888E-02
14	0.1680890	7.000000	7.000148	-0.1478371E-03	-0.2111958E-02
15	0.1440800	6.000000	5.999066	0.9342171E-03	0.1557028E-01
16	0.1201110	5.000000	5.000127	-0.1274345E-03	-0.2548691E-02
17	0.9610400E-01	4.000000	4.000082	-0.8198392E-04	-0.2049598E-02
18	0.7213100E-01	3.000000	3.001929	-0.1928812E-02	-0.6429372E-01
19	0.4810400E-01	2.000000	2.002004	-0.2004497E-02	-0.1002248
20	0.2405000E-01	1.000000	1.001435	-0.1435105E-02	-0.1435105
21	0.5100026E-04	0.0000000E+00	0.3630739E-02	-0.3630739E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.15108130E-02 0.41566941E+02 0.41379784E+00

ESS = 0.1574E-03 SD = 0.2957E-02 R2 = 0.999999E+00
2*SD = 0.5913E-02

C3DP01

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880533

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

MANUFACTURER	SENSOTEC
MODEL	Z1311-03
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	200013
PROPERTY NO.	4427-01-137
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT	
Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-50 PSI	PRESS. STD.	07401994
FLUKE	8840A	DMM	08604044

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	08901666
COMPAQ	PORTABLE	COMPUTER	28901974

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SPROUL
Charge Number	44160-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A5E
Date (M-D-Y)	05/13/92
Reviewed By	

Service Notes 0-50 PSID, C3DP01 ADS ~~15.003~~ 14.998

SEE ATTACHED DATA SHEET,

LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS,

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
50 PSI
TOLERANCE: 0.25%

B&W S.N. 0880533
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A
NAME: S. Elkins / D. Syme

PRESS SOURCE ASHCROFT DIGIGAUGE
0-50 PSI
B&W Ser. No. 0740199
TOLERANCE: 0.05%

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 71
Facility I. D. Name C3DP01

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.998 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.998 OHMS
RESISTOR MEASURING ACCURACY N.A.

POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.998

CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.992	59.946	-0.02%	
5.000	5.000	83.989	83.821	-0.07%	
10.000	10.000	107.986	107.788	-0.08%	
15.000	15.000	131.982	131.815	-0.07%	
20.000	20.000	155.979	155.878	-0.04%	
25.000	25.000	179.976	179.862	-0.05%	
30.000	30.000	203.973	203.846	-0.05%	
35.000	35.000	227.970	227.891	-0.03%	
40.000	40.000	251.966	251.886	-0.03%	
45.000	45.000	275.963	275.919	-0.02%	
50.000	50.000	299.960	299.761	-0.08%	
45.000	45.000	275.963	275.813	-0.06%	
40.000	40.000	251.966	251.755	-0.09%	
35.000	35.000	227.970	227.811	-0.07%	
30.000	30.000	203.973	203.770	-0.08%	
25.000	25.000	179.976	179.835	-0.06%	
20.000	20.000	155.979	155.851	-0.05%	
15.000	15.000	131.982	131.812	-0.07%	
10.000	10.000	107.986	107.783	-0.08%	
5.000	5.000	83.989	83.854	-0.06%	
0.000	0.000	59.992	59.971	-0.01%	

$\bar{Z} = 59.959$

CURVEFIT OUTPUT FOR VTAB c3dp01 ✓

DATE: 20-MAY-92
TIME: 16:26:55

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.1300184E-04	0.0000000E+00	0.1119659E-01	-0.1119659E-01	0.0000000E+00
2	0.2386200E-01	5.000000	4.989437	0.1056311E-01	0.2112621
3	0.4782900E-01	10.00000	9.986136	0.1386391E-01	0.1386391
4	0.7185600E-01	15.00000	14.99462	0.5384156E-02	0.3589438E-01
5	0.9591900E-01	20.00000	20.00987	-0.9868934E-02	-0.4934467E-01
6	0.1199030	25.00000	25.00793	-0.7928814E-02	-0.3171526E-01
7	0.1438870	30.00000	30.00526	-0.5262001E-02	-0.1754000E-01
8	0.1679320	35.00000	35.01458	-0.1457575E-01	-0.4164500E-01
9	0.1919270	40.00000	40.01274	-0.1274484E-01	-0.3186210E-01
0	0.2159600	45.00000	45.01810	-0.1810026E-01	-0.4022280E-01
1	0.2398020	50.00000	49.98296	0.1704490E-01	0.3408980E-01
2	0.2158540	45.00000	44.99603	0.3974770E-02	0.8832823E-02
3	0.1917960	40.00000	39.98546	0.1454054E-01	0.3635136E-01
4	0.1678520	35.00000	34.99791	0.2089503E-02	0.5970009E-02
5	0.1438110	30.00000	29.98943	0.1057230E-01	0.3524099E-01
6	0.1198760	25.00000	25.00230	-0.2302654E-02	-0.9210616E-02
7	0.9589200E-01	20.00000	20.00424	-0.4241956E-02	-0.2120978E-01
8	0.7185300E-01	15.00000	14.99399	0.6009467E-02	0.4006311E-01
9	0.4782400E-01	10.00000	9.985094	0.1490625E-01	0.1490625
0	0.2389500E-01	5.000000	4.996317	0.3682686E-02	0.7365372E-01
1	0.1199816E-04	0.0000000E+00	0.1640979E-01	-0.1640979E-01	0.0000000E+00

:GREE OF POLYNOMIAL 2

OEFFICIENTS
0.13907838E-01 0.20852775E+03 -0.63165188E+00

SS = 0.2547E-02 SD = 0.1190E-01 R2 = 0.999999E+00
2*SD = 0.2379E-01

C4DP02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 088052

MANUFACTURER	SENSOTEC
MODEL	Z1309-15
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	187436
PROPERTY NO.	4427-01-125
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED (Y-N)	~~N~~ Y
RECAL INT. (MOS.)	12

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-10PSI	PRESS. STD.	081021025
FLUKE	8840A	DMM	086040404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	089016166
COMPAQ	PORTABLE	COMPUTER	289019414

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0 0 1.0
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A D S
Date (M-D-Y)	0 5 / 1 3 9 2
Reviewed By	

Service Notes 0-10 PSID, C4DP02 RDS ~~14,996~~ 14,993 Ω
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS,

B-160

AS RECEIVED ____ AS LEFT ✓

RANSMITTER: SENSOTEC Z
10 PSI
TOLERANCE: 0.25%

B&W S.N. 0880521
DATE: 13-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

RESS SOURCE ASHCROFT DIGIGAUGE
0-10 PSI
B&W Ser. No. 0810225
TOLERANCE: 0.05%

NAME: S. ELKINS/D. SYME

Ambient Temperature (F) 71
Facility I. D. Name C4DP02

EADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

ALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.993 OHMS
ALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.993 OHMS
RESISTOR MEASURING ACCURACY N.A.
OWER SUPPLY VOLTAGE 24
OTAL SERIES RESISTANCE 14.993 CALIBRATION ACCURACY 0.32%

APPLIED PRESSURE RANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.972	59.914	-0.02%	
1.000	1.000	83.961	83.995	0.01%	
2.000	2.000	107.950	108.015	0.03%	
3.000	3.000	131.938	132.001	0.03%	
4.000	4.000	155.927	156.023	0.04%	
5.000	5.000	179.916	180.028	0.05%	
6.000	6.000	203.905	203.988	0.03%	
7.000	7.000	227.894	228.005	0.05%	
8.000	8.000	251.882	251.968	0.04%	
9.000	9.000	275.871	275.831	-0.02%	
10.000	10.000	299.860	299.724	-0.06%	
9.000	9.000	275.871	275.831	-0.02%	
8.000	8.000	251.882	251.950	0.03%	
7.000	7.000	227.894	228.013	0.05%	
6.000	6.000	203.905	204.011	0.04%	
5.000	5.000	179.916	180.052	0.06%	
4.000	4.000	155.927	156.054	0.05%	
3.000	3.000	131.938	132.019	0.03%	
2.000	2.000	107.950	108.046	0.04%	
1.000	1.000	83.961	84.001	0.02%	
0.000	0.000	59.972	59.937	-0.01%	

$\bar{z} = 59.926$

CURVEFIT OUTPUT FOR VTAB c4dp02

DATE: 20-MAY-92
TIME: 16:30:25

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	-0.1199949E-04	0.0000000E+00	-0.4799287E-03	0.4799287E-03	0.0000000E+00
2	0.2406900E-01	1.000000	1.000578	-0.5784023E-03	-0.5784024E-01
3	0.4808900E-01	2.000000	1.999772	0.2282403E-03	0.1141202E-01
4	0.7207500E-01	3.000000	2.998219	0.1780676E-02	0.5935587E-01
5	0.9609700E-01	4.000000	3.998835	0.1164983E-02	0.2912458E-01
6	0.1201020	5.000000	4.999412	0.5880364E-03	0.1176073E-01
7	0.1440620	6.000000	5.998780	0.1219524E-02	0.2032539E-01
8	0.1680790	7.000000	7.001195	-0.1195464E-02	-0.1707805E-01
9	0.1920420	8.000000	8.002024	-0.2024163E-02	-0.2530203E-01
10	0.2159050	9.000000	8.999339	0.6610667E-03	0.7345186E-02
11	0.2397980	10.00000	9.998570	0.1430004E-02	0.1430004E-01
12	0.2159050	9.000000	8.999339	0.6610667E-03	0.7345186E-02
13	0.1920240	8.000000	8.001272	-0.1272132E-02	-0.1590165E-01
14	0.1680870	7.000000	7.001529	-0.1529477E-02	-0.2184967E-01
15	0.1440850	6.000000	5.999740	0.2598763E-03	0.4331272E-02
16	0.1201260	5.000000	5.000413	-0.4126669E-03	-0.8253339E-02
17	0.9612800E-01	4.000000	4.000127	-0.1267279E-03	-0.3168197E-02
18	0.7209300E-01	3.000000	2.998969	0.1031153E-02	0.3437175E-01
19	0.4812000E-01	2.000000	2.001062	-0.1061743E-02	-0.5308713E-01
20	0.2407500E-01	1.000000	1.000828	-0.8279090E-03	-0.8279090E-01
21	0.1100051E-04	0.0000000E+00	0.4758707E-03	-0.4758707E-03	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.18728069E-04 0.41556496E+02 0.58060646E+00

ESS = 0.2274E-04 SD = 0.1124E-02 R2 = 0.100000E+01
2*SD = 0.2248E-02

IPDP06 6/13/92

:D-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

B&W Ser. No. 0880528

MANUFACTURER	SENSOTEC
MODEL	Z1309-22
ITEM	TRANSMITR, D-P
MANUF. SER. NO.	201803
PROPERTY NO.	4427-01-132
ORDER NO.	
SECTION	46
LOCATION	115
SCHEDULED(Y-N)	~~N~~ Y
RECAL INT.(MOS.)	12

TECH. PROCEDURE A0015

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	
AS LEFT — Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRESS. STD.	0810341
FLUKE	8840	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE		2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	00 1.0
Requested By	S. SARDUL
Charge Number	44260-102-002
Work Order No.	0296
Name	S. ELKINS / D. SYME A S E
Date (M-D-Y)	05 14 92
Reviewed By	

Service Notes 0-25 PSID, IPDP06 ADS ~~15.000~~ 14.997 Ω
SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS.

B-163

AS RECEIVED ____ AS LEFT ✓

TRANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880528
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

PRESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S,ELKINS/D, SYME

Ambient Temperature (F) 70
Facility I. D. Name IPDP06

READOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

VALUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.997 OHMS
VALUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.997 OHMS
RESISTOR MEASURING ACCURACY N.A.
POWER SUPPLY VOLTAGE 24
TOTAL SERIES RESISTANCE 14.997 CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE TRANSMITTER PSI	PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.988	59.953	-0.01%	
2.500	2.500	83.983	84.019	0.02%	
5.000	5.000	107.978	108.068	0.04%	
7.500	7.500	131.974	132.123	0.06%	
10.000	10.000	155.969	156.203	0.10%	
12.500	12.500	179.964	180.295	0.14%	
15.000	15.000	203.959	204.233	0.11%	
17.500	17.500	227.954	228.218	0.11%	
20.000	20.000	251.950	252.149	0.08%	
22.500	22.500	275.945	276.061	0.05%	
25.000	25.000	299.940	299.880	-0.03%	
22.500	22.500	275.945	275.966	0.01%	
20.000	20.000	251.950	252.113	0.07%	
17.500	17.500	227.954	228.180	0.09%	
15.000	15.000	203.959	204.210	0.10%	
12.500	12.500	179.964	180.239	0.11%	
10.000	10.000	155.969	156.182	0.09%	
7.500	7.500	131.974	132.088	0.05%	
5.000	5.000	107.978	108.053	0.03%	
2.500	2.500	83.983	84.005	0.01%	
0.000	0.000	59.988	59.932	-0.02%	

$\bar{z}$: 59.943

B-164

CURVEFIT OUTPUT FOR VTAB ipdp06 ✓

DATE: 20-MAY-92
TIME: 16:36:50

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.9998283E-05	0.0000000E+00	0.5626411E-02	-0.5626411E-02	0.0000000E+00
2	0.2407600E-01	2.500000	2.500650	-0.6500618E-03	-0.2600247E-01
3	0.4812500E-01	5.000000	4.996502	0.3497669E-02	0.6995337E-01
4	0.7218000E-01	7.500000	7.495568	0.4431573E-02	0.5908764E-01
5	0.9626000E-01	10.00000	9.999827	0.1727368E-03	0.1727368E-02
6	0.1203520	12.50000	12.50793	-0.7932857E-02	-0.6346286E-01
7	0.1442900	15.00000	15.00258	-0.2580795E-02	-0.1720530E-01
8	0.1682750	17.50000	17.50470	-0.4700612E-02	-0.2686064E-01
9	0.1922060	20.00000	20.00375	-0.3754841E-02	-0.1877421E-01
10	0.2161180	22.50000	22.50339	-0.3386703E-02	-0.1505201E-01
11	0.2399370	25.00000	24.99584	0.4157336E-02	0.1662934E-01
12	0.2160230	22.50000	22.49345	0.6549152E-02	0.2910734E-01
13	0.1921700	20.00000	19.99999	0.6474794E-05	0.3237397E-04
14	0.1682370	17.50000	17.50073	-0.7344070E-03	-0.4196611E-02
15	0.1442670	15.00000	15.00018	-0.1826675E-03	-0.1217784E-02
16	0.1202960	12.50000	12.50210	-0.2099945E-02	-0.1679956E-01
17	0.9623900E-01	10.00000	9.997642	0.2357815E-02	0.2357815E-01
18	0.7214500E-01	7.500000	7.491930	0.8069594E-02	0.1075946
19	0.4811000E-01	5.000000	4.994945	0.5055205E-02	0.1011041
20	0.2406200E-01	2.500000	2.499198	0.8021312E-03	0.3208525E-01
21	-0.1100172E-04	0.0000000E+00	0.3450385E-02	-0.3450385E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.45903860E-02 0.10362028E+03 0.22392541E+01

ESS = 0.3552E-03 SD = 0.4442E-02 R2 = 0.100000E+01
2*SD = 0.8884E-02

RD-45A Rev. 11-18-91

RESEARCH & DEVELOPMENT DIVISION
INSTRUMENT SERVICE LOG

Babcock & Wilcox
a McDermott company

INSTRUMENT STATUS	AS RECD	AS LEFT
1 Certified		
2 Calibrated		✓
3 For Ind. Only	✓	
4 Standardize		
5 Certified & Stand.		
6 Calibrated & Stand.		
9 Other		

TYPE OF SERVICE	
Certification 1	
Calibration 2	✓
Maintenance 3	
Repair 4	
Vendor Cert. 5	
Vendor Calib. 6	
Vendor Repair 7	
Other 9	

B&W Ser. No. 088052

MANUFACTURER SENSOTEC
MODEL Z1309-22
ITEM TRANSMITR, D-P
MANUF. SER. NO. 195498
PROPERTY NO. 4427-01-130
ORDER NO.

SECTION 46
LOCATION 115
SCHEDULED (Y-N) ~~N~~ Y
RECAL INT. (MOS.) 12

INSTRUMENT CONDITION

AS RECEIVED (Certified Equipment Only)	
Meets Manufacturer's Tolerance N	
Operates within previously defined limits N	
Deviates from Mfg or previously defined limits Y	
Inoperative (Describe below) Y	

AS LEFT	
Limited (Describe below)	✓
Meets Manufacturer's Tolerance	
Other (Describe Below)	

TECH. PROCEDURE A0015

Babcock & Wilcox R&D Division certifies that the performance of this instrument was verified using standards whose accuracies are traceable to the National Institute of Standards and Technology, an accepted value of a natural physical constant, a ratio type of calibration technique, or to a consensus standard.

STANDARDS USED

Manufacturer	Model	Item	B&W Serial No.
ASHCROFT	0-30 PSI	PRESS. STD.	0810341
FLUKE	8840-A	DMM	0860404

OTHER EQUIPMENT USED

COOPER	DP160	THERMOMETER	0890166
COMPAQ	PORTABLE	COMPUTER	2890194

Vendor Cert/Cal/Repair	
Repair Parts	
TOTAL MATERIAL COST	
TOTAL LABOR HOURS	0010
Requested By	S. SPROUL
Charge Number	44260-102-002
Work Order No.	0296
Name S. ELKINS / D. SYME	A S E
Date (M-D-Y)	05 14 92
Reviewed By	

Service Notes 0-25 PSID, IPDP04 ADS ~~+5.003~~ 14.996

SEE ATTACHED DATA SHEET,
LIMITED TO DATA PROVIDED, DOES NOT MEET 4:1 RATIO SPECS,

B-166

AS RECEIVED ____ AS LEFT ✓

ANSMITTER: SENSOTEC Z
25 PSI
TOLERANCE: 0.25%

B&W S.N. 0880526
DATE: 14-May-92
PROCEDURE: ARC-TP-015-08
PROGRAM: T0015_08.03A

ESS SOURCE ASHCROFT DIGIGAUGE
0-30 PSI
B&W Ser. No. 0810341
TOLERANCE: 0.06%

NAME: S. ELKINS / D. SYME

ADOUT DEV: FLUKE 8840A
B&W Ser. No. 0860404
TOLERANCE: 0.015%

Ambient Temperature (F) 70
Facility I. D. Name IPDP04

LUE OF CURRENT SENSING RESISTOR USED FOR TEST DATA 14.996 OHMS
LUE OF CURRENT SENSING RESISTOR USED FOR CALIBRATION 14.996 OHMS
RESISTOR MEASURING ACCURACY N.A.
WER SUPPLY VOLTAGE 24
TAL SERIES RESISTANCE 14.996 CALIBRATION ACCURACY 0.33%

APPLIED PRESSURE ANSMITTER PSI	PRESSURE PRESS SOURCE PSI	IDEAL OUTPUT SIG MILLIVOLTS	MEASURED OUTPUT SIG MILLIVOLTS	**LIMITED** ERROR % FULL SCALE	OUT OF TOLERANCE
0.000	0.000	59.984	59.996	0.00%	
2.500	2.500	83.978	83.982	0.00%	
5.000	5.000	107.971	107.988	0.01%	
7.500	7.500	131.965	131.995	0.01%	
10.000	10.000	155.958	156.044	0.04%	
12.500	12.500	179.952	180.115	0.07%	
15.000	15.000	203.946	204.106	0.07%	
17.500	17.500	227.939	228.063	0.05%	
20.000	20.000	251.933	252.046	0.05%	
22.500	22.500	275.926	275.966	0.02%	
25.000	25.000	299.920	299.757	-0.07%	
22.500	22.500	275.926	275.930	0.00%	
20.000	20.000	251.933	252.030	0.04%	
17.500	17.500	227.939	227.999	0.02%	
15.000	15.000	203.946	204.032	0.04%	
12.500	12.500	179.952	180.048	0.04%	
10.000	10.000	155.958	156.039	0.03%	
7.500	7.500	131.965	131.938	-0.01%	
5.000	5.000	107.971	107.931	-0.02%	
2.500	2.500	83.978	83.906	-0.03%	
0.000	0.000	59.984	59.931	-0.02%	

$\bar{Z} = 59.964$

CURVEFIT OUTPUT FOR VTAB ipdp04✓

DATE: 20-MAY-92
TIME: 16:35:01

	VOLTAGE(V)	OBS. DP(PSI)	CALC. DP(PSI)	DIFF (PSIA)	% DIFFERENCE
1	0.3199882E-04	0.0000000E+00	0.9852841E-02	-0.9852841E-02	0.0000000E+00
2	0.2401800E-01	2.500000	2.502404	-0.2403655E-02	-0.9614619E-01
3	0.4802400E-01	5.000000	4.998437	0.1562877E-02	0.3125755E-01
4	0.7203100E-01	7.500000	7.495980	0.4020445E-02	0.5360594E-01
5	0.9608000E-01	10.00000	9.999300	0.6998811E-03	0.6998810E-02
6	0.1201510	12.50000	12.50632	-0.6322592E-02	-0.5058074E-01
7	0.1441420	15.00000	15.00642	-0.6418458E-02	-0.4278972E-01
8	0.1680990	17.50000	17.50437	-0.4371357E-02	-0.2497918E-01
9	0.1920820	20.00000	20.00644	-0.6436679E-02	-0.3218340E-01
10	0.2160020	22.50000	22.50333	-0.3326114E-02	-0.1478273E-01
11	0.2397930	25.00000	24.98813	0.1186653E-01	0.4746611E-01
12	0.2159660	22.50000	22.49957	0.4327942E-03	0.1923530E-02
13	0.1920660	20.00000	20.00477	-0.4766986E-02	-0.2383493E-01
14	0.1680350	17.50000	17.49770	0.2303671E-02	0.1316383E-01
15	0.1440680	15.00000	14.99870	0.1295220E-02	0.8634802E-02
16	0.1200840	12.50000	12.49934	0.6574958E-03	0.5259966E-02
17	0.9607500E-01	10.00000	9.998780	0.1220490E-02	0.1220490E-01
18	0.7197400E-01	7.500000	7.490048	0.9952043E-02	0.1326939
19	0.4796700E-01	5.000000	4.992509	0.7491139E-02	0.1498228
20	0.2394200E-01	2.500000	2.494504	0.5496245E-02	0.2198498
21	-0.3300118E-04	0.0000000E+00	0.3100148E-02	-0.3100148E-02	0.0000000E+00

DEGREE OF POLYNOMIAL 2

COEFFICIENTS
0.65285591E-02 0.10388759E+03 0.12189226E+01

ESS = 0.6423E-03 SD = 0.5974E-02 R2 = 0.999999E+00
2*SD = 0.1195E-01

END

DATE FILMED

6/22/93