ISSUE SUMMARY
Form SOP-0402-07, Revision 7B

DESIGN CONTROL SUMMARY			
CLIENT:	Northern States Power Company	UNIT NO.: 1	Page No.: 1
PROJECT NAME:	**Monticello Nuclear Generating Plant**		
PROJECT NO.:	11972-049	☒ NUCLEAR SAFETY- RELATED	
CALC. NO.:	CA-95-075, Revision 1	☐ NOT NUCLEAR SAFETY-RELATED	
TITLE:	Main Steam Line High Flow Setpoint		
EQUIPMENT NO.:	DPIS-2-116/7/8/9 A,B,C&D		

IDENTIFICATION OF PAGES ADDED/REVISED/SUPERSEDED/VOIDED & REVIEW METHOD

This revision completely supersedes Revision 0

INPUTS/ ASSUMPTIONS
☒ VERIFIED
☐ UNVERIFIED

REVIEW METHOD:	Detailed	REV.	1
STATUS:	Approved	DATE FOR REV.:	12/18/2008
PREPARER	Nicholas Torres / Eric Kolodziejczyk	DATE:	12/18/2008
REVIEWER	John O'Hara / Greg Rainey	DATE:	12/18/2008
APPROVER	Steven Malak	DATE:	12/18/2008

IDENTIFICATION OF PAGES ADDED/REVISED/SUPERSEDED/VOIDED & REVIEW METHOD

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NOTE: PRINT AND SIGN IN THE SIGNATURE AREAS

MONTICELLO NUCLEAR GENERATING PLANT		3494
TITLE:	CALCULATION COVER SHEET	Revision 17
		Page 1 of 1

Title *Main Steam Line High Flow Setpoint* CA- *95* - *075* Rev. *1*

10 CFR50.59 Screening or Evaluation No: _____

Associated Reference(s): _____

Does this calculation:	YES	NO	Calc No(s), Rev(s), Add(s)
Supercede another calculation?	☒	☐	*CA-95-075 Rev.0*
Augment (credited by) another calculation?	☐	☒	
Affect the Fire Protection Program per Form 3765?	☐	☒	If Yes, attach Form 3765
Affect piping or supports?	☐	☒	If Yes, attach Form 3544
Affect IST Program Valve or Pump Reference Values, and/or Acceptance Criteria?	☐	☒	If Yes, inform IST Coordinator and provide copy of calculation

What systems are affected?

DBD Section (if any): B.02.04 3.3.3, 4.1.1, 4.2.1.E

Topic Code (See Form 3805): DBAE

Structure Code (See Form 3805): RB

Other Comments: _____

Prepared by: _____ Date: _____

Print/Signature

M/cah

1. PURPOSE

The Main Steam Line high flow trip portion of the reactor isolation system detects and isolates breaks in the large steam lines outside the reactor containment. The Main Steam Line Differential Pressure Switches provide the high steam flow MSIV signal.

The purpose of this calculation is to determine acceptable instrument settings for the main steam lines high flow instruments DPIS-2-116 to DPIS-2-119 A, B, C, & D. Instrument settings include the Nominal Trip Setpoint, the Allowable Value and ALT /AFT values. Calculation outputs will be used to verify the adequacy of current setpoints. Revision 1 of this calculation takes into consideration the effects of extended power uprate (EPU) and the new Analytical Limit. This calculation was performed with a goal of retaining the current setpoint value of 143 psid (Reference 10.7). This is considered acceptable because the current setpoint remains conservative under EPU conditions.

2. METHODOLOGY

This calculation is performed using the GE Setpoint Methodology as a guide as described in Appendix I to Engineering Standards Manual Section ESM-03.02, Revision 4, Design Requirements, Practices, & Topics (Instrumentation and Controls) (Reference 10.9). This methodology utilizes statistical estimates of the various instrument errors to achieve conservative, but reasonable, predictions of instrument channel uncertainties. The objective of the statistical approach to setpoint calculations is to achieve a workable compromise between the need to ensure instrument trips when appropriate, and the need to avoid spurious trips that may unnecessarily challenge safety systems or disrupt plant operation.

The determination of the differential pressure switch drift value used in this calculation is performed in accordance with ESM-03.02-APP-III (Reference 10.14).

3. ACCEPTANCE CRITERIA

The setpoint and instrument settings should be such that the Analytical Limit will not be exceeded when all applicable instrumentation uncertainties are considered. The existing setpoints and As-found/As-left ranges will be verified to provide sufficient margin using the GE methodology as a guide. A setpoint value will be established with a 95%/95% tolerance interval as a criteria of uncertainties (Reference 10.9). That is, there is a 95% probability that the constructed limits contain 95% of the population of interest for an 18-month +25% calibration interval (Reference 10.18) for the pressure switches (although these devices are calibrated every 3 months). If the existing setpoint and ranges do not provide sufficient margin, new setpoints or ranges will be specified by this calculation.

4. INPUTS

4.1 MNGP EPU Task Report T0900: Transient Analysis EC11830. GE-NE-0000-0062-2932 OPL-3, Transient Protection Parameters Verification for Reload Licensing Analysis.

	Cycle 24 Value	EPU Value
Rated Flow	7.259 10^6 lb/hr	8.335 10^6 lb/hr

4.2 DIT EPU-0258

	EPU Value	% EPU flow
Proposed Tech Spec Limit (AV)	151.95 psid	123.64%

4.3 DIT EPU-0259

140% existing flow	147.7 psid

4.4 MNGP EPU Task Report T1004: Environmental Qualification EC11836, Rev. 1. March 2008. This Input demonstrates environmental conditions used in the evaluation of Reference 10.13 will not change due to EPU. This reference provides the environmental conditions for the instruments in this calculation.

4.5 Monticello Component Master List (CML). The CML contains information regarding the pressure switches and calibration tools listed in this calculation.

Calibration Device	Description
XPI-9021	Ashcroft 2089
XPS-95171	Mansfield and Green TQ-50

4.6 NX-63626, Ashcroft Digital Test Gauge Operating Instructions

Calibration Device	Range	Accuracy
XPI-9021 (Ashcroft 2089)	0-500 psig	0.05% Full Scale

4.7 NX-17448, Mansfield and Green Pneumatic Dead Weight Tester.

Calibration Device	Range	Accuracy
XPS-95171 (Mansfield and Green TQ-50)	100-5000 psig	0.025% Reading

4.8 MNGP EPU Task Report T2005, Moisture Carryover in MSL (EC11845). This Input evaluates the effect of increased moisture carryover on the main steam flow instrumentation.

5. ASSUMPTIONS

Validated Assumptions

5.1 M&TE reference accuracy were assumed to be 3 sigma values unless otherwise noted.

5.2 No seismic data is available for the Barton switches. Per Section 6.2.1.2, the ZPA of the C-126 the rack is 0.41g. Normal vibration effects are considered as part of the analyzed drift. Per Section 6.1.1, seismic events are not considered as a service condition for the DPIS devices.

6. ANALYSIS

6.1 Instrument Channel Arrangement

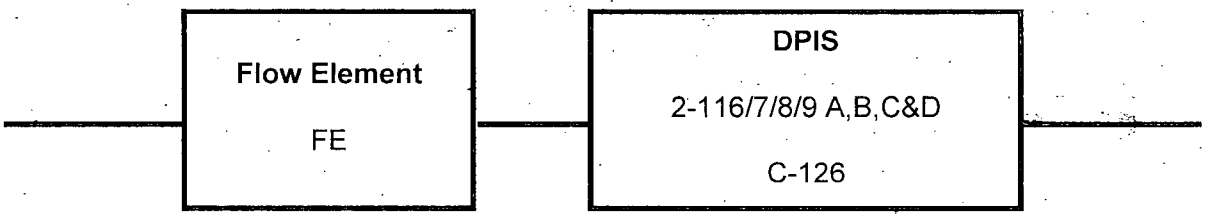
6.1.1 Loop Information:

DPIS-2-116 to DPIS-2-119 A, B, C & D are used during a Main Steam Line Break to close the MSIVs due to high steam flow. The flow in each of four steam lines is monitored by 4 DPIS switches across each of the flow elements. In the event of a Main Steam Line Break, the element restricts the flow to 200% of the original rated mass flow or less. This rate is the design safety limit. A one out of two twice high flow signal in any one steam line will result in isolating all four Main Steam Lines.

These instruments are required to function immediately upon a Main Steam Line Break and are not required to maintain setpoint accuracy during long term post accident conditions. As such, long term harsh environment effects are not applicable in this calculation.

The Barton Model 278 DPIS devices are Mercury type switches. As such, seismic events have a significant impact on the performance of the devices. Per Reference 10.13, seismic events are not considered as a service condition for the DPIS devices. As such, seismic events are not applicable in this calculation.

6.1.2 Loop Diagram:



6.2 Instrument Definition and Determination of Device Error Terms

6.2.1 Device 1:

6.2.1.1 Instrument Definition:

Component ID:	DPIS-2-116 to 119 A, B, C, D	Reference / Input
Location	Reactor Building 935' East C-126	10.7
Manufacturer:	Barton	10.7
Model Number:	278	10.7
Range:	200 psid	10.7
Input Signal:	Main Steam Line Process Differential Pressure	10.7
Current Setpoint:	143 psid (increasing)	10.7
Output Range:	N/A (i.e. contact opens/closes)	

6.2.1.2 Environmental Process and Physical Interfaces:

Calibration Conditions (Environmental):		Reference / Input
Temperature:	65 to 90°F	10.13, 4.4
Radiation:	Negligible	10.13, 4.4
Pressure:	Normal atmospheric	10.13, 4.4
Humidity:	20 to 90%	10.13, 4.4

Calibration Surveillance Interval: 3 mos ± 25%

Normal Plant Conditions (Environmental):		Reference / Input
Temperature:	60 to 104°F	10.13, 4.4
Radiation:	Negligible	10.13, 4.4
Pressure:	Normal atmospheric	10.13, 4.4
Humidity:	20 to 100%	10.13, 4.4

Trip Conditions (Environmental):		Reference / Input
Temperature:	104 to 173°F	10.13, 4.4
Radiation:	Negligible	10.13, 4.4

Pressure:	15.3 psia	10.13, 4.4
Humidity:	100 %	10.13, 4.4

Seismic Conditions:		Reference
OBE: (Instrument Rack C-126)	0.41g	5.2, 10.13

Main Steam Line Process Conditions:		Reference
Test Pressure	1200 psi	10.10

6.2.1.3 Device Accuracy (A_{iN}, A_{iT} & A_{iP}):

Term	Value		Sigma	Reference
VA:	± 0.4 psid	Note 1	2	10.8
ATE:	0	Note 2	N/A	10.8
OPE:	0	Note 3	N/A	Section 6.2.1.2, 10.8
SPE:	± 0.6 psid (bias)	Note 4	2	10.16
SE:	0		N/A	Section 6.1.1
RE:	0		N/A	Section 6.2.1.2
HE:	0	Note 5	N/A	10.8
PSE:	N/A	Note 6	N/A	N/A
REE:	N/A	Note 6	N/A	N/A

Note 1: Vendor Accuracy (VA) is based on switch repeatability error equal to ± 0.2% of Full Scale.

(± 0.002) * (200 psid) = ± 0.4 psid

Note 2: The maximum operating temperature of the switch is 200 °F. Vendor does not provide temperature effect values. Per Section 6.2.1.2, the maximum environmental temperature of 173 °F is bounded by the operating range of the device. Additionally, the vendor states that the devices contain a temperature compensator, which automatically protect the unit from zero and calibration drift when the instrument is subjected to a change in ambient temperature. Therefore, temperature effects are considered to be included in the vendor accuracy term.

Note 3: The switch has been selected to operate within the Main Steam Line maximum pressure of 1200 psi as specified per Section 6.2.1.2. Therefore, Overpressure Effects are not applicable.

Note 4: Per Reference 10.16, the SPE for a Barton Model 288A is 0.25 % FS per 1000 psi. Per Calculation CA-98-011 (Reference 10.17) the only significant difference between Model 278 and 288A is the use of a mercury switch vs. a snapping action switch. As such, the static pressure effect for a Barton Model 288A is applicable to the MSL High Flow DPIS devices as well. Per Section 6.2.1.2, the maximum line pressure is 1200 psi.

Effects of static pressure, not accounted for during calibration, are considered bias values. It is not known whether effects of static pressure will impact the DPIS devices in the positive or the negative direction. As such, SPE is considered a (+/-) bias value and will be applied to both sides of the process outside of the SRSS.

[(± 0.0025) * (1200 psi / 1000 psid)] = ± 0.3 % FS
± 0.3 % FS * 200 psid = ± 0.6 psid (bias)

Note 5: Per Section 6.2.1.2, the maximum environmental humidity is 100%. Per Reference 10.8, switch model 278 is housed inside of a Weather-Proof casing. Environmental humidity has no effect on the devices.

Note 6: The switches are mechanical devices and therefore power supply and EMI /RFI effects are not applicable in this calculation.

Based on environmental conditions (Section 6.2.1.3 Note 2), the accuracy under Normal Conditions (A_{iN}) is the same as Accuracy Under Trip Conditions (A_{iT}). Accuracy under Long Term Post Accident Conditions (A_{iP}) is not required.

A_i = SRSS of random terms + bias terms

This loop consists of one device, therefore:

$A_L = A_{iN} = A_{iT}$ = ±0.4 ±0.6 bias (2 sigma)

6.2.1.4 Analyzed Device Drift (AD)

Per Attachments 2 and 3, the 30-month predicted drift uncertainty for the Main Steam Line High Flow DPIS devices is 2.00 psid.

Term	Value	Sigma	Reference
AD	2.0 psid	2	Attachments 2 and 3

This loop consists of one device, therefore:

D_L = AD = ± 2.0 psid

6.2.1.5 As Left Tolerances (ALT)

The suggested limit on the magnitude of the ALT calculated per Section 5.2.5 of Reference 10.9 is given as:

$$ALT = \frac{2}{3}\sqrt{(VA)^2 + (C)^2 + (C_{STD})^2}$$

$$ALT = 2\sqrt{(0.4/2)^2 + (0.25/3)^2 + (0.125/3)^2} = 0.44\,psid$$

(Calibration error terms are calculated in Section 6.2.1.6)

The existing As-Left Tolerance specified on the calibration worksheet is ± 4.5 psid. This tolerance value is unacceptable because it is considered excessive and will "mask" instrument performance degradation. The calculated ALT value of ± 0.44 psid is also considered unacceptable because previous instrument performance suggests that this value is not routinely achievable and therefore impractical.

Therefore, it is suggested that the ALT be revised to ± 1.0 psig. This value will prevent "masking" instrument performance degradation and is routinely achievable per Attachment 2.

6.2.1.6 Device Calibration Error (C)

		Value	Sigma	Reference
Calibration Tool Error	C_i:	0.25 psi	3	4.6, Note 1
Tool Calibration Error	C_{iSTD}:	0.125 psi	3	4.7, Note 2
As Left Tolerance	ALT:	1.0 psi	2	6.2.1.5

Note 1: Per Input 4.5, the differential pressure switches are calibrated with XPI-9021 (Ashcroft 2089). From Input 4.6, the vendor accuracy of the Ashcroft 2089 is 0.05% of full scale. Therefore, the XPI-9021 has an accuracy of 0.25 psi at 500 psi.

Calibration Device	Range	Accuracy	Reference
XPI-9021 (Ashcroft 2089)	0-500 psig	0.05% Full Scale	4.6

Note 2: Per Input 4.5, the Ashcroft 2089 is calibrated using the XPS-95171 dead weight tester. From Input 4.7, the vendor accuracy of the Mansfield and Green dead weight tester is 0.025% of output pressure. Therefore, the XPS-95171 has an accuracy of 0.125 psi at 500 psi.

Calibration Device	Range	Accuracy	Reference
XPS-95171 (Mansfield and Green Deadweight tester)	100-5000 psig	0.025% Reading	4.7

Since calibration term values are controlled by 100% testing they are assumed to represent 3 sigma values. Individual calibration error terms are combined using the SRSS method and normalized to a 2 sigma confidence level:

C_L = Device 1 Calibration Error

$$C_L = \frac{2}{3}\sqrt{C^2 + C_{STD}{}^2 + ALT^2}$$

$$C_L = 2\sqrt{(0.25/3)^2 + (0.125/3)^2 + (1.0/2)^2}$$

$$C_L = 1.01 \text{ psid}$$

6.3 Determination of Primary Element Accuracy (PEA) and Process Measurement Accuracy (PMA)

PEA: There is a Primary Element Accuracy value associated with the steam flow restrictor (flow element). Per the purchase specification, Reference 10.11, the accuracy of the steam flow restrictors is to be within ± 2% of original rated flow. Per Reference 10.1, the 2% error is valid at 140% of original rated flow. The existing setpoint of 143 psid is within this flow rate. Therefore, the 2% error is taken as the PEA value for this calculation. Per Reference 10.5, since the effect of the PEA value cannot be predicted at a particular future instant, it is considered a random value; and is thus eligible for SRSS combination. Therefore:

PEA = ± 2% of flow (random term).

PMA: Per Reference 10.1, Section 3.13.5, the actual differential pressure signal from the flow element is proportional to the specific volume of the steam. At pressures higher than the design pressure, process measurement accuracy (PMA) error exists. Per Reference 10.1, Section 3.13.5, a PMA allowance of 2% rated flow is utilized for determining the Main Steam Line High Flow Setpoint. Although Reference 10.1 does not specify whether or not this effect should be applied as a random or bias value, the PMA causes a known effect on the instrument loop and should be applied as a bias term. For simplicity purposes, the PMA value is considered a (+/-) bias value and will be applied to both sides of the process outside of the SRSS. Errors due to pressures lower than the design pressure will create an early (conservative) trip and are not evaluated in this calculation. Therefore:

PMA = ± 2% of flow (bias term).

The values of PEA and PMA specified above are given in units of flow. In order to combine these effects with other loop uncertainty values, PEA and PMA must be converted to units of differential pressure at the flow rate of interest. This calculation uses the existing trip setpoint flow rate as the flow rate of interest. Converting from DP to Flow is done using the general Flow / DP relationship:

Flow = K * $(DP)^{1/2}$ or DP = $(Flow / K)^2$

Per Input 4.3:
140% of existing flow = 147.7 psid

Per Input 4.1:
Rated flow 7.259 *10^6 lb/hr existing
Rated flow 8.335 *10^6 lb/hr after EPU

Solving for K using the existing flow rate of 7.259*10^6 lb/hr:
$(1.40)*7.259*10^6 = K * (147.7)^{1/2}$
$K = ((1.40)*7.259*10^6) / ((147.7)^{1/2}) = 836208$

This is the collective K value for all four steam lines. To get the K value for an individual steam venturi, the value is divided by four.

Individual K value = 836208 / 4 = 209052

Using the above equation to determine the flow rate at 143 psid (existing setpoint):
$Flow_{143\ psid} = 209052 * (143)^{1/2}$
$Flow_{@143\ psid} = 2.4999 * 10^6$ lb/hr.

Therefore, a 2% flow error (PEA and PMA) is calculated as follows:

$Flow_{@2\%\ error} = 1.02 * (2.4999 * 10^6$ lb/hr.)
$Flow_{@2\%\ error} = 2.5499 * 10^6$ lb/hr.

Converting to differential pressure:
$DP_{@2\%\ error} = (2.5499 * 10^6$ lb/hr. / 209052)^2
$DP_{@2\%\ error} = 148.78$ psid

2% Error = (DP at 2% error – DP at setpoint)
2% Error = 148.78 - 143
2% Error = 5.78 psid

6.4 Determination of Other Error Terms

Term	Value
Operator Reading Error (ORE)	N/A
Insulation Resistance (IRE)	N/A
Other	± 2.5 psid (random term)

The conversion from DP to steam flow has been derived using test data from NEDO - 10544 (Reference 10.15). Per Reference 10.15, the flow limiters have an effective discharge coefficient of 0.97 compared to a predicted value of 1.0. This is equivalent to an error in differential pressure of 2.5 psid. This unpredicted variance of - 0.03 has an additional effect on the accuracy of the flow element (PEA) determined in Section 6.3. Per Reference 10.12, the change is flow coefficient for EPU conditions is negligible.

Since the Coefficient of Discharge is directly related to the accuracy of the flow element, this effect is considered a component of PEA and thus a random value; eligible for SRSS combination.

6.5 Calculation of Allowable Value and Operating Setpoint

6.5.1 Allowable Value (AV):

Per Reference 10.2, the Analytical Limit (AL) is 140% of original rated flow. This value was chosen by GE to provide a margin above the original operational limit.

The new AL will be taken as 165 psi (approximately 158% of original rated flow). This is an acceptable value as it is low enough to trip during a break of any main steam line. The AL is well below the Design Safety Limit of 200% of original rated flow and choke flow of the venturis. It is also high enough above the operational limit to avoid spurious trips due to transients and valve testing.

This value is used along with the following terms to calculate the Allowable Value.

Term	Value	Sigma	Reference
A_{iT}	± 0.4 (random)	2	Section 6.2.1.3
A_{iT}	± 0.6 (bias)	N/A	Section 6.2.1.3
C_L	± 1.01	2	Section 6.2.1.6
PEA	± 5.78 (random)	2	Section 6.3
PMA	± 5.78 (bias)	N/A	Section 6.3
Other	± 2.5 (random)	2	Section 6.4

$$AV \le AL - \left(\frac{1.645}{2}\right)\sqrt{\left(A_{iT}^2 + C_L^2 + PEA^2 + OTHER\,RANDOM\right)} + \text{bias terms}$$

$$AV \le 165 - \left(\frac{1.645}{2}\right)\left(\sqrt{0.4^2 + 1.01^2 + 5.78^2 + 2.5^2}\right) - 5.78 - 0.6$$

$$AV \le 165 - 5.26 - 5.78 - 0.6$$

$$AV \le 153.36$$

The proposed Tech Spec Limit of 151.95 is conservative and will be used as the Allowable Value. This results in an extra margin of 1.41 to be included in the determination of $NTSP_1$.

Therefore,

AV = 151.95 psid

6.5.2 Nominal Trip Setpoint (NTSP):

Per Reference 10.5 and 10.9, for processes approaching a setpoint from a single side of interest, a reduction factor of (1.645 /2) may be applied for random terms.

$$NTSP_1 = AL - \left(\frac{1.645}{2}\right)\sqrt{A_{iT}^2 + C_L^2 + D_L^2 + PEA^2 + OTHER^2} + \text{bias terms} + \text{margin}$$

$$NTSP_1 = 165 - \left(\frac{1.645}{2}\right)\sqrt{0.4^2 + 1.01^2 + 2.0^2 + 5.78^2 + 2.5^2} - 5.78 - 0.6 - 1.41$$

$$NTSP_1 = 151.7$$

6.5.3 Licensee Event Report (LER) Avoidance Evaluation:

The purpose of the LER Avoidance Evaluation is to ensure that there is sufficient margin provided between the AV and the NTSP to reasonably avoid violation of the AV. For a single instrument channel a Z value of greater than 1.29 provides sufficient margin between the NTSP and the AV. Although this is a multi channel loop, a Z of 1.29 will be used for conservatism. Therefore, $NTSP_2$ is calculated to provide a lower bound for the NTSP based on LER avoidance criteria.

$$\text{Sigma(LER)} = \frac{1}{2}\left(\sqrt{A_{iN}^2 + C_L^2 + D_L^2}\right) + \text{bias}$$

$$Sigma(LER) = \frac{1}{2}\left(\sqrt{0.4^2 + 1.01^2 + 2.0^2}\right) + 0.6$$

$$Sigma(LER) = 1.74$$

$$NTSP_2 = AV - Z \times \text{Sigma(LER)}$$

$$NTSP_2 = 151.95 - (1.29 \times 1.74)$$

$$NTSP_2 = 149.7$$

Therefore, an NTSP ≤ 149.7 psid will result in a Z greater than 1.29 and provide sufficient margin between the NTSP and the AV.

6.5.4 Selection of Operating Setpoint:

$$NTSP \leq \text{Controlling } NTSP - ALT$$
$$NTSP \leq NTSP_2 - ALT$$
$$NTSP \leq 149.7 - 1.0$$
$$NTSP \leq 148.7$$

The current setpoint of 143 psid (Reference 10.7) is conservative and is considered acceptable.

6.5.5 Leave Alone Zone:

Leave Alone Zones/Tolerances are not used at the MNGP per Reference 10.9.

6.5.6 Establishing As-Found Tolerance (AFT):

An As-Found Tolerance is calculated to provide suggested limits for use during the surveillance testing:

$$AFT = \sqrt{ALT^2 + AD^2}$$
$$AFT = \sqrt{1.0^2 + 2.0^2}$$
$$AFT = 2.23$$

Rounding down to the nearest 0.1 psid:

AFT = ± 2.2 psid

6.5.7 Required Limits Evaluation:

The purpose of a Required Limits Evaluation is to ensure that the combination of errors present during calibration of each device in the channel is accounted for while allowing for the possibility that the devices may both be recalibration. Since this loop contains only one device, an evaluation is not required.

6.5.8 Spurious Trip Avoidance Evaluation:

The STA is evaluated against the edge of the As-Left Tolerance band for conservatism. Refer to Reference 10.1 for more detail. Per Section 6.5.4, the operating setpoint is 143 psid. Per Section 6.2.1.5, the ALT is 1.0 psid. Therefore,

(NTSP – ALT) = 143 psid – 1 psid
(NTSP – ALT) = 142 psid

$$Sigma(STA) = \left(\frac{1}{2}\right)\left(\sqrt{A_{iN}{}^2 + C_L{}^2 + D_L{}^2 + PEA^2 + OTHERRANDOM^2}\right) + bias$$

$$Sigma(STA) = \left(\frac{1}{2}\right)\left(\sqrt{0.4^2 + 1.01^2 + 2.00^2 + 5.78^2 + 2.5^2}\right) + 5.78 + 0.6$$

$$Sigma(STA) = 9.73$$

Per Section 3.13.3 of Reference 10.1, the existing operational limit is considered to be 127 % rated flow based on operating experience. The same operational limit will be used for EPU during Main Steam valve testing. The valve testing occurs at reduced power and therefore the existing operational limit of 121.54 psig is acceptable.

$$Z_{STA} = \frac{|Adjusted\ NTSP - Operational\ Limit|}{Sigma(STA)}$$

$$Z_{STA} = \frac{|142 - 121.54|}{9.73}$$

$$Z_{STA} = 2.1$$

Therefore, the adjusted NTSP of 142 results in a Z_{STA} greater than 1.65 and provides assurance that no spurious trips will occur.

6.5.9 Elevation / Density Correction:

An elevation /line correction is not required for the DPIS switches. If a head pressure or process temperature does exist, a pressure or density change will be exerted on both sides of the switch equally and will have no noticeable effect on differential pressure detected by the switch. As such, no significant error is introduced due to elevation or density changes.

Reference 10.15 indicates that there may be a zero offset possibly caused by a water leg between the steamline tap and the condensing chamber. This offset creates an indicated differential pressure larger than actual differential pressure. For increasing setpoints, this effect is conservative because it results in an early trip.

Task Report T2005 (Input 4.8) assessed the effect of increased moisture carryover on the main steam flow instrumentation at EPU conditions. The increase in measured pressure drop with moisture increase was found to have an insignificant influence on the main steam flow instrumentation.

6.6 Channel Error Calculation

Channel error calculation is not required to be determined. Instrument operation is required immediately upon main steam line break. Long term post accident evaluation is not needed.

7. CONCLUSIONS

The results of the calculations are as follows:

Term	Value (psid)
A_{iN}	± 0.4 (random) ± 0.6 (bias)
A_{iT}	± 0.4 (random) ± 0.6 (bias)
AD	± 2.0
C_L	± 1.01
PEA	± 5.78
PMA	± 5.78
OTHER	± 2.5
ALT	± 1.0
AL	165
AV	151.95
AFT	± 2.2
NTSP	143

Based on these results, it is concluded that the Analytical Limit is not exceeded when all applicable uncertainties are considered.

8. FUTURE NEEDS

8.1 Plant procedure and CML changes will be implemented in accordance with the MNGP setpoint change process.

9. ATTACHMENTS

1. Setpoint Relationships
2. Drift Analysis
3. Drift Analysis Spreadsheets
4. DIT EPU-0258
5. DIT EPU-0259
6. BARTON product bulletin 288A/289A-7, "Differential Pressure Indicating Switches (Reference 10.8).
7. NEDO-10544, April 1972, Modified Steam Line Flow Limiting Venturi Test Results (Reference 10.15).
8. Telephone conversation record between Bechtel Power Setpoint Group to ITT Barton (Reference 10.16).

10. REFERENCES

10.1 NEDC 31336P-A, September 1996, "General Electric Setpoint Methodology".

10.2 GE-NE-901-021-0492 "Setpoint Calculation Guidelines for the Monticello Nuclear Generating Plant", DRF A00-01932-1.

10.3 Engineering Standards Manual ESM 03.02 "Design Requirements, Practices, & Topics (Instrumentation & Controls)" Rev. 9.

10.4 ANSI/ISA Standard ISA-S67.04 – Part I "Setpoints for Nuclear Safety-Related Instrumentation", dated September 1994.

10.5 ISA Recommended Practice RP67.04 – Part II "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation", dated 1994.

10.6 EPRI report TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs", dtd 3/94.

10.7 Monticello Plant Component Master List (CML) Database.

10.8 BARTON product bulletin 288A/289A-7, "Differential Pressure Indicating Switches."

10.9 ESM-03.02-APP-I, GE Methodology Instrumentation and Controls.

10.10 NX-7829-67-1, Rack (25-26) C-126, Revision B.

10.11 Purchase specification 21A1058, Controlled Specification Data Sheet Steam Flow Restrictor.

10.12 CA-97-216, Revision 0, Calculation to Determine Discharge Coefficient Changes for the Main Steam Line Flow Restrictors.

10.13 CA-95-027, Revision 1, Determine of Instrument Service Conditions for Input into Setpoint Calculations.

10.14 ESM-03.02-APP-III, GE Methodology Instrumentation and Controls.

10.15 NEDO-10544, April 1972, Modified Steam Line Flow Limiting Venturi Test Results.

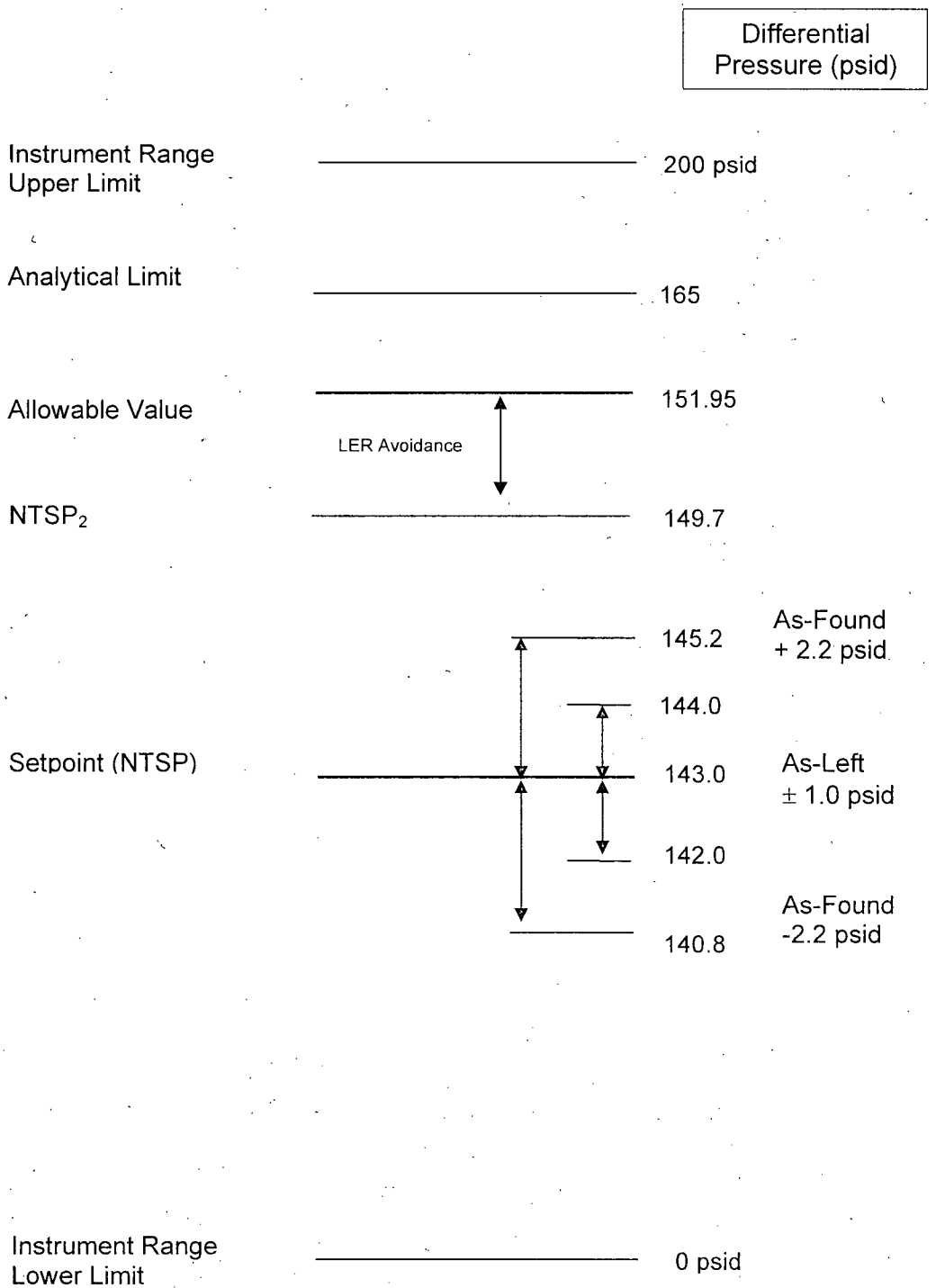
10.16 Telephone conversation record from Bechtel Power Setpoint Group to ITT Barton.

10.17 CA-98-011, Environmental Qualification of Barton Pressure Switches Models 278, 288, 288A and 289A.

10.18 Generic Letter 91-04, Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle.

MONTICELLO NUCLEAR GENERATING PLANT		CA-95-075
TITLE:	**Main Steam Line High Flow Setpoint**	Attachment 1 Page 1 of 1

For Illustration Only Not to Scale



A1.1 Data Grouping

The following Barton model 278 differential pressure indicating switches are included in this analysis:

Equipment ID	Range	Setpoint (desired)
DPIS-2-116A	0 - 200 psid	143 psid
DPIS-2-116B	0 - 200 psid	143 psid
DPIS-2-116C	0 - 200 psid	143 psid
DPIS-2-116D	0 - 200 psid	143 psid
DPIS-2-117A	0 - 200 psid	143 psid
DPIS-2-117B	0 - 200 psid	143 psid
DPIS-2-117C	0 - 200 psid	143 psid
DPIS-2-117D	0 - 200 psid	143 psid
DPIS-2-118A	0 - 200 psid	143 psid
DPIS-2-118B	0 - 200 psid	143 psid
DPIS-2-118C	0 - 200 psid	143 psid
DPIS-2-118D	0 - 200 psid	143 psid
DPIS-2-119A	0 - 200 psid	143 psid
DPIS-2-119B	0 - 200 psid	143 psid
DPIS-2-119C	0 - 200 psid	143 psid
DPIS-2-119D	0 - 200 psid	143 psid

As shown in section 6.2.1.2, the devices are exposed to similar environmental conditions with the same calibration frequency. Therefore, the individual drift data for the devices can be grouped without further numerical testing, following the criteria set forth in step. 5.4.8 of ESM-03.02-APP-III (Input 12).

A1.2 Populating the Spreadsheet

Calibration data for the switches included the date of calibration, as well as the As-Found and As-Left setpoint values. This data was input into a Microsoft Excel spreadsheet, and included in Attachment 2.

The calibration interval was determined by taking the difference between the current and previous calibration dates. Per step 5.3.9 of ESM-03.02-APP-III, the calibration interval was converted to months by dividing the number of days by 30.5 days per month.

The Drift value was calculated by taking the difference between the current calibration As-Found value and the previous calibration As-Left value.

None of the data points were removed from the final data set. Although the outlier test results showed several potential outliers, the points were kept in the analysis. Per the instructions of Attachment 1 from Input 12, there were no valid reasons for removing the outliers.

A1.3 Spreadsheet Performance of Basic Statistics

The following information was determined for each instrument individually:

The average or mean value ($\bar{x}$) of the drift data for each instrument was determined by using the "Average" function in Microsoft Excel. This function uses the following equation:

$$\bar{x} = \frac{\sum x_i}{n}$$

where $\bar{x}$ = average of data set
x_i = individual drift value
n = total number of values

The standard deviation of a data set returns the measure of how widely dispersed the values are in relation to the mean of the data. The standard deviation for each instrument was determined using the "STDEV" function. Microsoft Excel uses the following equation in the "STDEV" function:

$$s = \sqrt{\frac{n\sum x_i^2 - \left(\sum x_i\right)^2}{n(n-1)}}$$

where s = standard deviation of sample
x_i = individual drift value
n = total number of values

The variance (s^2) is another measure of data spread from the mean. The variance for each instrument was determined by using the "VAR" function in Microsoft Excel. The variance is calculated as follows:

$$s^2 = \frac{n\sum x_i^2 - \left(\sum x_i\right)^2}{n(n-1)}$$

where s^2 = variance of sample
x_i = individual drift value
n = total number of values

The largest positive drift value for each instrument was determined by using the "MAX" function.

The largest negative drift value for each instrument was determined by using the "MIN" function.

The number of data points (n) for each instrument was determined using the "COUNT" function.

The psid values for average, standard deviation, and largest positive and negative drift were converted to a percent of instrument span using the following formula:

$$\%\ \text{span} = \frac{\text{psid value}}{\text{psid span}} \times 100\%$$

A Drift Trend Plot was developed for each instrument by plotting the drift value versus calibration date. Bounds corresponding to ± 2s (2 standard deviations) are shown on the plot.

Page 49 of Attachment 2 presents the combined drift data statistics for the subject units. The combined statistics were determined using the preceding methods.

A1.4 Outlier Detection and Expulsion

Per step 5.5 of ESM-03.02-APP-III, the t-Test is used to detect the presence of outliers in the final data set. The t-Test requires the use of the following equation:

$$t = \frac{\left| x_i - \bar{x} \right|}{s}$$

where t = individual t-Test statistic
s = standard deviation of sample
x_i = individual drift value
$\bar{x}$ = individual drift value

The t-Test involves calculating the individual 't' statistic for each data point, and comparing them to a critical value. The critical value depends on the sample size, and is obtained from Table 9.2 of Input 12.

The t-Test is shown on pages 50 through 74 of Attachment 2. Based on a sample size of 1094, the critical value utilized in the t-Test is 4.0. Seven of the calculated individual t-Test statistics exceeded the critical value which, according to the t-Test, identifies them as outliers. However, based on the criteria of Attachment 1 to ESM-03.02-APP-III, none of the seven points were eliminated from the final data set.

A1.5 Normality Tests

Most statistical analyses make the assumption that the values in question are normally distributed. The criteria in Input 12 require that the data set be tested for normality. It is recommended that for samples of over 50 data points, the D' Test be utilized.

D' (D-Prime) Test
The D' Test calculates a test statistic value for the sample population and compares the calculated value to the values for the D' percentage points of the distribution, which are tabulated in Table 9.7 of ESM-03.02-APP-III. The D' Test is two-sided, which means that the two-sided percentage limits at the stated level of significance must bound the calculated D' value. For the given sample size, the calculated value of D' must lie with the two values provided in Table 9.7 in order to accept the hypothesis for normality.

To perform a D' Test, the drift value data set is sorted and numbered in ascending order from smallest to largest.

Calculate the S^2 value for the group:

$$S^2 = (n-1) \times s^2$$

where S^2 = sum of the squares about the mean
s^2 = unbiased estimate of the sample population variance
n = total number of data points

Calculate the linear combination (T) of the sample group:

$$t_i = \left(i - \frac{n+1}{2} \right) \times x_i$$

$$T = \sum t_i$$

where T = linear combination of the sample
t_i = individual component of T
i = number of sample point
n = total number of data points
x_i = individual sample data point

Calculate the D' value for the sample group. The following equation is used:

$$D' = \frac{T}{S}$$

Determine the critical D' values based on the sample size using Table 9.7 in Input 12. If the exact sample size is not listed in Table 9.7, interpolate the values to obtain an estimate of the critical D' values.

Refer to pages 75 through 98 of Attachment 2 to see the D' Test for the drift data. For a sample size of 1094, the critical D' values are 9833.6 and 9959.7. The calculated D' value was 9551.5. Based on this result, the assumption of normality is rejected.

Coverage Analysis

Since the assumption of normality was rejected by the D' Test, a coverage analysis was performed per section 4.7.5.E of ESM-03.02-APP-III. A coverage analysis is discussed for cases in which the hypothesis tests reject the assumption of normality, but the assumption of normality may still be a conservative representation of the data. The coverage analysis involves the use of a histogram of the data set, overlaid with the equivalent probability distribution curve for the normal distribution, based on the data sample's mean and standard deviation. Visual examination of the plot is used, and the kurtosis is analyzed to determine if the distribution of the data is near normal. If the data is near normal, then a normal distribution model which adequately covers the set of drift data as observed is derived. This normal distribution will be used as the model for the drift of the device.

Sample counting is used to determine an acceptable normal distribution. The standard deviation of the group is computed. The number of times the samples are within 2 standard deviations of the mean is computed. The count is divided by the total number of

samples in the group to determine a percentage. If the percentage of data within 2 standard deviations of the mean is greater than 95.45%, the existing standard deviation is acceptable to be used for the encompassing normal distribution model. In case the percentage is less than required, the standard deviation should be enlarged. The required multiplier for the standard deviation in order to provide this coverage is termed the Normality Adjustment Factor (NAF). If no adjustment is required, the NAF is equal to one.

The coverage analysis is presented on page 99 of Attachment 2. Visual inspection shows a moderate kurtosis, as most of the data points are found within 1.5 standard deviations of the mean. Calculations using the table on page 99 of Attachment 2 show that 95.9% of the data is encompassed within 2 standard deviations of the mean. Therefore, it is concluded that a normal distribution is a conservative representation of the data, and thus NAF is equal to 1.

A1.6 Selection of Final Data Set

The devices in question are only calibrated to one setpoint. Therefore, all data points will be utilized and no further analysis is required in determining the final data set.

A1.7 Time-Dependency Analysis

Standard statistical analyses do not consider time-dependency. The following tests attempt to uncover any time-related performance and the impact of any time-dependency on the analysis.

Drift Interval Plot
A drift interval plot is an XY scatter plot that shows the data set plotted against the time interval between calibrations. It relies on visual inspection to discriminate the plot for any trend in the data to exhibit a time dependency. A prediction line can be added to this plot to aid in the analysis.

Page 100 of Attachment 2 shows the drift interval plot for this data set. The plot shows a scatter of drift values, both positive and negative around the 1.5 and 3 month calibration intervals. As these were the most common intervals, most of the data points are found near these two time periods. Based on the equation of the regression line, there may be a slight time-dependency present. The drift interval plot includes the tolerance interval (TI). This tolerance interval is equal to the random drift term calculated in section A1.9.

Standard Deviations and Means at Different Calibration Intervals (Binning Analysis)
The binning analysis is the most recommended method of determining time dependent tendencies in a given sample pool. Following the instructions in step 4.8.3 of Input 12, the drift data was segregated into different groups (bins) corresponding to different ranges of calibration intervals. In order for further analysis to be done, at least 2 valid bins must exist. In order to be considered valid, a bin must contain more than five data points and more than 10% of the total data count. The binning analysis (Attachment 2, pages 101-123) shows that only 1 valid bin exists. Therefore, per the criteria in Input 12, the data will be established as moderately time dependent for the purposes of extrapolation of the drift value.

Due to the fact that multiple valid bins did not exist in the binning analysis, no further time-dependency testing is available.

A1.8 Drift Bias Determination

The absolute value of the average calculated drift for the trip units is 0.009 psid. Similarly, the absolute value of the average calculated drift is less than 0.1% of the calibrated span (200 psid). Based on the criteria of ESM-03.02-APP-III, it is concluded that the instrument drift does not have a bias. Therefore, the drift bias terms will be taken as 0 in this analysis.

A1.9 Analyzed Drift Value

Bias Term
Based on the section A1.8, the instruments do not have a bias. Therefore, the bias term will be equal to 0.

Random Term
The random term of the analyzed drift value is calculated with the below equation:

$$AD_{random} = s \times TIF \times NAF$$

where AD_{random} = random term for analyzed drift
s = drift standard deviation
TIF = 95%/95% tolerance interval factor
NAF = Normality Adjustment factor

The value of TIF is obtained from Table 9.1 of ESM-03.02-APP-III. Based on a sample size of 1094, TIF is equal to 1.960. From the coverage analysis, NAF was determined to be 1. From page 49 of Attachment 2, the standard deviation of the sample is 0.88. Thus the random term is equal to 1.73 psid.

30-Month Predicted Drift (Random Term)
Since the drift was determined to be moderately time dependent, the following equation was used to extrapolate the drift uncertainty:

$$AD_{E.random} = AD_{random} \times \sqrt{\frac{CI_E}{CI_O}}$$

where $AD_{E.random}$ = extended period drift term
AD_{random} = random term for analyzed drift
CI_E = extended calibration interval (surveillance interval +25%)
CI_O = average observed calibration time interval from bin with longest time interval

The value of the random term for the analyzed drift was determined to be 1.73 psid. The extended calibration interval is equal to the surveillance calibration interval (3 months) plus an additional 25% (0.75 months). Therefore, CI_E is equal to 3.75 months. CI_O is

determined from a valid bin of data with the longest calibration interval. There was only one valid bin, with a calibration interval range of 1.25 to 3.75 months. The average calibration interval within this bin is equal to 2.8 months. These values produce a 30-month predicted drift term of 2.00 psid.

Per the criteria in step 5.10.4.B, a check was made to ensure that the calculated 30-month predicted drift uncertainty is greater than the uncertainty calculated with the 99%/95% tolerance factor. Based on the large sample size (> 1000 data points), the TIF for 99%/95% is equal to the TIF for 95%/95%. The uncertainty calculated using the 99%/95% TIF of 1.960 is 1.73 psid.

Therefore, the 30-month predicted drift uncertainty is 2.00 psid.

Drift Data for DPIS-2-116A

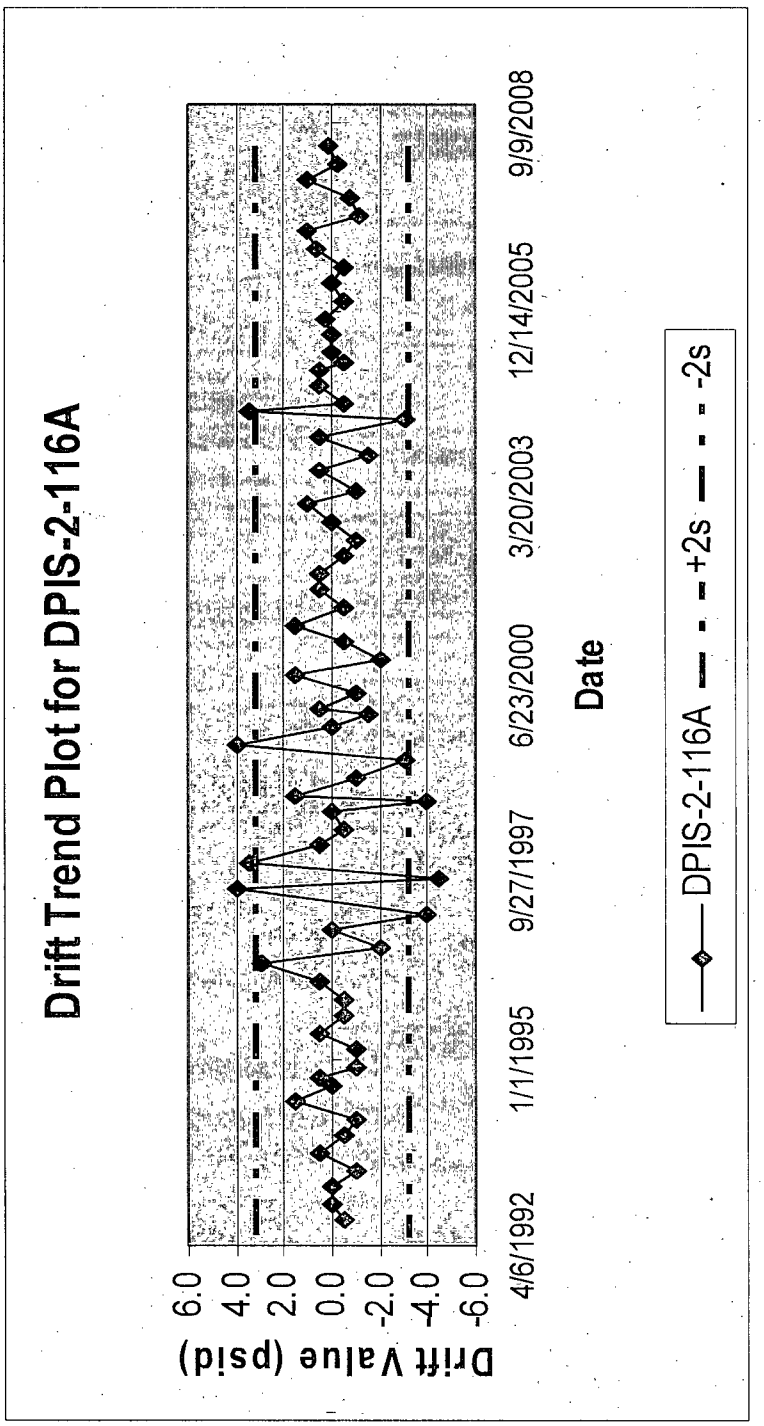
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	140.9	140.9	0.1	0.05
2/4/2008	2.7	140.8	140.8	-0.2	-0.10
11/15/2007	3.3	141.0	141.0	1.0	0.50
8/6/2007	3.0	140.0	140.0	-0.8	-0.40
5/7/2007	2.9	140.8	140.8	-1.2	-0.60
2/8/2007	3.1	142.0	142.0	1.0	0.50
11/6/2006	3.0	141.0	141.0	0.7	0.35
8/7/2006	3.0	140.3	140.3	-0.5	-0.25
5/8/2006	3.0	140.8	140.8	0.0	0.00
2/6/2006	3.2	140.8	140.8	-0.5	-0.25
10/31/2005	3.0	141.3	141.3	0.3	0.15
8/1/2005	3.0	141.0	141.0	0.0	0.00
5/2/2005	1.7	141.0	141.0	0.0	0.00
3/10/2005	1.2	141.0	141.0	-0.5	-0.25
1/31/2005	3.0	141.5	141.5	0.5	0.25
11/1/2004	3.0	141.0	141.0	0.5	0.25
8/2/2004	1.4	140.5	140.5	-0.5	-0.25
6/20/2004	1.6	142.0	141.0	3.5	1.75
5/3/2004	3.0	138.5	138.5	-3.0	-1.50
2/2/2004	3.0	141.5	141.5	0.5	0.25
11/3/2003	3.0	141.0	141.0	-1.5	-0.75
8/4/2003	3.4	142.5	142.5	0.5	0.25
4/23/2003	2.6	142.0	142.0	-1.0	-0.50
2/3/2003	3.0	143.0	143.0	1.0	0.50
11/4/2002	3.0	142.0	142.0	0.0	0.00
8/5/2002	3.0	142.0	142.0	-1.0	-0.50
5/6/2002	3.0	143.0	143.0	-0.5	-0.25
2/4/2002	3.0	143.5	143.5	0.5	0.25
11/6/2001	2.9	143.0	143.0	0.5	0.25
8/10/2001	3.1	142.5	142.5	-0.5	-0.25
5/7/2001	3.0	143.0	143.0	1.5	0.75
2/5/2001	3.0	141.5	141.5	-0.5	-0.25
11/6/2000	3.0	142.0	142.0	-2.0	-1.00
8/7/2000	3.0	144.0	144.0	1.5	0.75
5/9/2000	2.9	142.5	142.5	-1.0	-0.50
2/11/2000	0.7	143.5	143.5	0.5	0.25
1/20/2000	2.4	143.0	143.0	-1.5	-0.75
11/8/1999	3.0	144.5	144.5	0.0	0.00
8/9/1999	3.0	144.5	144.5	4.0	2.00
5/10/1999	3.0	140.5	140.5	-3.0	-1.50
2/8/1999	3.0	143.5	143.5	-1.0	-0.50
11/9/1998	1.3	144.5	144.5	1.5	0.75
9/30/1998	1.7	121.0	143.0	-4.0	-2.00

8/10/1998	3.0	125.0	125.0	0.0	0.00
5/12/1998	2.9	125.0	125.0	-0.5	-0.25
2/12/1998	3.0	125.5	125.5	0.5	0.25
11/11/1997	3.0	125.0	125.0	3.5	1.75
8/11/1997	1.4	121.5	121.5	-4.5	-2.25
6/30/1997	4.6	126.0	126.0	4.0	2.00
2/10/1997	3.0	122.0	122.0	-4.0	-2.00
11/11/1996	3.0	126.0	126.0	0.0	0.00
8/13/1996	2.7	126.0	126.0	-2.0	-1.00
5/24/1996	3.3	128.0	128.0	3.0	1.50
2/13/1996	3.0	125.0	125.0	0.5	0.25
11/13/1995	3.0	124.5	124.5	-0.5	-0.25
8/15/1995	3.0	125.0	125.0	-0.5	-0.25
5/15/1995	3.0	125.5	125.5	0.5	0.25
2/13/1995	3.0	125.0	125.0	-1.0	-0.50
11/15/1994	1.6	126.0	126.0	-1.0	-0.50
9/26/1994	1.4	127.0	127.0	0.5	0.25
8/15/1994	3.0	126.5	126.5	0.0	0.00
5/17/1994	3.0	126.5	126.5	1.5	0.75
2/15/1994	3.0	125.0	125.0	-1.0	-0.50
11/16/1993	3.0	126.0	126.0	-0.5	-0.25
8/17/1993	3.0	126.5	126.5	0.5	0.25
5/18/1993	2.9	126.0	126.0	-1.0	-0.50
2/19/1993	3.0	127.0	127.0	0.0	0.00
11/19/1992	3.0	127.0	127.0	0.0	0.00
8/18/1992	3.0	127.0	127.0	-0.5	-0.25
5/18/1992		127.5	127.5		

Basic Statistics for DPIS-2-116A

Average	$\bar{x}$	(psid)	-0.1
Standard Deviation	s	(psid)	1.61
Variance	s^2	(psid)	2.59
Largest Positive Drift		(psid)	4.0
Largest Negative Drift		(psid)	-4.5
Number of Samples	n		69

Average	$\bar{x}$	(%)	-0.06
Standard Deviation	s	(%)	0.80
Largest Positive Drift		(%)	2.00
Largest Negative Drift		(%)	-2.25


Drift Trend Plot for DPIS-2-116A
Drift Value (psid)
6.0
4.0
2.0
0.0
-2.0
-4.0
-6.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-116A
+2s
-2s

Drift Data for DPIS-2-116B

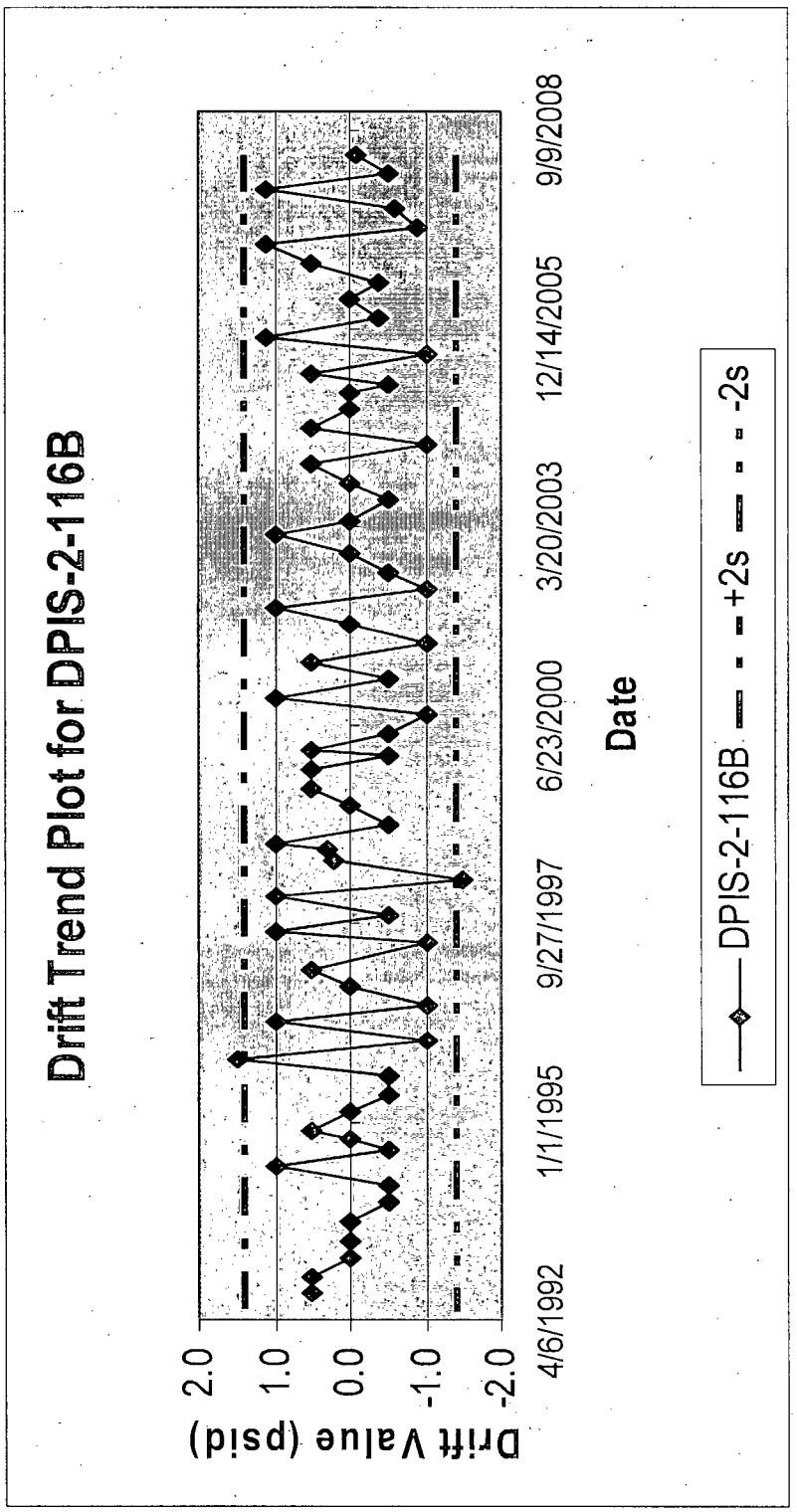
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.4	141.4	-0.1	-0.05
2/5/2008	2.7	141.5	141.5	-0.5	-0.25
11/15/2007	3.3	142.0	142.0	1.1	0.55
8/6/2007	3.0	140.9	140.9	-0.6	-0.30
5/7/2007	2.9	141.5	141.5	-0.9	-0.45
2/8/2007	3.1	142.4	142.4	1.1	0.55
11/6/2006	3.0	141.3	141.3	0.5	0.25
8/7/2006	3.0	140.8	140.8	-0.4	-0.20
5/8/2006	3.0	141.2	141.2	0.0	0.00
2/6/2006	3.2	141.2	141.2	-0.4	-0.20
10/31/2005	3.0	141.6	141.6	1.1	0.55
8/1/2005	3.0	140.5	140.5	-1.0	-0.50
5/2/2005	1.7	141.5	141.5	0.5	0.25
3/11/2005	1.3	141.0	141.0	-0.5	-0.25
1/31/2005	3.0	141.5	141.5	0.0	0.00
11/1/2004	3.0	141.5	141.5	0.0	0.00
8/2/2004	3.0	141.5	141.5	0.5	0.25
5/3/2004	3.0	141.0	141.0	-1.0	-0.50
2/2/2004	3.0	142.0	142.0	0.5	0.25
11/3/2003	3.0	141.5	141.5	0.0	0.00
8/4/2003	3.4	141.5	141.5	-0.5	-0.25
4/23/2003	2.6	142.0	142.0	0.0	0.00
2/3/2003	3.0	142.0	142.0	1.0	0.50
11/4/2002	3.0	141.0	141.0	0.0	0.00
8/5/2002	3.0	141.0	141.0	-0.5	-0.25
5/6/2002	3.0	141.5	141.5	-1.0	-0.50
2/4/2002	3.0	142.5	142.5	1.0	0.50
11/6/2001	2.9	141.5	141.5	0.0	0.00
8/10/2001	3.1	141.5	141.5	-1.0	-0.50
5/7/2001	3.0	142.5	142.5	0.5	0.25
2/5/2001	3.0	142.0	142.0	-0.5	-0.25
11/6/2000	3.0	142.5	142.5	1.0	0.50
8/7/2000	3.0	141.5	141.5	-1.0	-0.50
5/9/2000	2.9	142.5	142.5	-0.5	-0.25
2/11/2000	0.7	143.0	143.0	0.5	0.25
1/21/2000	2.4	142.5	142.5	-0.5	-0.25
11/8/1999	3.0	143.0	143.0	0.5	0.25
8/9/1999	3.0	142.5	142.5	0.5	0.25
5/10/1999	3.0	142.0	142.0	0.0	0.00
2/8/1999	3.0	142.0	142.0	-0.5	-0.25
11/9/1998	1.3	142.5	142.5	1.0	0.50
9/30/1998	1.7	123.5	141.5	0.3	0.15
8/10/1998	3.0	123.2	123.2	0.2	0.10

5/12/1998	2.9	123.0	123.0	-1.5	-0.75
2/12/1998	3.0	124.5	124.5	1.0	0.50
11/11/1997	3.0	123.5	123.5	-0.5	-0.25
8/11/1997	1.4	124.0	124.0	1.0	0.50
6/30/1997	4.6	123.0	123.0	-1.0	-0.50
2/10/1997	3.0	124.0	124.0	0.5	0.25
11/11/1996	3.0	123.5	123.5	0.0	0.00
8/13/1996	2.7	123.5	123.5	-1.0	-0.50
5/24/1996	3.3	124.5	124.5	1.0	0.50
2/13/1996	3.0	123.5	123.5	-1.0	-0.50
11/13/1995	3.0	124.5	124.5	1.5	0.75
8/15/1995	3.0	123.0	123.0	-0.5	-0.25
5/15/1995	3.0	123.5	123.5	-0.5	-0.25
2/13/1995	3.0	124.0	124.0	0.0	0.00
11/15/1994	1.5	124.0	124.0	0.5	0.25
9/29/1994	1.5	123.5	123.5	0.0	0.00
8/15/1994	3.0	123.5	123.5	-0.5	-0.25
5/17/1994	3.0	124.0	124.0	1.0	0.50
2/15/1994	3.0	123.0	123.0	-0.5	-0.25
11/16/1993	3.0	123.5	123.5	-0.5	-0.25
8/17/1993	3.0	124.0	124.0	0.0	0.00
5/18/1993	2.9	124.0	124.0	0.0	0.00
2/19/1993	3.0	124.0	124.0	0.0	0.00
11/19/1992	3.0	124.0	124.0	0.5	0.25
8/18/1992	3.0	123.5	123.5	0.5	0.25
5/18/1992		123.0	123.0		

Basic Statistics for LIS-2-3-657B

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.69
Variance	s^2	(psid)	0.48
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.35
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-116B
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-116B
+2s
-2s

Drift Data for DPIS-2-116C

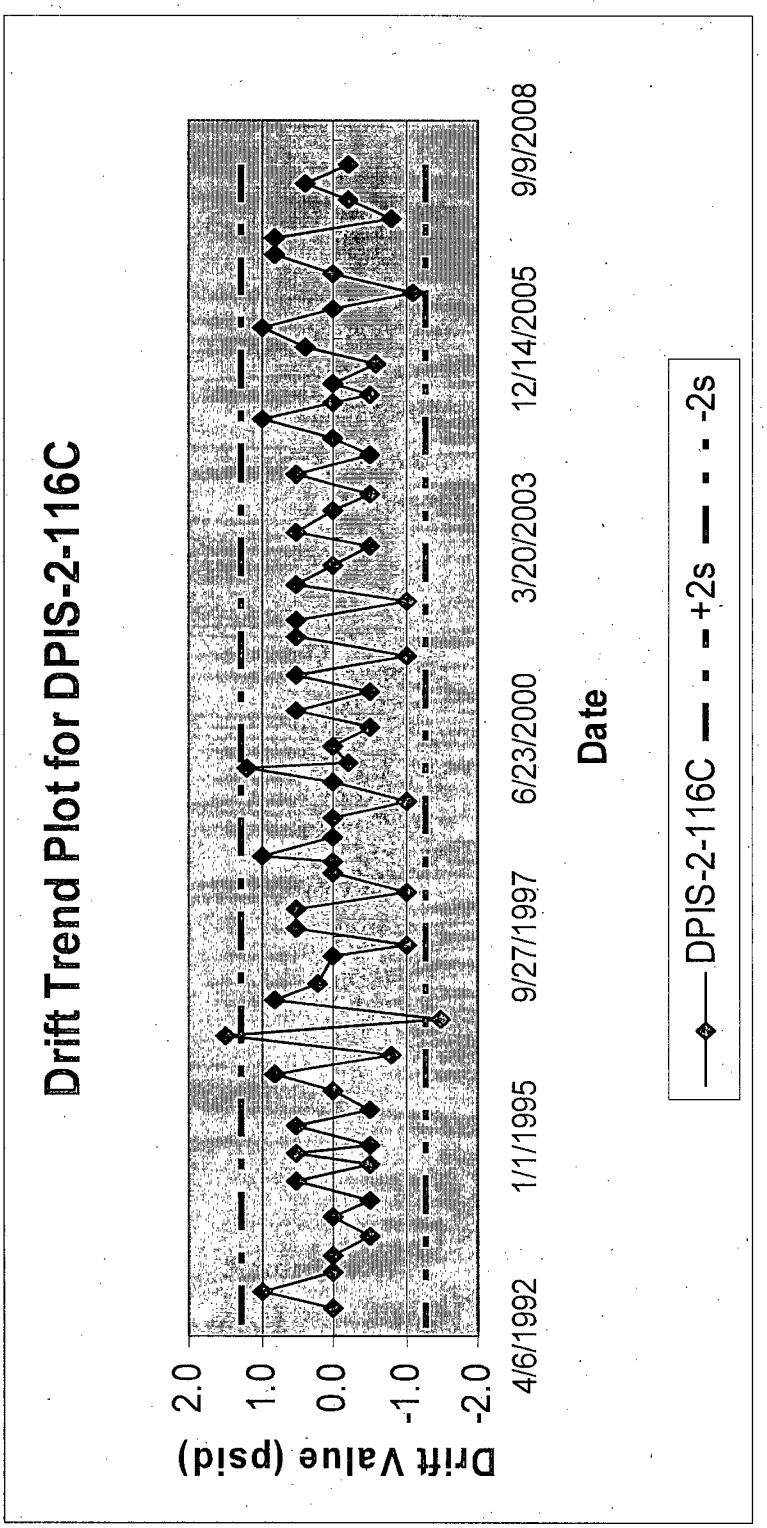
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	142.0	142.0	-0.2	-0.10
2/5/2008	2.7	142.2	142.2	0.4	0.20
11/15/2007	3.3	141.8	141.8	-0.2	-0.10
8/6/2007	3.0	142.0	142.0	-0.8	-0.40
5/7/2007	2.9	142.8	142.8	0.8	0.40
2/8/2007	3.1	142.0	142.0	0.8	0.40
11/6/2006	3.0	141.2	141.2	0.0	0.00
8/7/2006	3.0	141.2	141.2	-1.1	-0.55
5/8/2006	3.0	142.3	142.3	0.0	0.00
2/6/2006	3.2	142.3	142.3	1.0	0.50
10/31/2005	3.0	141.3	141.3	0.4	0.20
8/1/2005	3.0	140.9	140.9	-0.6	-0.30
5/2/2005	1.7	141.5	141.5	0.0	0.00
3/11/2005	1.3	141.5	141.5	-0.5	-0.25
1/31/2005	3.0	142.0	142.0	0.0	0.00
11/1/2004	3.0	142.0	142.0	1.0	0.50
8/2/2004	3.0	141.0	141.0	0.0	0.00
5/3/2004	3.0	141.0	141.0	-0.5	-0.25
2/2/2004	3.0	141.5	141.5	0.5	0.25
11/3/2003	3.0	141.0	141.0	-0.5	-0.25
8/4/2003	3.4	141.5	141.5	0.0	0.00
4/23/2003	2.6	144.5	141.5	0.5	0.25
2/3/2003	3.0	144.0	144.0	-0.5	-0.25
11/4/2002	3.0	144.5	144.5	0.0	0.00
8/5/2002	3.0	144.5	144.5	0.5	0.25
5/6/2002	3.0	144.0	144.0	-1.0	-0.50
2/4/2002	3.0	145.0	145.0	0.5	0.25
11/6/2001	2.9	144.5	144.5	0.5	0.25
8/10/2001	3.1	144.0	144.0	-1.0	-0.50
5/7/2001	3.0	145.0	145.0	0.5	0.25
2/5/2001	3.0	144.5	144.5	-0.5	-0.25
11/6/2000	3.0	145.0	145.0	0.5	0.25
8/7/2000	3.0	144.5	144.5	-0.5	-0.25
5/9/2000	2.9	145.0	145.0	0.0	0.00
2/11/2000	0.7	145.0	145.0	-0.2	-0.10
1/21/2000	2.4	145.2	145.2	1.2	0.60
11/8/1999	3.0	144.0	144.0	0.0	0.00
8/9/1999	3.0	144.0	144.0	-1.0	-0.50
5/10/1999	3.0	145.0	145.0	0.0	0.00
2/8/1999	3.0	145.0	145.0	0.0	0.00
11/9/1998	1.3	145.0	145.0	1.0	0.50
9/30/1998	1.7	127.0	144.0	0.0	0.00
8/10/1998	3.0	127.0	127.0	0.0	0.00

5/12/1998	2.9	127.0	127.0	-1.0	-0.50
2/12/1998	3.0	128.0	128.0	0.5	0.25
11/11/1997	3.0	127.5	127.5	0.5	0.25
8/11/1997	1.4	127.0	127.0	-1.0	-0.50
6/30/1997	4.6	128.0	128.0	0.0	0.00
2/10/1997	3.0	128.0	128.0	0.2	0.10
11/11/1996	3.0	127.8	127.8	0.8	0.40
8/13/1996	2.7	127.0	127.0	-1.5	-0.75
5/24/1996	3.3	128.5	128.5	1.5	0.75
2/13/1996	3.0	127.0	127.0	-0.8	-0.40
11/13/1995	3.0	127.8	127.8	0.8	0.40
8/15/1995	3.0	127.0	127.0	0.0	0.00
5/15/1995	3.0	127.0	127.0	-0.5	-0.25
2/13/1995	3.0	127.5	127.5	0.5	0.25
11/15/1994	1.6	127.0	127.0	-0.5	-0.25
9/28/1994	1.4	127.5	127.5	0.5	0.25
8/15/1994	3.0	127.0	127.0	-0.5	-0.25
5/17/1994	3.0	127.5	127.5	0.5	0.25
2/15/1994	3.0	127.0	127.0	-0.5	-0.25
11/16/1993	3.0	127.5	127.5	0.0	0.00
8/17/1993	3.0	127.5	127.5	-0.5	-0.25
5/18/1993	2.9	128.0	128.0	0.0	0.00
2/19/1993	3.0	128.0	128.0	0.0	0.00
11/19/1992	3.0	128.0	128.0	1.0	0.50
8/18/1992	3.0	127.0	127.0	0.0	0.00
5/18/1992		127.0	127.0		

Basic Statistics for DPIS-2-116C

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.63
Variance	s^2	(psid)	0.40
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.01
Standard Deviation	s	(%)	0.31
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-116C
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-116C
+2s
-2s

Drift Data for DPIS-2-116D

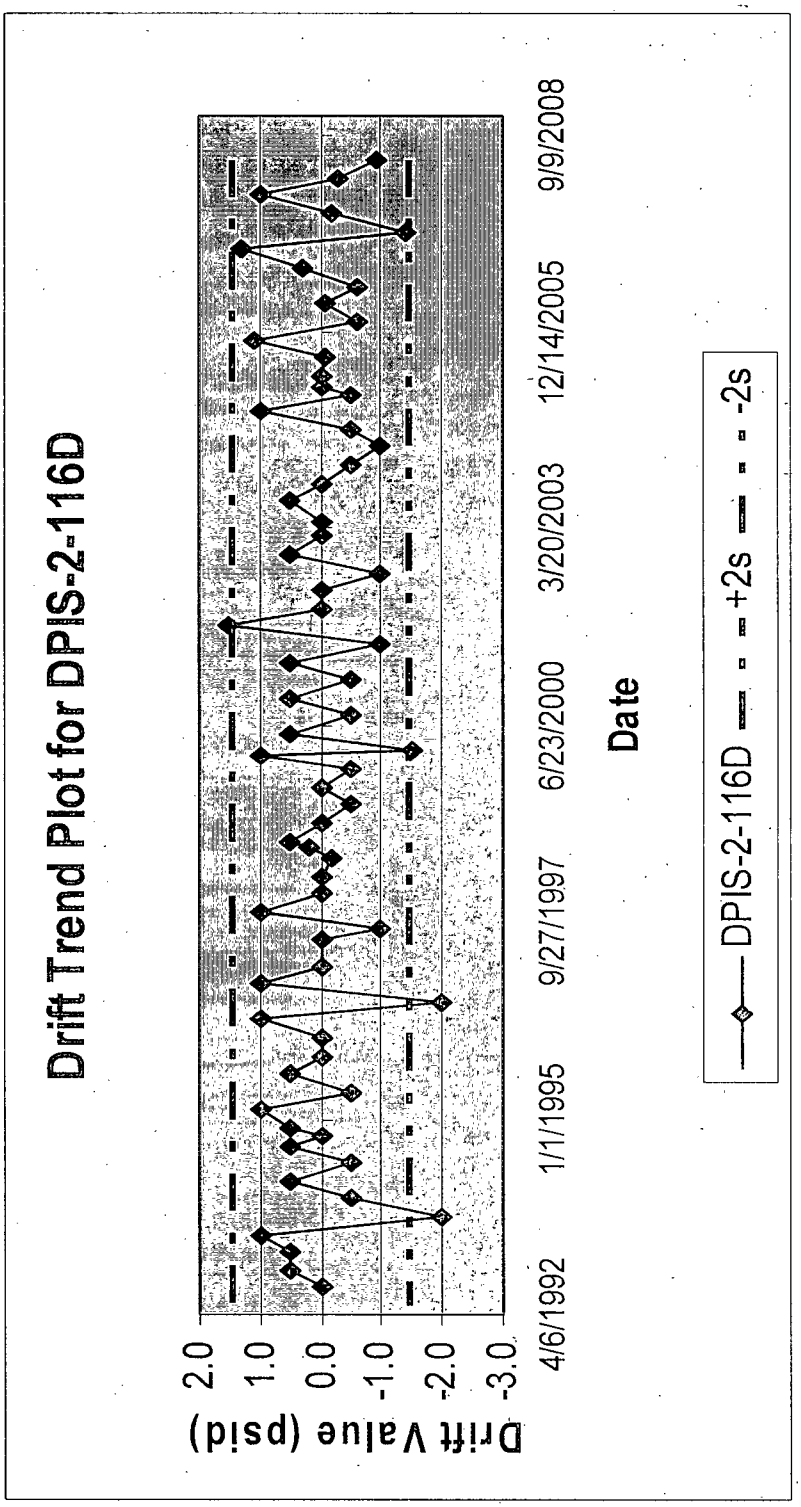
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	140.0	140.0	-0.9	-0.45
2/5/2008	2.7	140.9	140.9	-0.3	-0.15
11/15/2007	3.3	141.2	141.2	1.0	0.50
8/6/2007	3.0	140.2	140.2	-0.2	-0.10
5/7/2007	2.9	140.4	140.4	-1.4	-0.70
2/8/2007	3.1	141.8	141.8	1.3	0.65
11/6/2006	3.0	140.5	140.5	0.3	0.15
8/7/2006	3.0	140.2	140.2	-0.6	-0.30
5/8/2006	3.0	140.8	140.8	-0.1	-0.05
2/6/2006	3.2	140.9	140.9	-0.6	-0.30
10/31/2005	3.0	141.5	141.5	1.1	0.55
8/1/2005	3.0	140.4	140.4	-0.1	-0.05
5/2/2005	1.6	140.5	140.5	0.0	0.00
3/13/2005	1.3	140.5	140.5	0.0	0.00
1/31/2005	3.0	140.5	140.5	-0.5	-0.25
11/1/2004	3.0	141.0	141.0	1.0	0.50
8/2/2004	3.0	140.0	140.0	-0.5	-0.25
5/3/2004	3.0	140.5	140.5	-1.0	-0.50
2/2/2004	3.0	141.5	141.5	-0.5	-0.25
11/3/2003	3.0	142.0	142.0	0.0	0.00
8/4/2003	3.4	142.0	142.0	0.5	0.25
4/23/2003	2.6	141.5	141.5	0.0	0.00
2/3/2003	3.0	141.5	141.5	0.0	0.00
11/4/2002	3.0	141.5	141.5	0.5	0.25
8/5/2002	3.0	141.0	141.0	-1.0	-0.50
5/6/2002	3.0	142.0	142.0	0.0	0.00
2/4/2002	3.0	142.0	142.0	0.0	0.00
11/6/2001	2.9	142.0	142.0	1.5	0.75
8/10/2001	3.1	140.5	140.5	-1.0	-0.50
5/7/2001	3.0	141.5	141.5	0.5	0.25
2/5/2001	3.0	141.0	141.0	-0.5	-0.25
11/6/2000	3.0	141.5	141.5	0.5	0.25
8/7/2000	3.0	141.0	141.0	-0.5	-0.25
5/9/2000	2.9	141.5	141.5	0.5	0.25
2/11/2000	0.7	141.0	141.0	-1.5	-0.75
1/22/2000	2.5	142.5	142.5	1.0	0.50
11/8/1999	3.0	141.5	141.5	-0.5	-0.25
8/9/1999	3.0	142.0	142.0	0.0	0.00
5/10/1999	3.0	142.0	142.0	-0.5	-0.25
2/8/1999	3.0	142.5	142.5	0.0	0.00
11/9/1998	1.3	142.5	142.5	0.5	0.25
9/30/1998	1.7	123.0	142.0	0.2	0.10
8/10/1998	3.0	122.8	122.8	-0.2	-0.10

5/12/1998	2.9	123.0	123.0	0.0	0.00
2/12/1998	3.0	123.0	123.0	0.0	0.00
11/11/1997	3.0	123.0	123.0	1.0	0.50
8/11/1997	1.4	122.0	122.0	-1.0	-0.50
6/30/1997	4.6	123.0	123.0	0.0	0.00
2/10/1997	3.0	123.0	123.0	0.0	0.00
11/11/1996	3.0	123.0	123.0	1.0	0.50
8/13/1996	2.7	122.0	122.0	-2.0	-1.00
5/24/1996	3.3	124.0	124.0	1.0	0.50
2/13/1996	3.0	123.0	123.0	0.0	0.00
11/13/1995	3.0	123.0	123.0	0.0	0.00
8/15/1995	3.0	123.0	123.0	0.5	0.25
5/15/1995	3.0	122.5	122.5	-0.5	-0.25
2/13/1995	3.0	123.0	123.0	1.0	0.50
11/15/1994	1.5	122.0	122.0	0.5	0.25
9/29/1994	1.5	123.0	121.5	0.0	0.00
8/15/1994	3.0	124.0	123.0	0.5	0.25
5/17/1994	3.0	123.5	123.5	-0.5	-0.25
2/15/1994	3.0	124.0	124.0	0.5	0.25
11/16/1993	3.0	123.5	123.5	-0.5	-0.25
8/17/1993	3.0	124.0	124.0	-2.0	-1.00
5/18/1993	2.9	126.0	126.0	1.0	0.50
2/19/1993	3.0	125.0	125.0	0.5	0.25
11/19/1992	3.0	124.5	124.5	0.5	0.25
8/18/1992	3.0	124.0	124.0	0.0	0.00
5/18/1992		124.0	124.0		

Basic Statistics for DPIS-2-116D

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.74
Variance	s^2	(psid)	0.55
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-2.0
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.37
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-1.00


Drift Trend Plot for DPIS-2-116D
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
-3.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-116D
+2s
-2s

Drift Data for DPIS-2-117A

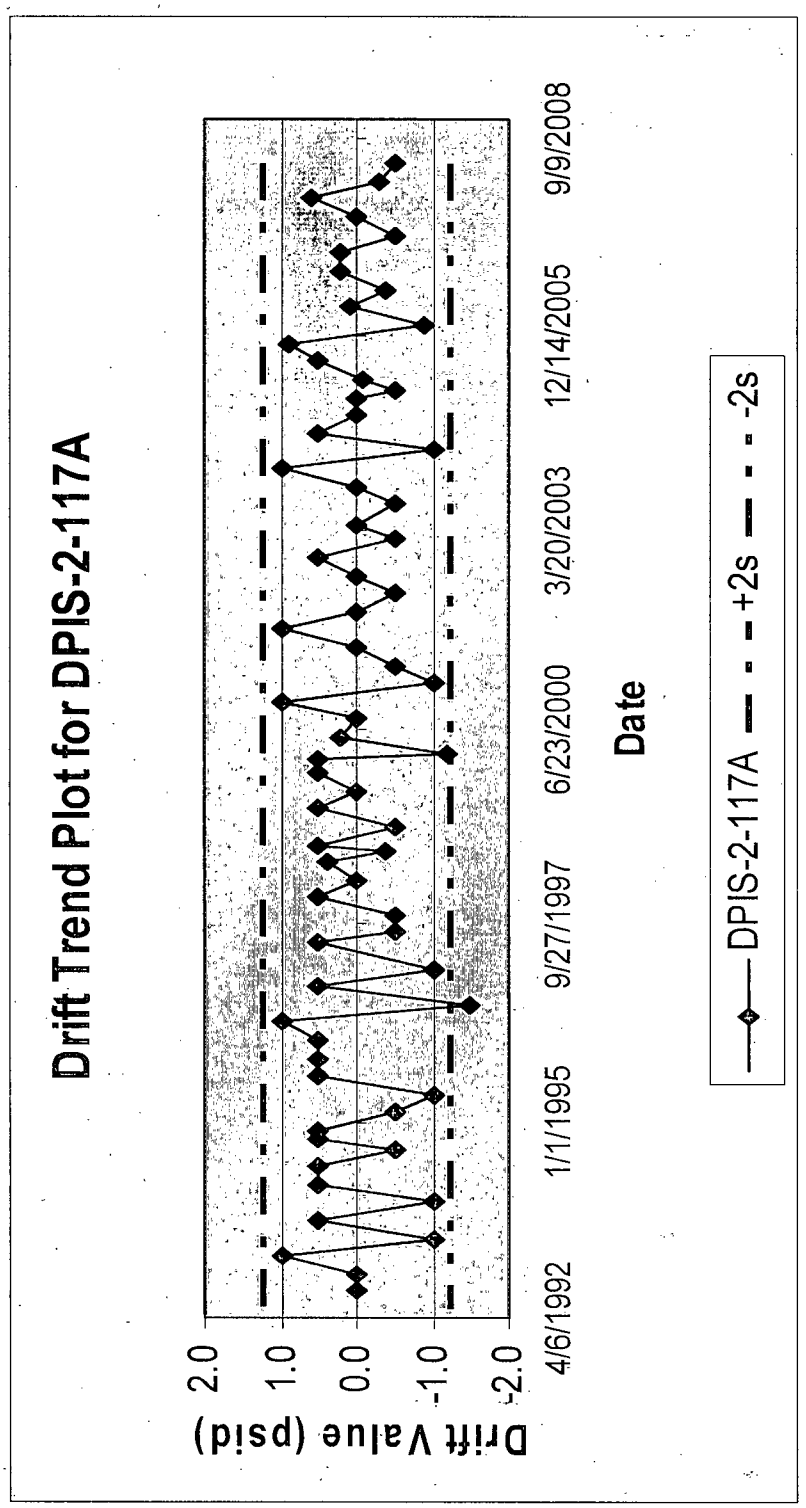
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.8	141.8	-0.5	-0.25
2/4/2008	2.7	142.3	142.3	-0.3	-0.15
11/15/2007	3.3	142.6	142.6	0.6	0.30
8/6/2007	3.0	142.0	142.0	0.0	0.00
5/7/2007	2.9	142.0	142.0	-0.5	-0.25
2/8/2007	3.1	142.5	142.5	0.2	0.10
11/6/2006	3.0	142.3	142.3	0.2	0.10
8/7/2006	3.0	142.1	142.1	-0.4	-0.20
5/8/2006	3.0	142.5	142.5	0.1	0.05
2/6/2006	3.2	142.4	142.4	-0.9	-0.45
10/31/2005	3.0	143.3	143.3	0.9	0.45
8/1/2005	3.0	142.4	142.4	0.5	0.25
5/2/2005	1.7	141.9	141.9	-0.1	-0.05
3/11/2005	1.3	142.0	142.0	-0.5	-0.25
1/31/2005	3.0	142.5	142.5	0.0	0.00
11/1/2004	3.0	142.5	142.5	0.0	0.00
8/2/2004	3.0	142.5	142.5	0.5	0.25
5/3/2004	3.0	142.0	142.0	-1.0	-0.50
2/2/2004	3.0	143.0	143.0	1.0	0.50
11/3/2003	3.0	142.0	142.0	0.0	0.00
8/4/2003	3.4	142.0	142.0	-0.5	-0.25
4/23/2003	2.6	142.5	142.5	0.0	0.00
2/3/2003	3.0	142.5	142.5	-0.5	-0.25
11/4/2002	3.0	143.0	143.0	0.5	0.25
8/5/2002	3.0	142.5	142.5	0.0	0.00
5/6/2002	3.0	142.5	142.5	-0.5	-0.25
2/4/2002	3.0	143.0	143.0	0.0	0.00
11/6/2001	2.9	143.0	143.0	1.0	0.50
8/10/2001	3.1	142.0	142.0	0.0	0.00
5/7/2001	3.0	142.0	142.0	-0.5	-0.25
2/5/2001	3.0	142.5	142.5	-1.0	-0.50
11/6/2000	3.0	143.5	143.5	1.0	0.50
8/7/2000	3.0	142.5	142.5	0.0	0.00
5/9/2000	2.9	142.5	142.5	0.2	0.10
2/11/2000	0.7	142.3	142.3	-1.2	-0.60
1/20/2000	2.4	143.5	143.5	0.5	0.25
11/8/1999	3.0	143.0	143.0	0.5	0.25
8/9/1999	3.0	142.5	142.5	0.0	0.00
5/10/1999	3.0	142.5	142.5	0.5	0.25
2/8/1999	3.0	142.0	142.0	-0.5	-0.25
11/9/1998	1.3	142.5	142.5	0.5	0.25
9/30/1998	1.7	125.0	142.0	-0.4	-0.20
8/10/1998	3.0	125.4	125.4	0.4	0.20

5/12/1998	2.9	125.0	125.0	0.0	0.00
2/12/1998	3.0	125.0	125.0	0.5	0.25
11/11/1997	3.0	124.5	124.5	-0.5	-0.25
8/11/1997	1.4	125.0	125.0	-0.5	-0.25
6/30/1997	4.6	125.5	125.5	0.5	0.25
2/10/1997	3.0	125.0	125.0	-1.0	-0.50
11/11/1996	3.0	126.0	126.0	0.5	0.25
8/13/1996	2.7	125.5	125.5	-1.5	-0.75
5/24/1996	3.3	127.0	127.0	1.0	0.50
2/13/1996	3.0	126.0	126.0	0.5	0.25
11/13/1995	3.0	125.5	125.5	0.5	0.25
8/15/1995	3.0	125.0	125.0	0.5	0.25
5/15/1995	3.0	124.5	124.5	-1.0	-0.50
2/13/1995	3.0	125.5	125.5	-0.5	-0.25
11/15/1994	1.6	126.0	126.0	0.5	0.25
9/27/1994	1.4	125.5	125.5	0.5	0.25
8/15/1994	3.0	125.0	125.0	-0.5	-0.25
5/17/1994	3.0	125.5	125.5	0.5	0.25
2/15/1994	3.0	125.0	125.0	0.5	0.25
11/16/1993	3.0	124.5	124.5	-1.0	-0.50
8/17/1993	3.0	125.5	125.5	0.5	0.25
5/18/1993	2.9	125.0	125.0	-1.0	-0.50
2/19/1993	3.0	126.0	126.0	1.0	0.50
11/19/1992	3.0	125.0	125.0	0.0	0.00
8/18/1992	3.0	125.0	125.0	0.0	0.00
5/18/1992		125.0	125.0		

Basic Statistics for DPIS-2-117A

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.61
Variance	s^2	(psid)	0.37
Largest Positive Drift		(psid)	1.0
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.30
Largest Positive Drift		(%)	0.50
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-117A
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-117A
+2s
-2s

Drift Data for DPIS-2-117B

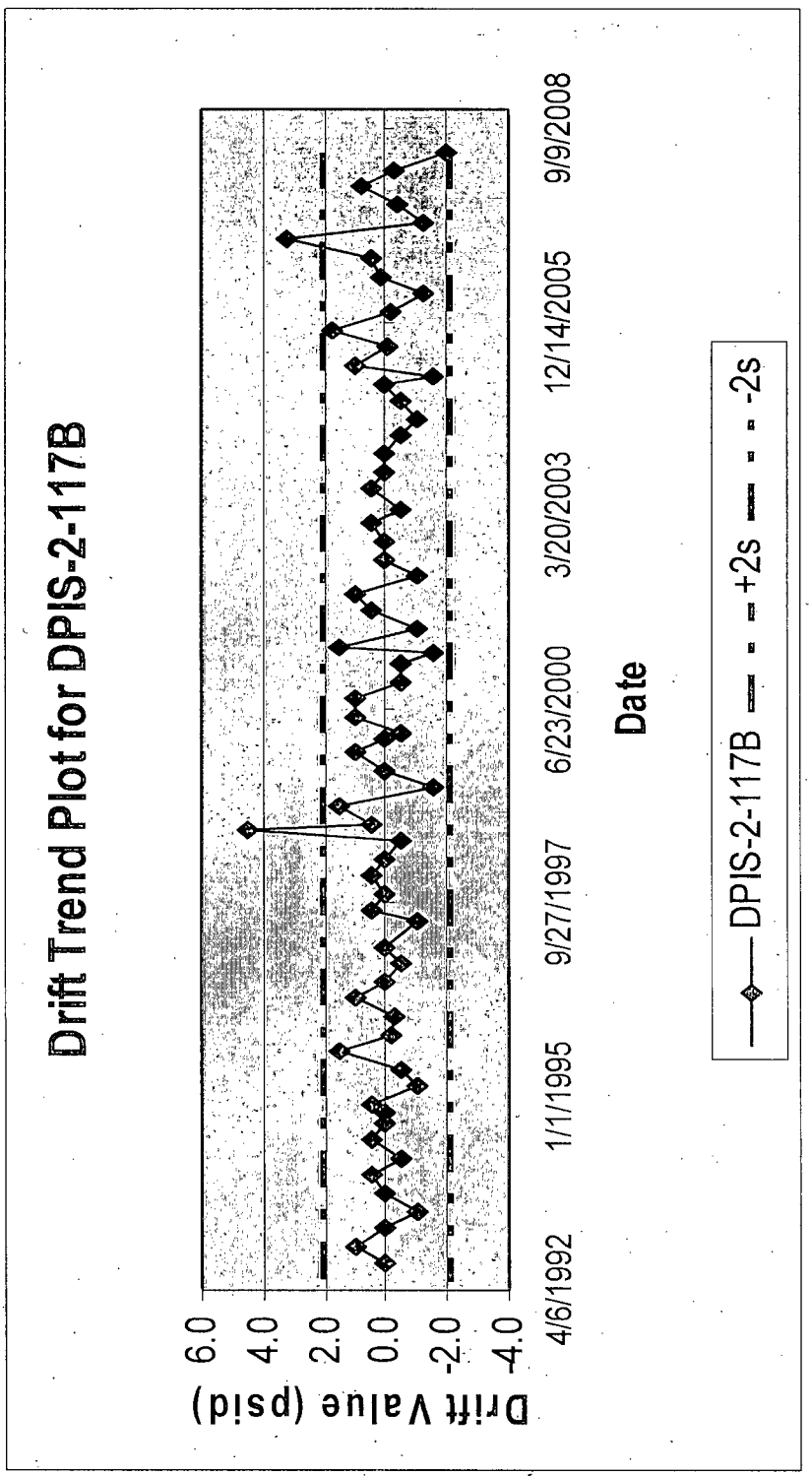
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.9	141.9	-2.0	-1.00
2/5/2008	2.7	143.9	143.9	-0.3	-0.15
11/15/2007	3.3	144.2	144.2	0.8	0.40
8/6/2007	3.0	143.4	143.4	-0.4	-0.20
5/7/2007	2.9	143.8	143.8	-1.2	-0.60
2/8/2007	3.1	145.0	145.0	3.2	1.60
11/6/2006	3.0	141.8	141.8	0.5	0.25
8/7/2006	3.0	141.3	141.3	0.1	0.05
5/8/2006	3.0	141.2	141.2	-1.2	-0.60
2/6/2006	3.2	142.4	142.4	-0.2	-0.10
10/31/2005	3.0	142.6	142.6	1.7	0.85
8/1/2005	3.0	140.9	140.9	-0.1	-0.05
5/2/2005	1.7	141.0	141.0	1.0	0.50
3/12/2005	1.3	140.0	140.0	-1.5	-0.75
1/31/2005	3.0	141.5	141.5	0.0	0.00
11/1/2004	3.0	141.5	141.5	-0.5	-0.25
8/2/2004	3.0	142.0	142.0	-1.0	-0.50
5/3/2004	3.0	143.0	143.0	-0.5	-0.25
2/2/2004	3.0	143.5	143.5	0.0	0.00
11/3/2003	3.0	143.5	143.5	0.0	0.00
8/4/2003	3.4	144.0	143.5	0.5	0.25
4/23/2003	2.6	143.5	143.5	-0.5	-0.25
2/3/2003	3.0	144.0	144.0	0.5	0.25
11/4/2002	3.0	143.5	143.5	0.0	0.00
8/5/2002	3.0	143.5	143.5	0.0	0.00
5/6/2002	3.0	143.5	143.5	-1.0	-0.50
2/4/2002	3.0	144.5	144.5	1.0	0.50
11/6/2001	2.9	143.5	143.5	0.5	0.25
8/10/2001	3.1	143.0	143.0	-1.0	-0.50
5/7/2001	1.2	144.0	144.0	1.5	0.75
3/31/2001	1.8	144.0	142.5	-1.5	-0.75
2/5/2001	3.0	145.5	145.5	-0.5	-0.25
11/6/2000	3.0	146.0	146.0	-0.5	-0.25
8/7/2000	3.0	146.5	146.5	1.0	0.50
5/9/2000	2.9	145.5	145.5	1.0	0.50
2/11/2000	0.7	144.5	144.5	-0.5	-0.25
1/21/2000	2.4	145.0	145.0	0.0	0.00
11/8/1999	3.0	145.0	145.0	1.0	0.50
8/9/1999	3.0	144.0	144.0	0.0	0.00
5/10/1999	3.0	144.0	144.0	-1.5	-0.75
2/8/1999	3.0	145.5	145.5	1.5	0.75
11/9/1998	1.3	144.0	144.0	0.5	0.25
9/30/1998	1.7	128.0	143.5	4.5	2.25

8/10/1998	3.0	123.5	123.5	-0.5	-0.25
5/12/1998	2.9	124.0	124.0	0.0	0.00
2/12/1998	3.0	124.0	124.0	0.5	0.25
11/11/1997	3.0	123.5	123.5	0.0	0.00
8/11/1997	1.4	123.5	123.5	0.5	0.25
6/30/1997	4.6	123.0	123.0	-1.0	-0.50
2/10/1997	3.0	124.0	124.0	0.0	0.00
11/11/1996	3.0	124.0	124.0	-0.5	-0.25
8/13/1996	2.7	124.5	124.5	0.0	0.00
5/24/1996	3.3	124.5	124.5	1.0	0.50
2/13/1996	3.0	123.5	123.5	-0.3	-0.15
11/13/1995	3.0	123.8	123.8	-0.2	-0.10
8/15/1995	3.0	124.0	124.0	1.5	0.75
5/15/1995	3.0	122.5	122.5	-0.5	-0.25
2/13/1995	3.0	123.0	123.0	-1.0	-0.50
11/15/1994	1.5	124.0	124.0	0.5	0.25
9/29/1994	1.5	123.5	123.5	0.0	0.00
8/15/1994	3.0	123.5	123.5	0.0	0.00
5/17/1994	3.0	123.5	123.5	0.5	0.25
2/15/1994	3.0	123.0	123.0	-0.5	-0.25
11/16/1993	3.0	123.5	123.5	0.5	0.25
8/17/1993	3.0	123.0	123.0	0.0	0.00
5/18/1993	2.9	123.0	123.0	-1.0	-0.50
2/19/1993	3.0	124.0	124.0	0.0	0.00
11/19/1992	3.0	124.0	124.0	1.0	0.50
8/18/1992	3.0	123.0	123.0	0.0	0.00
5/18/1992		123.0	123.0		

Basic Statistics for DPIS-2-117B

Average	$\bar{x}$	(psid)	0.1
Standard Deviation	s	(psid)	1.03
Variance	s^2	(psid)	1.06
Largest Positive Drift		(psid)	4.5
Largest Negative Drift		(psid)	-2.0
Number of Samples	n		69

Average	$\bar{x}$	(%)	0.04
Standard Deviation	s	(%)	0.52
Largest Positive Drift		(%)	2.25
Largest Negative Drift		(%)	-1.00


Drift Trend Plot for DPIS-2-117B
Drift Value (psid)
6.0
4.0
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-117B
+2s
-2s

Drift Data for DPIS-2-117C

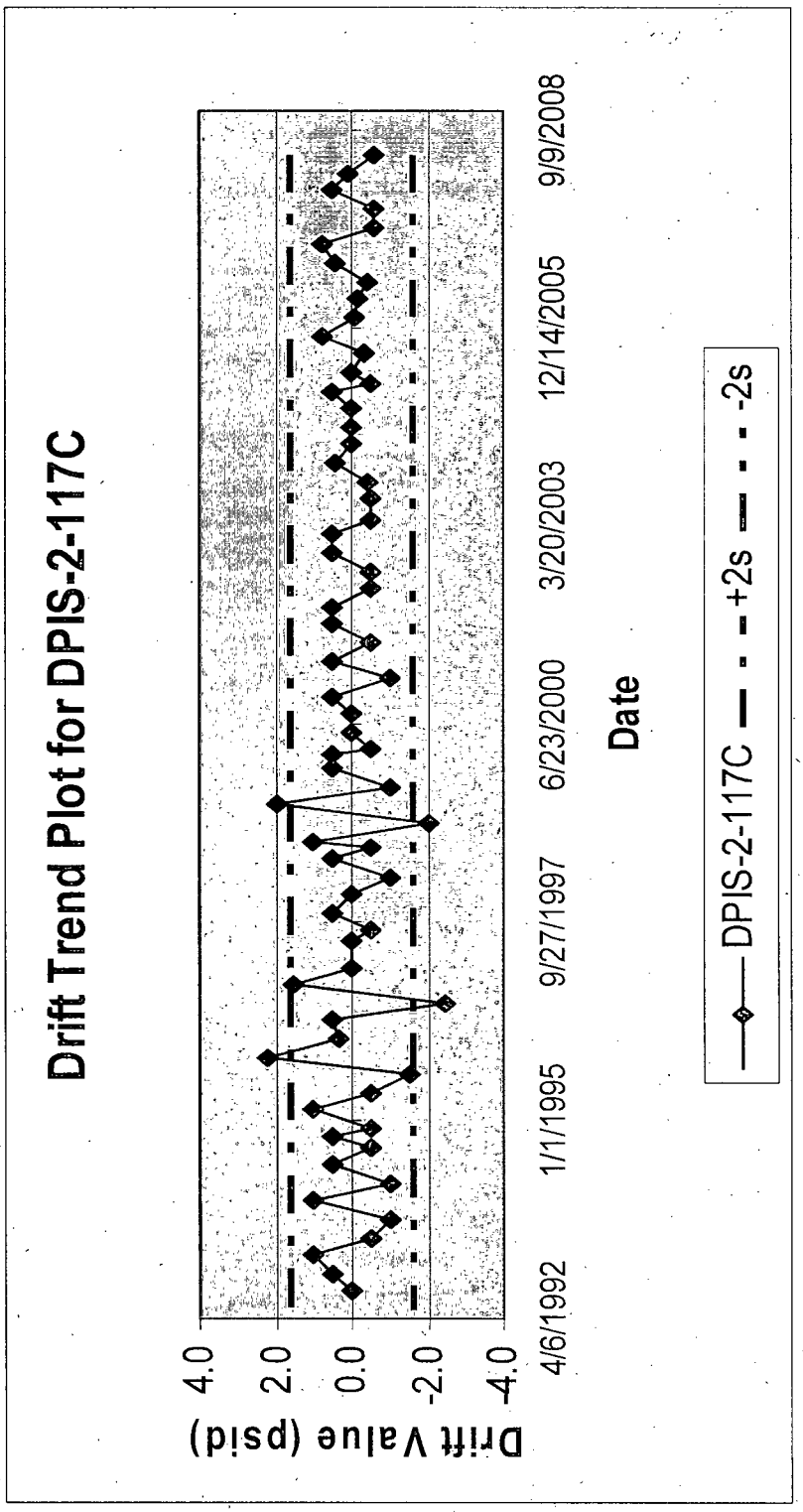
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	142.8	142.8	-0.6	-0.30
2/5/2008	2.7	143.4	143.4	0.1	0.05
11/15/2007	3.3	143.3	143.3	0.5	0.25
8/6/2007	3.0	142.8	142.8	-0.6	-0.30
5/7/2007	2.9	143.4	143.4	-0.6	-0.30
2/8/2007	3.1	144.0	144.0	0.8	0.40
11/6/2006	3.0	143.2	143.2	0.4	0.20
8/7/2006	3.0	142.8	142.8	-0.4	-0.20
5/8/2006	3.0	143.2	143.2	-0.2	-0.10
2/6/2006	3.2	143.4	143.4	-0.1	-0.05
10/31/2005	3.0	143.5	143.5	0.8	0.40
8/1/2005	3.0	142.7	142.7	-0.3	-0.15
5/2/2005	1.7	143.0	143.0	0.0	0.00
3/11/2005	1.3	143.0	143.0	-0.5	-0.25
1/31/2005	3.0	143.5	143.5	0.5	0.25
11/1/2004	3.0	143.0	143.0	0.0	0.00
8/2/2004	3.0	143.0	143.0	0.0	0.00
5/3/2004	3.0	143.0	143.0	0.0	0.00
2/2/2004	3.0	143.0	143.0	0.4	0.20
11/3/2003	3.0	142.6	142.6	-0.4	-0.20
8/4/2003	3.4	143.0	143.0	-0.5	-0.25
4/23/2003	2.6	143.5	143.5	-0.5	-0.25
2/3/2003	3.0	144.0	144.0	0.5	0.25
11/4/2002	3.0	143.5	143.5	0.5	0.25
8/5/2002	3.0	143.0	143.0	-0.5	-0.25
5/6/2002	3.0	143.5	143.5	-0.5	-0.25
2/4/2002	3.0	144.0	144.0	0.5	0.25
11/6/2001	2.9	143.5	143.5	0.5	0.25
8/10/2001	3.1	143.0	143.0	-0.5	-0.25
5/7/2001	3.0	143.5	143.5	0.5	0.25
2/5/2001	3.0	143.0	143.0	-1.0	-0.50
11/6/2000	3.0	144.0	144.0	0.5	0.25
8/7/2000	3.0	143.5	143.5	0.0	0.00
5/9/2000	2.9	143.5	143.5	0.0	0.00
2/11/2000	0.7	143.5	143.5	-0.5	-0.25
1/21/2000	2.4	144.0	144.0	0.5	0.25
11/8/1999	3.0	143.5	143.5	0.5	0.25
8/9/1999	3.0	143.0	143.0	-1.0	-0.50
5/10/1999	3.0	144.0	144.0	2.0	1.00
2/8/1999	3.0	142.0	142.0	-2.0	-1.00
11/9/1998	1.3	144.0	144.0	1.0	0.50
9/30/1998	1.7	125.0	143.0	-0.5	-0.25
8/10/1998	3.0	125.5	125.5	0.5	0.25

5/12/1998	2.9	125.0	125.0	-1.0	-0.50
2/12/1998	3.0	126.0	126.0	0.0	0.00
11/11/1997	3.0	126.0	126.0	0.5	0.25
8/11/1997	1.4	125.5	125.5	-0.5	-0.25
6/30/1997	4.6	126.0	126.0	0.0	0.00
2/10/1997	3.0	126.0	126.0	0.0	0.00
11/11/1996	3.0	126.0	126.0	1.5	0.75
8/13/1996	2.7	124.5	124.5	-2.5	-1.25
5/24/1996	3.3	127.0	127.0	0.5	0.25
2/13/1996	3.0	126.5	126.5	0.3	0.15
11/13/1995	3.0	126.2	126.2	2.2	1.10
8/15/1995	3.0	124.0	124.0	-1.5	-0.75
5/15/1995	3.0	125.5	125.5	-0.5	-0.25
2/13/1995	3.0	126.0	126.0	1.0	0.50
11/15/1994	1.6	125.0	125.0	-0.5	-0.25
9/28/1994	1.4	125.5	125.5	0.5	0.25
8/15/1994	3.0	125.0	125.0	-0.5	-0.25
5/17/1994	3.0	125.5	125.5	0.5	0.25
2/15/1994	3.0	125.0	125.0	-1.0	-0.50
11/16/1993	3.0	126.0	126.0	1.0	0.50
8/17/1993	3.0	125.0	125.0	-1.0	-0.50
5/18/1993	2.9	126.0	126.0	-0.5	-0.25
2/19/1993	3.0	126.5	126.5	1.0	0.50
11/19/1992	3.0	125.5	125.5	0.5	0.25
8/18/1992	3.0	125.0	125.0	0.0	0.00
5/18/1992		125.0	125.0		

Basic Statistics for DPIS-2-117C

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.80
Variance	s^2	(psid)	0.64
Largest Positive Drift		(psid)	2.2
Largest Negative Drift		(psid)	-2.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.40
Largest Positive Drift		(%)	1.10
Largest Negative Drift		(%)	-1.25


Drift Trend Plot for DPIS-2-117C
Drift Value (psid)
4.0
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-117C
+2s
-2s

Drift Data for DPIS-2-117D

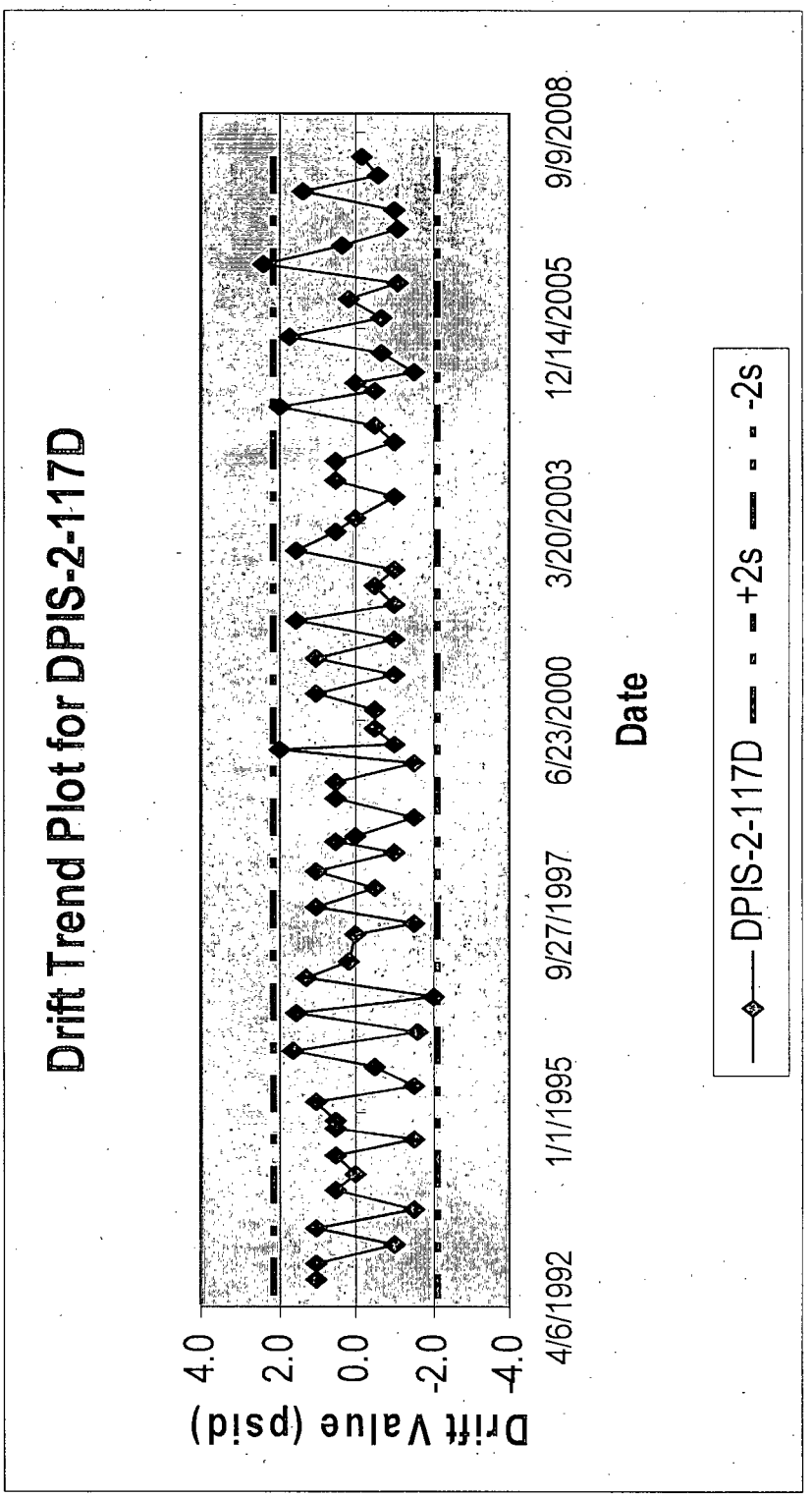
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	140.5	140.5	-0.2	-0.10
2/5/2008	2.7	140.7	140.7	-0.6	-0.30
11/15/2007	3.3	141.3	141.3	1.4	0.70
8/6/2007	2.9	139.9	139.9	-1.0	-0.50
5/9/2007	3.0	140.9	140.9	-1.1	-0.55
2/8/2007	3.1	142.0	142.0	0.3	0.15
11/6/2006	3.0	141.7	141.7	2.4	1.20
8/7/2006	3.0	139.9	139.3	-1.1	-0.55
5/8/2006	3.0	141.0	141.0	0.2	0.10
2/6/2006	3.2	140.8	140.8	-0.7	-0.35
10/31/2005	3.0	141.5	141.5	1.7	0.85
8/1/2005	3.0	139.8	139.8	-0.7	-0.35
5/2/2005	1.6	140.5	140.5	-1.5	-0.75
3/13/2005	1.3	142.0	142.0	0.0	0.00
1/31/2005	3.0	142.0	142.0	-0.5	-0.25
11/1/2004	3.0	142.5	142.5	2.0	1.00
8/2/2004	3.0	140.5	140.5	-0.5	-0.25
5/3/2004	3.0	141.0	141.0	-1.0	-0.50
2/2/2004	3.0	142.0	142.0	0.5	0.25
11/3/2003	3.0	141.5	141.5	0.5	0.25
8/4/2003	3.4	141.0	141.0	-1.0	-0.50
4/23/2003	2.6	142.0	142.0	0.0	0.00
2/3/2003	3.0	142.0	142.0	0.5	0.25
11/4/2002	3.0	141.5	141.5	1.5	0.75
8/5/2002	3.0	140.0	140.0	-1.0	-0.50
5/6/2002	3.0	141.0	141.0	-0.5	-0.25
2/4/2002	3.0	141.5	141.5	-1.0	-0.50
11/6/2001	2.9	142.5	142.5	1.5	0.75
8/10/2001	3.1	141.0	141.0	-1.0	-0.50
5/7/2001	3.0	142.0	142.0	1.0	0.50
2/5/2001	3.0	141.0	141.0	-1.0	-0.50
11/6/2000	3.0	142.0	142.0	1.0	0.50
8/7/2000	3.0	141.0	141.0	-0.5	-0.25
5/9/2000	2.9	141.5	141.5	-0.5	-0.25
2/11/2000	0.7	142.0	142.0	-1.0	-0.50
1/22/2000	2.5	143.0	143.0	2.0	1.00
11/8/1999	3.0	141.0	141.0	-1.5	-0.75
8/9/1999	3.0	142.5	142.5	0.5	0.25
5/10/1999	3.0	142.0	142.0	0.5	0.25
2/8/1999	3.0	141.5	141.5	-1.5	-0.75
11/9/1998	1.3	143.0	143.0	0.0	0.00
9/30/1998	1.7	122.5	143.0	0.5	0.25
8/10/1998	3.0	122.0	122.0	-1.0	-0.50

5/12/1998	2.9	123.0	123.0	1.0	0.50
2/12/1998	3.0	122.0	122.0	-0.5	-0.25
11/11/1997	3.0	122.5	122.5	1.0	0.50
8/11/1997	1.4	121.5	121.5	-1.5	-0.75
6/30/1997	4.6	123.0	123.0	0.0	0.00
2/10/1997	3.0	123.0	123.0	0.2	0.10
11/11/1996	3.0	122.8	122.8	1.3	0.65
8/13/1996	2.7	121.5	121.5	-2.0	-1.00
5/24/1996	3.3	123.5	123.5	1.5	0.75
2/13/1996	3.0	122.0	122.0	-1.6	-0.80
11/13/1995	3.0	123.6	123.6	1.6	0.80
8/15/1995	3.0	122.0	122.0	-0.5	-0.25
5/15/1995	3.0	122.5	122.5	-1.5	-0.75
2/13/1995	3.0	124.0	124.0	1.0	0.50
11/15/1994	1.5	123.0	123.0	0.5	0.25
9/29/1994	1.5	122.5	122.5	0.5	0.25
8/15/1994	3.0	122.0	122.0	-1.5	-0.75
5/17/1994	3.0	123.5	123.5	0.5	0.25
2/15/1994	3.0	123.0	123.0	0.0	0.00
11/16/1993	3.0	123.0	123.0	0.5	0.25
8/17/1993	3.0	122.5	122.5	-1.5	-0.75
5/18/1993	2.9	124.0	124.0	1.0	0.50
2/19/1993	3.0	123.0	123.0	-1.0	-0.50
11/19/1992	3.0	124.0	124.0	1.0	0.50
8/18/1992	3.0	123.0	123.0	1.0	0.50
5/18/1992		122.0	122.0		

Basic Statistics for DPIS-2-117D

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	1.08
Variance	s^2	(psid)	1.17
Largest Positive Drift		(psid)	2.4
Largest Negative Drift		(psid)	-2.0
Number of Samples	n		68

Average	$\bar{x}$	(%)	-0.01
Standard Deviation	s	(%)	0.54
Largest Positive Drift		(%)	1.20
Largest Negative Drift		(%)	-1.00


Drift Trend Plot for DPIS-2-117D
Drift Value (psid)
4.0
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-117D
+2s
-2s

Drift Data for DPIS-2-118A

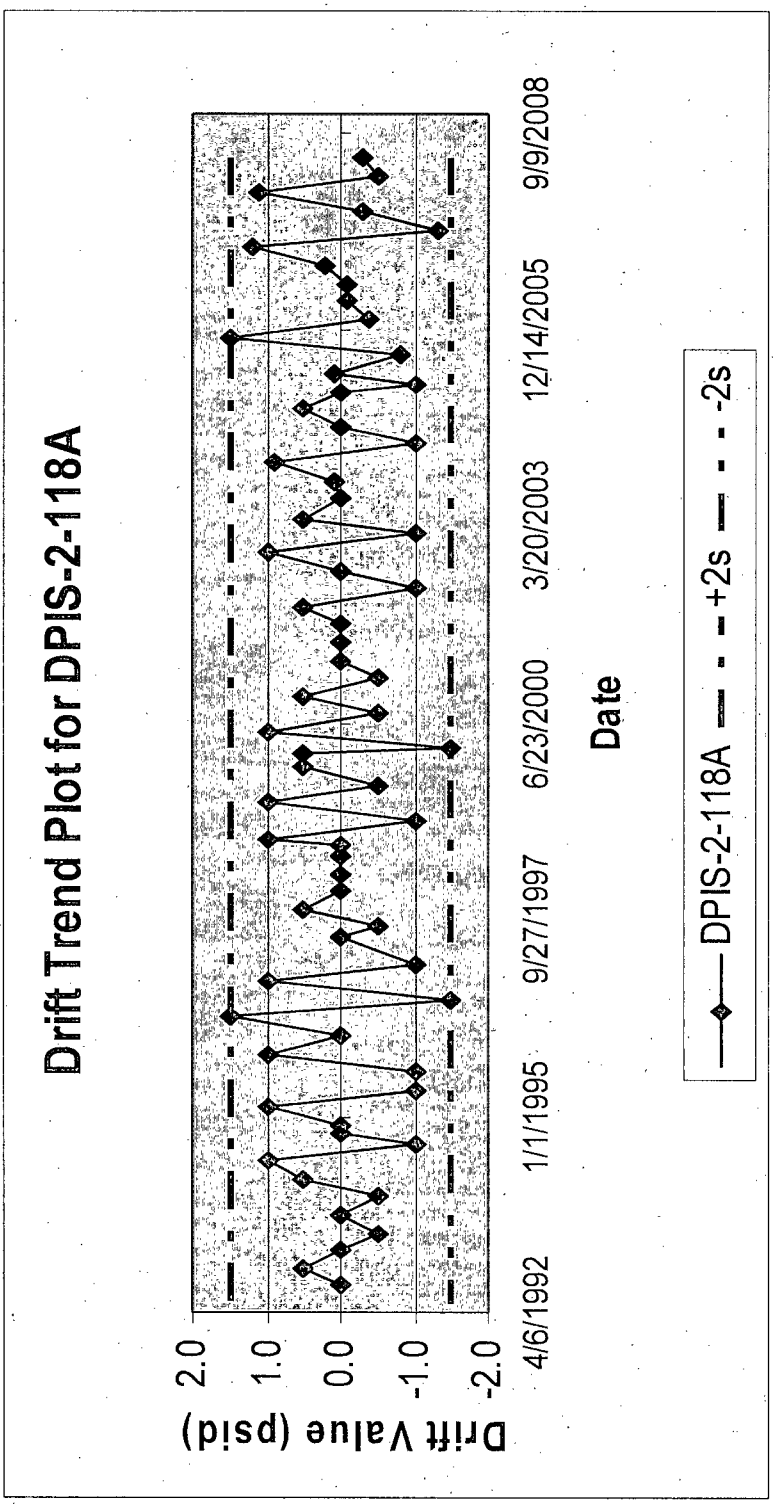
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	140.3	140.3	-0.3	-0.15
2/4/2008	2.7	140.6	140.6	-0.5	-0.25
11/15/2007	3.3	141.1	141.1	1.1	0.55
8/6/2007	3.0	140.0	140.0	-0.3	-0.15
5/7/2007	2.9	140.3	140.3	-1.3	-0.65
2/8/2007	3.1	141.6	141.6	1.2	0.60
11/6/2006	3.0	140.4	140.4	0.2	0.10
8/7/2006	3.0	140.2	140.2	-0.1	-0.05
5/8/2006	3.0	140.3	140.3	-0.1	-0.05
2/6/2006	3.2	140.4	140.4	-0.4	-0.20
10/31/2005	3.0	140.8	140.8	1.5	0.75
8/1/2005	3.0	139.3	139.3	-0.8	-0.40
5/2/2005	1.7	140.1	140.1	0.1	0.05
3/11/2005	1.3	140.0	140.0	-1.0	-0.50
1/31/2005	3.0	141.0	141.0	0.0	0.00
11/1/2004	3.0	141.0	141.0	0.5	0.25
8/2/2004	3.0	140.5	140.5	0.0	0.00
5/3/2004	3.0	140.5	140.5	-1.0	-0.50
2/2/2004	3.0	141.5	141.5	0.9	0.45
11/3/2003	3.0	140.6	140.6	0.1	0.05
8/4/2003	3.4	140.5	140.5	0.0	0.00
4/23/2003	2.6	145.0	140.5	0.5	0.25
2/3/2003	3.0	144.5	144.5	-1.0	-0.50
11/4/2002	3.0	145.5	145.5	1.0	0.50
8/5/2002	3.0	144.5	144.5	0.0	0.00
5/6/2002	3.0	144.5	144.5	-1.0	-0.50
2/4/2002	3.0	145.5	145.5	0.5	0.25
11/6/2001	2.9	145.0	145.0	0.0	0.00
8/10/2001	3.1	145.0	145.0	0.0	0.00
5/7/2001	3.0	145.0	145.0	0.0	0.00
2/5/2001	3.0	145.0	145.0	-0.5	-0.25
11/6/2000	3.0	145.5	145.5	0.5	0.25
8/7/2000	3.0	145.0	145.0	-0.5	-0.25
5/9/2000	2.9	145.5	145.5	1.0	0.50
2/11/2000	0.7	144.5	144.5	-1.5	-0.75
1/20/2000	2.4	146.0	146.0	0.5	0.25
11/8/1999	3.0	145.5	145.5	0.5	0.25
8/9/1999	3.0	145.0	145.0	-0.5	-0.25
5/10/1999	3.0	145.5	145.5	1.0	0.50
2/8/1999	3.0	144.5	144.5	-1.0	-0.50
11/9/1998	1.3	145.5	145.5	1.0	0.50
9/30/1998	1.7	127.0	144.5	0.0	0.00
8/10/1998	3.0	127.0	127.0	0.0	0.00

5/12/1998	2.9	127.0	127.0	0.0	0.00
2/12/1998	3.0	127.0	127.0	0.0	0.00
11/11/1997	3.0	127.0	127.0	0.5	0.25
8/11/1997	1.4	126.5	126.5	-0.5	-0.25
6/30/1997	4.6	127.0	127.0	0.0	0.00
2/10/1997	3.0	127.0	127.0	-1.0	-0.50
11/11/1996	3.0	128.0	128.0	1.0	0.50
8/13/1996	2.7	127.0	127.0	-1.5	-0.75
5/24/1996	3.3	128.5	128.5	1.5	0.75
2/13/1996	3.0	127.0	127.0	0.0	0.00
11/13/1995	3.0	127.0	127.0	1.0	0.50
8/15/1995	3.0	126.0	126.0	-1.0	-0.50
5/15/1995	3.0	127.0	127.0	-1.0	-0.50
2/13/1995	3.0	128.0	128.0	1.0	0.50
11/15/1994	1.6	127.0	127.0	0.0	0.00
9/27/1994	1.4	127.0	127.0	0.0	0.00
8/15/1994	3.0	127.0	127.0	-1.0	-0.50
5/17/1994	3.0	128.0	128.0	1.0	0.50
2/15/1994	3.0	127.0	127.0	0.5	0.25
11/16/1993	3.0	126.5	126.5	-0.5	-0.25
8/17/1993	3.0	127.0	127.0	0.0	0.00
5/18/1993	2.9	127.0	127.0	-0.5	-0.25
2/19/1993	3.0	127.5	127.5	0.0	0.00
11/19/1992	3.0	127.5	127.5	0.5	0.25
8/18/1992	3.0	127.0	127.0	0.0	0.00
5/18/1992		127.0	127.0		

Basic Statistics for DPIS-2-118A

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.74
Variance	s^2	(psid)	0.54
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.37
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-118A
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-118A
+2s
-2s

Drift Data for DPIS-2-118B

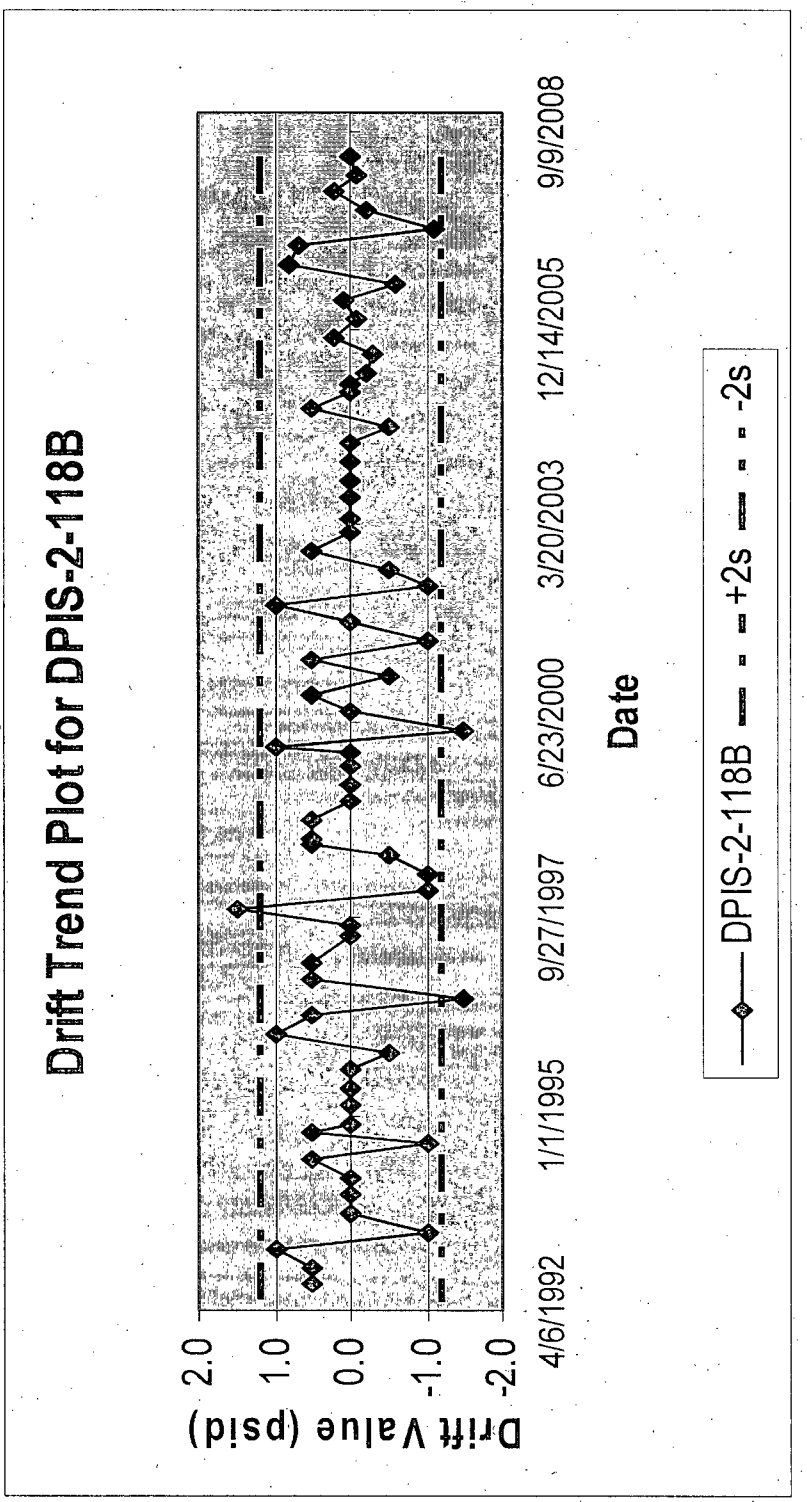
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.9	141.9	0.0	0.00
2/5/2008	2.7	141.9	141.9	-0.1	-0.05
11/15/2007	3.3	142.0	142.0	0.2	0.10
8/6/2007	3.0	141.8	141.8	-0.2	-0.10
5/7/2007	2.9	142.0	142.0	-1.1	-0.55
2/8/2007	3.1	143.1	143.1	0.7	0.35
11/6/2006	3.0	142.4	142.4	0.8	0.40
8/7/2006	3.0	141.6	141.6	-0.6	-0.30
5/8/2006	3.0	142.2	142.2	0.1	0.05
2/6/2006	3.2	142.1	142.1	-0.1	-0.05
10/31/2005	3.0	142.2	142.2	0.2	0.10
8/1/2005	3.0	142.0	142.0	-0.3	-0.15
5/2/2005	1.7	142.3	142.3	-0.2	-0.10
3/12/2005	1.3	142.5	142.5	0.0	0.00
1/31/2005	3.0	142.5	142.5	0.0	0.00
11/1/2004	3.0	142.5	142.5	0.5	0.25
8/2/2004	3.0	142.0	142.0	-0.5	-0.25
5/3/2004	3.0	142.5	142.5	0.0	0.00
2/2/2004	3.0	142.5	142.5	0.0	0.00
11/3/2003	3.0	142.5	142.5	0.0	0.00
8/4/2003	3.4	142.5	142.5	0.0	0.00
4/23/2003	2.6	144.0	142.5	0.0	0.00
2/3/2003	3.0	144.0	144.0	0.0	0.00
11/4/2002	3.0	144.0	144.0	0.5	0.25
8/5/2002	3.0	143.5	143.5	-0.5	-0.25
5/6/2002	3.0	144.0	144.0	-1.0	-0.50
2/4/2002	3.0	145.0	145.0	1.0	0.50
11/6/2001	2.9	144.0	144.0	0.0	0.00
8/10/2001	3.1	144.0	144.0	-1.0	-0.50
5/7/2001	3.0	145.0	145.0	0.5	0.25
2/5/2001	3.0	144.5	144.5	-0.5	-0.25
11/6/2000	3.0	145.0	145.0	0.5	0.25
8/7/2000	3.0	144.5	144.5	0.0	0.00
5/9/2000	2.9	144.5	144.5	-1.5	-0.75
2/11/2000	0.7	146.0	146.0	1.0	0.50
1/21/2000	2.4	145.0	145.0	0.0	0.00
11/8/1999	3.0	145.0	145.0	0.0	0.00
8/9/1999	3.0	145.0	145.0	0.0	0.00
5/10/1999	3.0	145.0	145.0	0.0	0.00
2/8/1999	3.0	145.0	145.0	0.5	0.25
11/9/1998	1.3	144.5	144.5	0.5	0.25
9/30/1998	1.7	125.0	144.0	0.5	0.25
8/10/1998	3.0	124.5	124.5	-0.5	-0.25

5/12/1998	2.9	125.0	125.0	-1.0	-0.50
2/12/1998	3.0	126.0	126.0	-1.0	-0.50
11/11/1997	3.0	127.0	127.0	1.5	0.75
8/11/1997	1.4	125.5	125.5	0.0	0.00
6/30/1997	4.6	125.5	125.5	0.0	0.00
2/10/1997	3.0	125.5	125.5	0.5	0.25
11/11/1996	3.0	125.0	125.0	0.5	0.25
8/13/1996	2.7	124.5	124.5	-1.5	-0.75
5/24/1996	3.3	126.0	126.0	0.5	0.25
2/13/1996	3.0	125.5	125.5	1.0	0.50
11/13/1995	3.0	124.5	124.5	-0.5	-0.25
8/15/1995	3.0	125.0	125.0	0.0	0.00
5/15/1995	3.0	125.0	125.0	0.0	0.00
2/13/1995	3.0	125.0	125.0	0.0	0.00
11/15/1994	1.5	125.0	125.0	0.0	0.00
9/29/1994	1.5	125.0	125.0	0.5	0.25
8/15/1994	3.0	124.5	124.5	-1.0	-0.50
5/17/1994	3.0	125.5	125.5	0.5	0.25
2/15/1994	3.0	125.0	125.0	0.0	0.00
11/16/1993	3.0	125.0	125.0	0.0	0.00
8/17/1993	3.0	125.0	125.0	0.0	0.00
5/18/1993	2.9	125.0	125.0	-1.0	-0.50
2/19/1993	3.0	126.0	126.0	1.0	0.50
11/19/1992	3.0	125.0	125.0	0.5	0.25
8/18/1992	3.0	124.5	124.5	0.5	0.25
5/18/1992		124.0	124.0		

Basic Statistics for DPIS-2-118B

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.60
Variance	s^2	(psid)	0.37
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.00
Standard Deviation	s	(%)	0.30
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-118B
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-118B
+2s
-2s

Drift Data for DPIS-2-118C

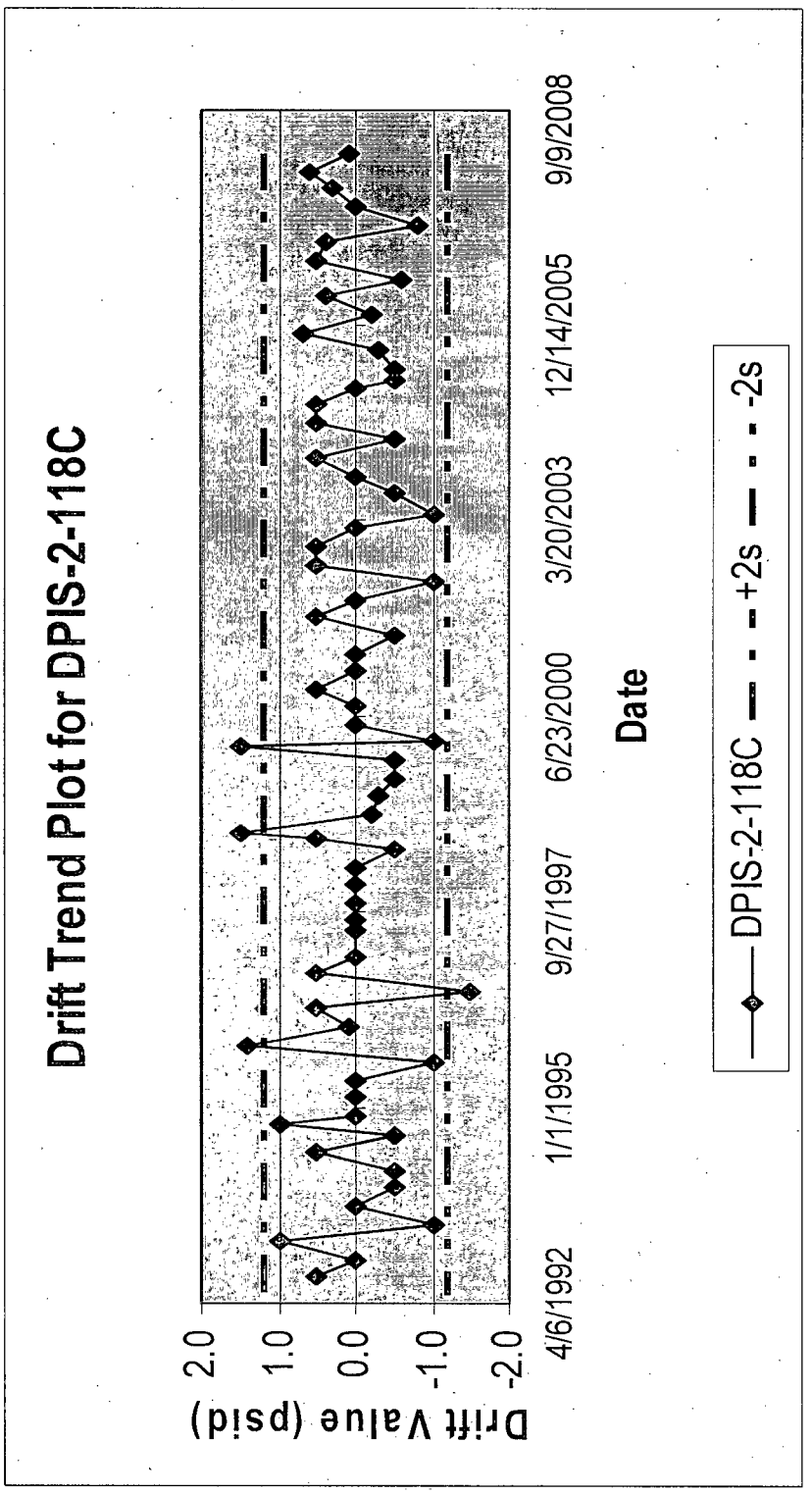
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	142.6	142.6	0.1	0.05
2/5/2008	2.7	142.5	142.5	0.6	0.30
11/15/2007	3.3	141.9	141.9	0.3	0.15
8/6/2007	3.0	141.6	141.6	0.0	0.00
5/7/2007	2.9	141.6	141.6	-0.8	-0.40
2/8/2007	3.1	142.4	142.4	0.4	0.20
11/6/2006	3.0	142.0	142.0	0.5	0.25
8/7/2006	3.0	141.5	141.5	-0.6	-0.30
5/8/2006	3.0	142.1	142.1	0.4	0.20
2/6/2006	3.2	141.7	141.7	-0.2	-0.10
10/31/2005	3.0	141.9	141.9	0.7	0.35
8/1/2005	3.0	141.2	141.2	-0.3	-0.15
5/2/2005	1.7	141.5	141.5	-0.5	-0.25
3/11/2005	1.3	142.0	142.0	-0.5	-0.25
1/31/2005	3.0	142.5	142.5	0.0	0.00
11/1/2004	3.0	142.5	142.5	0.5	0.25
8/2/2004	3.0	142.0	142.0	0.5	0.25
5/3/2004	3.0	141.5	141.5	-0.5	-0.25
2/2/2004	3.0	142.0	142.0	0.5	0.25
11/3/2003	3.0	141.5	141.5	0.0	0.00
8/4/2003	3.4	141.5	141.5	-0.5	-0.25
4/23/2003	2.6	144.0	142.0	-1.0	-0.50
2/3/2003	3.0	145.0	145.0	0.0	0.00
11/4/2002	3.0	145.0	145.0	0.5	0.25
8/5/2002	3.0	144.5	144.5	0.5	0.25
5/6/2002	3.0	144.0	144.0	-1.0	-0.50
2/4/2002	3.0	145.0	145.0	0.0	0.00
11/6/2001	2.9	145.0	145.0	0.5	0.25
8/10/2001	3.1	144.5	144.5	-0.5	-0.25
5/7/2001	3.0	145.0	145.0	0.0	0.00
2/5/2001	3.0	145.0	145.0	0.0	0.00
11/6/2000	3.0	145.0	145.0	0.5	0.25
8/7/2000	3.0	144.5	144.5	0.0	0.00
5/9/2000	2.9	144.5	144.5	0.0	0.00
2/11/2000	0.7	144.5	144.5	-1.0	-0.50
1/21/2000	2.4	145.5	145.5	1.5	0.75
11/8/1999	3.0	144.0	144.0	-0.5	-0.25
8/9/1999	3.0	144.5	144.5	-0.5	-0.25
5/10/1999	3.0	145.0	145.0	-0.3	-0.15
2/8/1999	3.0	145.3	145.3	-0.2	-0.10
11/9/1998	1.3	145.5	145.5	1.5	0.75
9/30/1998	1.7	126.0	144.0	0.5	0.25
8/10/1998	3.0	125.5	125.5	-0.5	-0.25

5/12/1998	2.9	126.0	126.0	0.0	0.00
2/12/1998	3.0	126.0	126.0	0.0	0.00
11/11/1997	3.0	126.0	126.0	0.0	0.00
8/11/1997	1.4	126.0	126.0	0.0	0.00
6/30/1997	4.6	126.0	126.0	0.0	0.00
2/10/1997	3.0	126.0	126.0	0.0	0.00
11/11/1996	3.0	126.0	126.0	0.5	0.25
8/13/1996	2.7	125.5	125.5	-1.5	-0.75
5/24/1996	3.3	127.0	127.0	0.5	0.25
2/13/1996	3.0	126.5	126.5	0.1	0.05
11/13/1995	3.0	126.4	126.4	1.4	0.70
8/15/1995	3.0	125.0	125.0	-1.0	-0.50
5/15/1995	3.0	126.0	126.0	0.0	0.00
2/13/1995	3.0	126.0	126.0	0.0	0.00
11/15/1994	1.6	126.0	126.0	0.0	0.00
9/28/1994	1.4	126.0	126.0	1.0	0.50
8/15/1994	3.0	125.0	125.0	-0.5	-0.25
5/17/1994	3.0	125.5	125.5	0.5	0.25
2/15/1994	3.0	125.0	125.0	-0.5	-0.25
11/16/1993	3.0	125.5	125.5	-0.5	-0.25
8/17/1993	3.0	126.0	126.0	0.0	0.00
5/18/1993	2.9	126.0	126.0	-1.0	-0.50
2/19/1993	3.0	127.0	127.0	1.0	0.50
11/19/1992	3.0	126.0	126.0	0.0	0.00
8/18/1992	3.0	126.0	126.0	0.5	0.25
5/18/1992		125.5	125.5		

Basic Statistics for DPIS-2-118C

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.60
Variance	s^2	(psid)	0.36
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-1.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	0.01
Standard Deviation	s	(%)	0.30
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-0.75


Drift Trend Plot for DPIS-2-118C
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-118C
+2s
-2s

Drift Data for DPIS-2-118D

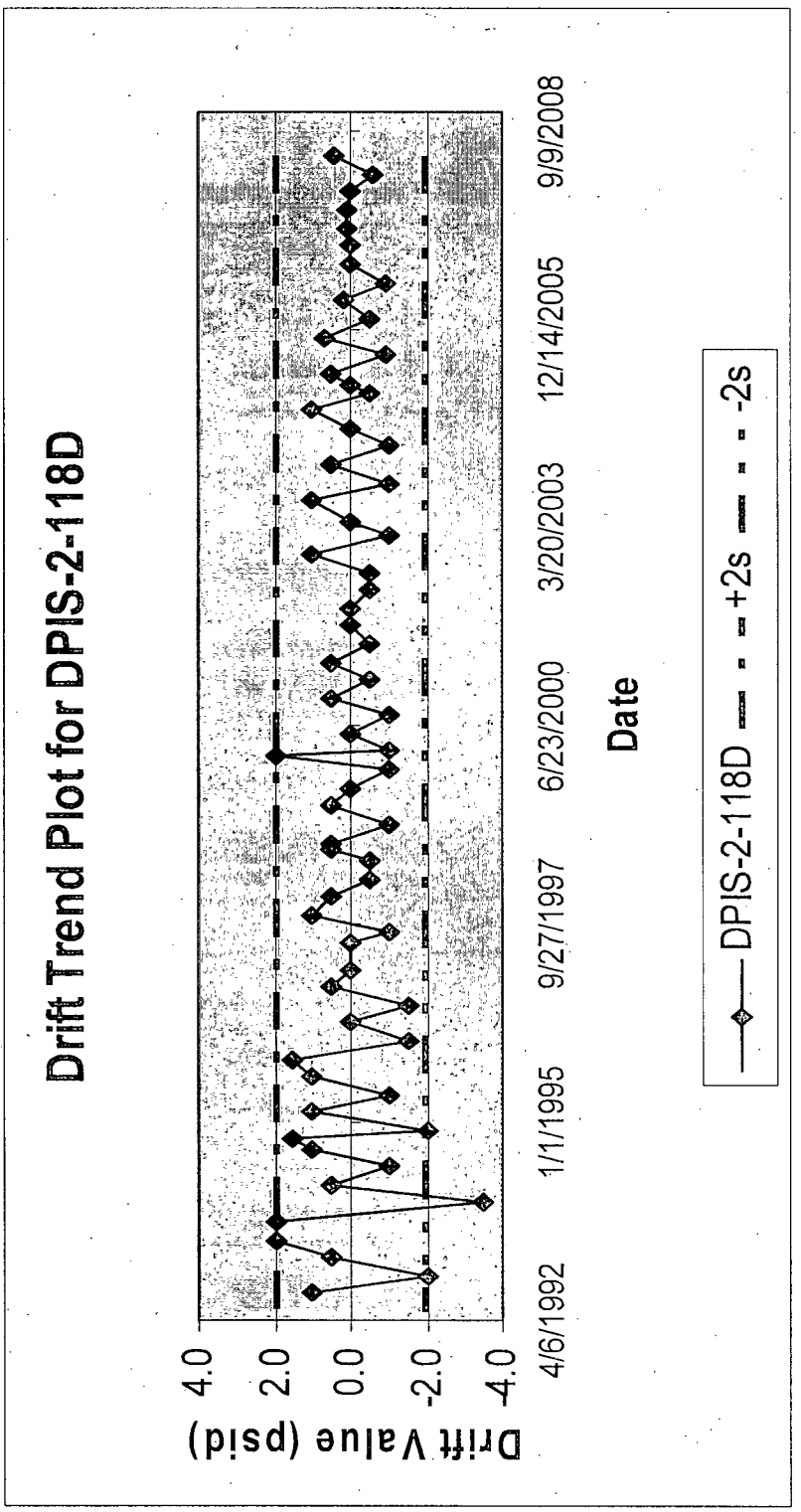
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.8	141.8	0.4	0.20
2/5/2008	2.7	141.4	141.4	-0.6	-0.30
11/15/2007	3.3	142.0	142.0	0.0	0.00
8/6/2007	2.9	142.0	142.0	0.1	0.05
5/9/2007	3.0	141.9	141.9	0.1	0.05
2/8/2007	3.1	141.8	141.8	0.0	0.00
11/6/2006	3.0	141.8	141.8	0.0	0.00
8/7/2006	3.0	138.1	141.8	-0.9	-0.45
5/8/2006	3.0	139.0	139.0	0.2	0.10
2/6/2006	3.2	138.8	138.8	-0.5	-0.25
10/31/2005	3.0	139.3	139.3	0.7	0.35
8/1/2005	3.0	138.6	138.6	-0.9	-0.45
5/2/2005	1.6	139.5	139.5	0.5	0.25
3/13/2005	1.3	139.0	139.0	0.0	0.00
1/31/2005	3.0	139.0	139.0	-0.5	-0.25
11/1/2004	3.0	139.5	139.5	1.0	0.50
8/2/2004	3.0	138.5	138.5	0.0	0.00
5/3/2004	3.0	138.5	138.5	-1.0	-0.50
2/2/2004	3.0	139.5	139.5	0.5	0.25
11/3/2003	3.0	139.0	139.0	-1.0	-0.50
8/4/2003	3.4	140.0	140.0	1.0	0.50
4/23/2003	2.6	139.0	139.0	0.0	0.00
2/3/2003	3.0	139.0	139.0	-1.0	-0.50
11/4/2002	3.0	140.0	140.0	1.0	0.50
8/5/2002	3.0	139.0	139.0	-0.5	-0.25
5/6/2002	3.0	139.5	139.5	-0.5	-0.25
2/4/2002	3.0	140.0	140.0	0.0	0.00
11/6/2001	2.9	140.0	140.0	0.0	0.00
8/10/2001	3.1	140.0	140.0	-0.5	-0.25
5/7/2001	3.0	140.5	140.5	0.5	0.25
2/5/2001	3.0	140.0	140.0	-0.5	-0.25
11/6/2000	3.0	140.5	140.5	0.5	0.25
8/7/2000	3.0	140.0	140.0	-1.0	-0.50
5/9/2000	2.9	141.0	141.0	0.0	0.00
2/11/2000	0.7	141.0	141.0	-1.0	-0.50
1/22/2000	2.5	142.0	142.0	2.0	1.00
11/8/1999	3.0	140.0	140.0	-1.0	-0.50
8/9/1999	3.0	141.0	141.0	0.0	0.00
5/10/1999	3.0	141.0	141.0	0.5	0.25
2/8/1999	3.0	140.5	140.5	-1.0	-0.50
11/9/1998	1.3	141.5	141.5	0.5	0.25
9/30/1998	1.7	124.0	141.0	0.5	0.25
8/10/1998	3.0	123.5	123.5	-0.5	-0.25

5/12/1998	2.9	124.0	124.0	-0.5	-0.25
2/12/1998	3.0	124.5	124.5	0.5	0.25
11/11/1997	3.0	124.0	124.0	1.0	0.50
8/11/1997	1.4	123.0	123.0	-1.0	-0.50
6/30/1997	4.6	124.0	124.0	0.0	0.00
2/10/1997	3.0	124.0	124.0	0.0	0.00
11/11/1996	3.0	124.0	124.0	0.5	0.25
8/13/1996	2.7	123.5	123.5	-1.5	-0.75
5/24/1996	3.3	125.0	125.0	0.0	0.00
2/13/1996	3.0	125.0	125.0	-1.5	-0.75
11/13/1995	3.0	126.5	126.5	1.5	0.75
8/15/1995	3.0	125.0	125.0	1.0	0.50
5/15/1995	3.0	124.0	124.0	-1.0	-0.50
2/13/1995	3.0	125.0	125.0	1.0	0.50
11/15/1994	1.5	124.0	124.0	-2.0	-1.00
9/29/1994	1.5	125.5	126.0	1.5	0.75
8/15/1994	3.0	124.0	124.0	1.0	0.50
5/17/1994	3.0	123.0	123.0	-1.0	-0.50
2/15/1994	3.0	124.0	124.0	0.5	0.25
11/16/1993	3.0	123.5	123.5	-3.5	-1.75
8/17/1993	3.0	127.0	127.0	2.0	1.00
5/18/1993	2.9	125.0	125.0	2.0	1.00
2/19/1993	3.0	123.0	123.0	0.5	0.25
11/19/1992	3.0	122.5	122.5	-2.0	-1.00
8/18/1992	3.0	124.5	124.5	1.0	0.50
5/18/1992		123.5	123.5		

Basic Statistics for DPIS-2-118D

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	1.00
Variance	s^2	(psid)	0.99
Largest Positive Drift		(psid)	2.0
Largest Negative Drift		(psid)	-3.5
Number of Samples	n		68

Average	$\bar{x}$	(%)	-0.02
Standard Deviation	s	(%)	0.50
Largest Positive Drift		(%)	1.00
Largest Negative Drift		(%)	-1.75


Drift Trend Plot for DPIS-2-118D
Drift Value (psid)
4.0
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-118D
+2s
-2s

Drift Data for DPIS-2-119A

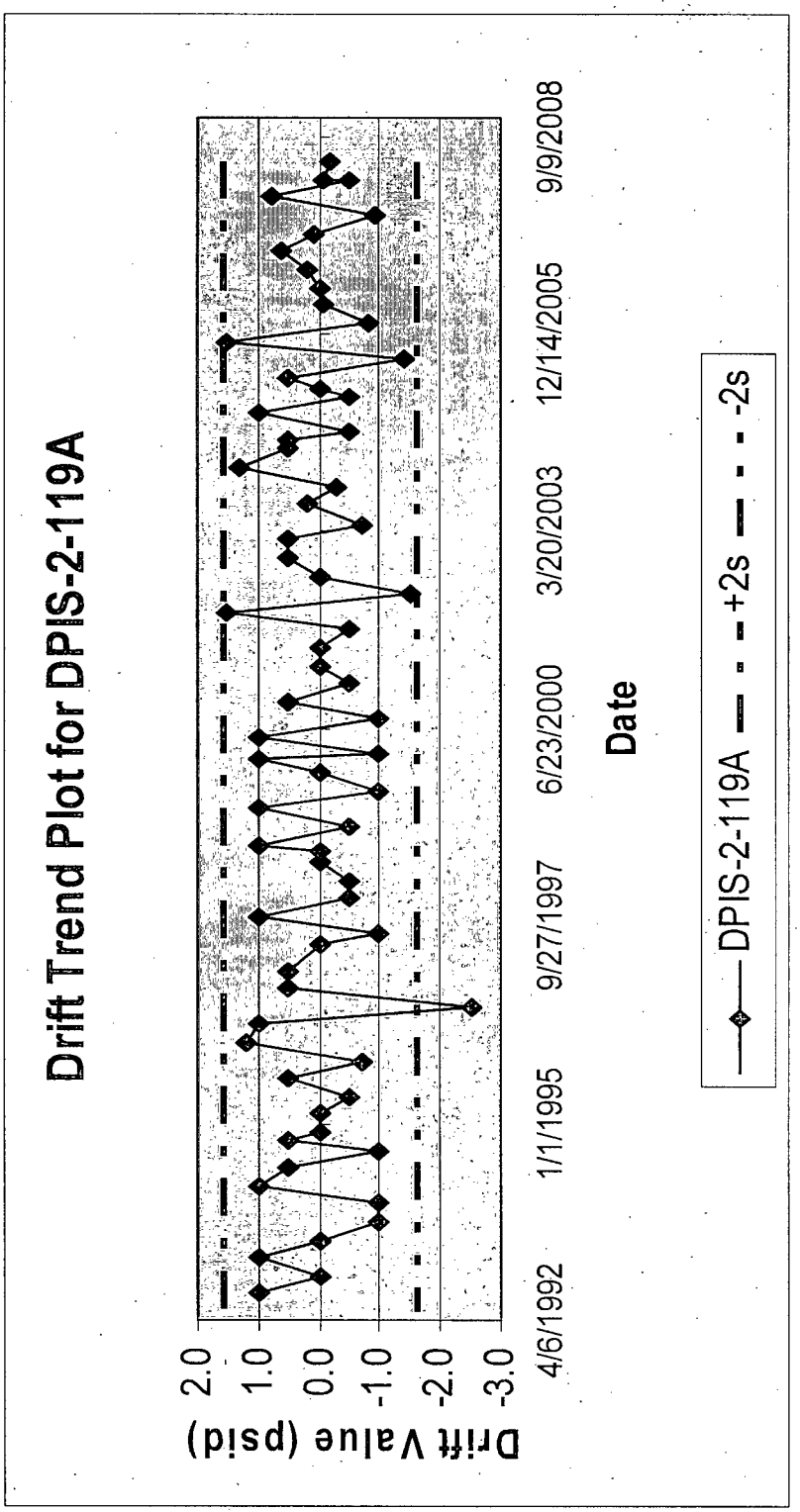
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.2	141.2	-0.2	-0.10
2/5/2008	0.0	141.4	141.4	-0.1	-0.05
2/4/2008	2.7	141.5	141.5	-0.5	-0.25
11/15/2007	3.3	142.0	142.0	0.8	0.40
8/6/2007	3.0	141.2	141.2	-0.9	-0.45
5/7/2007	2.9	142.1	142.1	0.1	0.05
2/8/2007	3.1	142.0	142.0	0.6	0.30
11/6/2006	3.0	141.4	141.4	0.2	0.10
8/7/2006	3.0	141.2	141.2	0.0	0.00
5/8/2006	3.0	141.2	141.2	-0.1	-0.05
2/6/2006	3.2	141.3	141.3	-0.8	-0.40
10/31/2005	3.0	142.1	142.1	1.5	0.75
8/1/2005	3.0	140.6	140.6	-1.4	-0.70
5/2/2005	1.7	142.0	142.0	0.5	0.25
3/11/2005	1.3	141.5	141.5	0.0	0.00
1/31/2005	3.0	141.5	141.5	-0.5	-0.25
11/1/2004	3.0	142.0	142.0	1.0	0.50
8/2/2004	1.4	141.0	141.0	-0.5	-0.25
6/20/2004	1.6	144.0	141.5	0.5	0.25
5/3/2004	3.0	144.0	143.5	0.5	0.25
2/2/2004	3.0	144.5	143.5	1.3	0.65
11/3/2003	3.0	143.2	143.2	-0.3	-0.15
8/4/2003	3.4	143.5	143.5	0.2	0.10
4/23/2003	2.6	143.3	143.3	-0.7	-0.35
2/3/2003	3.0	144.0	144.0	0.5	0.25
11/4/2002	3.0	143.5	143.5	0.5	0.25
8/5/2002	3.0	143.0	143.0	0.0	0.00
5/6/2002	3.0	143.0	143.0	-1.5	-0.75
2/4/2002	3.0	144.5	144.5	1.5	0.75
11/6/2001	2.9	143.0	143.0	-0.5	-0.25
8/10/2001	3.1	143.5	143.5	0.0	0.00
5/7/2001	3.0	143.5	143.5	0.0	0.00
2/5/2001	3.0	143.5	143.5	-0.5	-0.25
11/6/2000	3.0	144.0	144.0	0.5	0.25
8/7/2000	3.0	143.5	143.5	-1.0	-0.50
5/9/2000	2.9	144.5	144.5	1.0	0.50
2/11/2000	0.7	143.5	143.5	-1.0	-0.50
1/20/2000	2.4	144.5	144.5	1.0	0.50
11/8/1999	3.0	143.5	143.5	0.0	0.00
8/9/1999	3.0	143.5	143.5	-1.0	-0.50
5/10/1999	3.0	144.5	144.5	1.0	0.50
2/8/1999	3.0	143.5	143.5	-0.5	-0.25
11/9/1998	1.3	144.0	144.0	1.0	0.50

9/30/1998	1.7	122.0	143.0	0.0	0.00
8/10/1998	3.0	122.0	122.0	0.0	0.00
5/12/1998	2.9	122.0	122.0	-0.5	-0.25
2/12/1998	3.0	122.5	122.5	-0.5	-0.25
11/11/1997	3.0	123.0	123.0	1.0	0.50
8/11/1997	1.4	122.0	122.0	-1.0	-0.50
6/30/1997	4.6	123.0	123.0	0.0	0.00
2/10/1997	3.0	123.0	123.0	0.5	0.25
11/11/1996	3.0	122.5	122.5	0.5	0.25
8/13/1996	2.7	122.0	122.0	-2.5	-1.25
5/24/1996	3.3	124.5	124.5	1.0	0.50
2/13/1996	3.0	123.5	123.5	1.2	0.60
11/13/1995	3.0	122.3	122.3	-0.7	-0.35
8/15/1995	3.0	123.0	123.0	0.5	0.25
5/15/1995	3.0	122.5	122.5	-0.5	-0.25
2/13/1995	3.0	123.0	123.0	0.0	0.00
11/15/1994	1.6	123.0	123.0	0.0	0.00
9/27/1994	1.4	123.0	123.0	0.5	0.25
8/15/1994	3.0	122.5	122.5	-1.0	-0.50
5/17/1994	3.0	123.5	123.5	0.5	0.25
2/15/1994	3.0	123.0	123.0	1.0	0.50
11/16/1993	3.0	122.0	122.0	-1.0	-0.50
8/17/1993	3.0	123.0	123.0	-1.0	-0.50
5/18/1993	2.9	124.0	124.0	0.0	0.00
2/19/1993	3.0	124.0	124.0	1.0	0.50
11/19/1992	3.0	123.0	123.0	0.0	0.00
8/18/1992	3.0	123.0	123.0	1.0	0.50
5/18/1992		122.0	122.0		

Basic Statistics for DPIS-2-119A

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.80
Variance	s^2	(psid)	0.63
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-2.5
Number of Samples	n		70

Average	$\bar{x}$	(%)	0.02
Standard Deviation	s	(%)	0.40
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-1.25


Drift Trend Plot for DPIS-2-119A
Drift Value (psid)
2.0
1.0
0.0
-1.0
-2.0
-3.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-119A
+2s
-2s

Drift Data for DPIS-2-119B

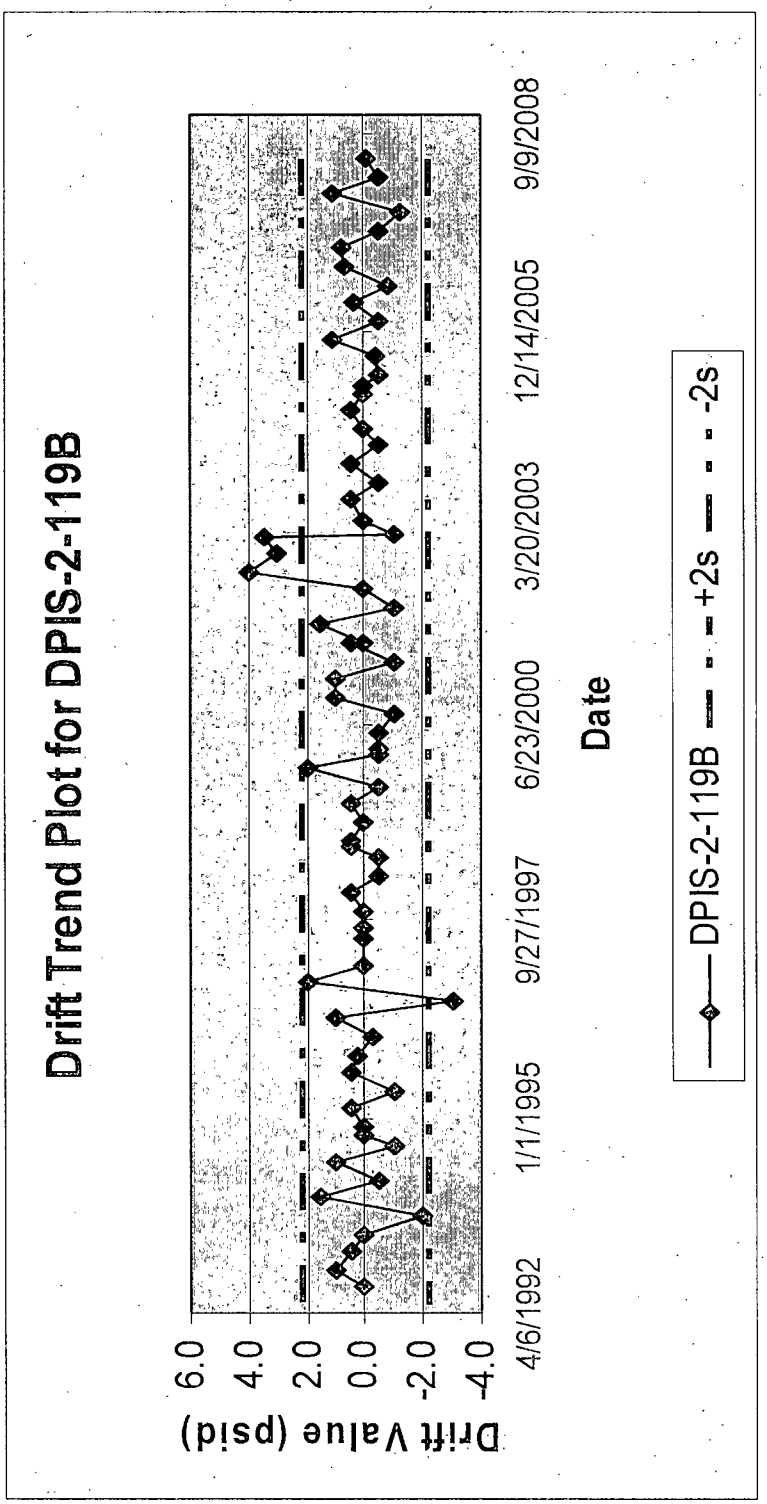
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	141.6	141.6	-0.1	-0.05
2/5/2008	2.7	141.7	141.7	-0.5	-0.25
11/15/2007	3.3	142.2	142.2	1.1	0.55
8/6/2007	3.0	141.1	141.1	-1.2	-0.60
5/7/2007	2.9	142.3	142.3	-0.5	-0.25
2/8/2007	3.1	142.8	142.8	0.8	0.40
11/6/2006	3.0	142.0	142.0	0.7	0.35
8/7/2006	3.0	141.3	141.3	-0.8	-0.40
5/8/2006	3.0	142.1	142.1	0.4	0.20
2/6/2006	3.2	141.7	141.7	-0.5	-0.25
10/31/2005	3.0	142.2	142.2	1.1	0.55
8/1/2005	3.0	141.1	141.1	-0.4	-0.20
5/2/2005	1.6	141.5	141.5	-0.5	-0.25
3/13/2005	1.3	142.0	142.0	0.0	0.00
1/31/2005	3.0	142.0	142.0	0.0	0.00
11/1/2004	3.0	142.0	142.0	0.5	0.25
8/2/2004	3.0	141.5	141.5	0.0	0.00
5/3/2004	3.0	141.5	141.5	-0.5	-0.25
2/2/2004	3.0	142.0	142.0	0.5	0.25
11/3/2003	3.0	141.5	141.5	-0.5	-0.25
8/4/2003	3.4	142.0	142.0	0.5	0.25
4/23/2003	2.6	141.5	141.5	0.0	0.00
2/3/2003	0.3	141.5	141.5	-1.0	-0.50
1/24/2003	2.7	146.0	142.5	3.5	1.75
11/4/2002	3.0	148.0	142.5	3.0	1.50
8/5/2002	3.0	149.0	145.0	4.0	2.00
5/6/2002	3.0	145.0	145.0	0.0	0.00
2/4/2002	3.0	145.0	145.0	-1.0	-0.50
11/6/2001	2.9	146.0	146.0	1.5	0.75
8/10/2001	0.0	144.5	144.5	0.0	0.00
8/10/2001	3.1	144.5	144.5	0.5	0.25
5/7/2001	3.0	144.0	144.0	-1.0	-0.50
2/5/2001	3.0	145.0	145.0	1.0	0.50
11/6/2000	3.0	144.0	144.0	1.0	0.50
8/7/2000	3.0	143.0	143.0	-1.0	-0.50
5/9/2000	2.9	144.0	144.0	-0.5	-0.25
2/11/2000	0.7	144.5	144.5	-0.5	-0.25
1/21/2000	2.4	145.0	145.0	-0.5	-0.25
11/8/1999	3.0	145.5	145.5	2.0	1.00
8/9/1999	3.0	143.5	143.5	-0.5	-0.25
5/10/1999	3.0	144.0	144.0	0.5	0.25
2/8/1999	3.0	143.5	143.5	0.0	0.00
11/9/1998	1.3	143.5	143.5	0.5	0.25

9/30/1998	1.7	126.0	143.0	0.5	0.25
8/10/1998	3.0	125.5	125.5	-0.5	-0.25
5/12/1998	2.9	126.0	126.0	-0.5	-0.25
2/12/1998	3.0	126.5	126.5	0.5	0.25
11/11/1997	3.0	126.0	126.0	0.0	0.00
8/11/1997	1.4	126.0	126.0	0.0	0.00
6/30/1997	4.6	126.0	126.0	0.0	0.00
2/10/1997	3.0	126.0	126.0	0.0	0.00
11/11/1996	3.0	126.0	126.0	2.0	1.00
8/13/1996	2.7	124.0	124.0	-3.0	-1.50
5/24/1996	3.3	127.0	127.0	1.0	0.50
2/13/1996	3.0	126.0	126.0	-0.3	-0.15
11/13/1995	3.0	126.3	126.3	0.3	0.15
8/15/1995	3.0	126.0	126.0	0.5	0.25
5/15/1995	3.0	125.5	125.5	-1.0	-0.50
2/13/1995	3.0	126.5	126.5	0.5	0.25
11/15/1994	1.5	126.0	126.0	0.0	0.00
9/29/1994	1.5	126.0	126.0	0.0	0.00
8/15/1994	3.0	126.0	126.0	-1.0	-0.50
5/17/1994	3.0	127.0	127.0	1.0	0.50
2/15/1994	3.0	126.0	126.0	-0.5	-0.25
11/16/1993	3.0	126.5	126.5	1.5	0.75
8/17/1993	3.0	125.0	125.0	-2.0	-1.00
5/18/1993	2.9	127.0	127.0	0.0	0.00
2/19/1993	3.0	127.0	127.0	0.5	0.25
11/19/1992	3.0	126.5	126.5	1.0	0.50
8/18/1992	3.0	125.5	125.5	0.0	0.00
5/18/1992		125.5	125.5		

Basic Statistics for DPIS-2-119B

Average	$\bar{x}$	(psid)	0.2
Standard Deviation	s	(psid)	1.10
Variance	s^2	(psid)	1.21
Largest Positive Drift		(psid)	4.0
Largest Negative Drift		(psid)	-3.0
Number of Samples	n		70

Average	$\bar{x}$	(%)	0.09
Standard Deviation	s	(%)	0.55
Largest Positive Drift		(%)	2.00
Largest Negative Drift		(%)	-1.50


Drift Trend Plot for DPIS-2-119B
Drift Value (psid)
6.0
4.0
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-119B
+2s
-2s

Drift Data for DPIS-2-119C

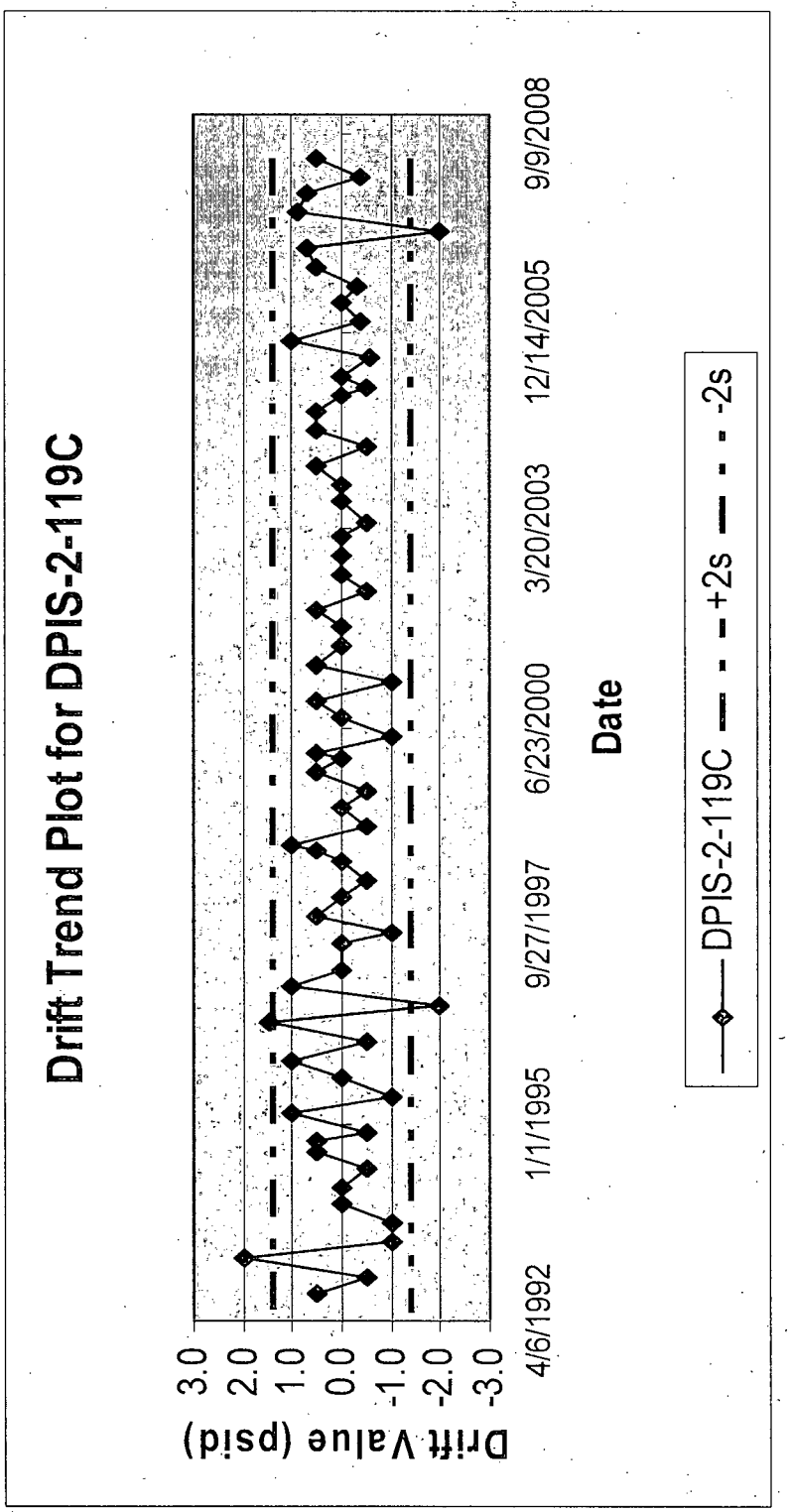
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	140.6	140.6	0.5	0.25
2/5/2008	2.7	140.1	140.1	-0.4	-0.20
11/15/2007	3.3	140.5	140.5	0.7	0.35
8/6/2007	3.0	139.8	139.8	0.9	0.45
5/7/2007	2.9	138.9	138.9	-2.0	-1.00
2/8/2007	3.1	140.9	140.9	0.7	0.35
11/6/2006	3.0	140.2	140.2	0.5	0.25
8/7/2006	3.0	139.7	139.7	-0.3	-0.15
5/8/2006	3.0	140.0	140.0	0.0	0.00
2/6/2006	3.2	140.0	140.0	-0.4	-0.20
10/31/2005	3.0	140.4	140.4	1.0	0.50
8/1/2005	3.0	139.4	139.4	-0.6	-0.30
5/2/2005	1.7	140.0	140.0	0.0	0.00
3/12/2005	1.3	140.0	140.0	-0.5	-0.25
1/31/2005	3.0	140.5	140.5	0.0	0.00
11/1/2004	3.0	140.5	140.5	0.5	0.25
8/2/2004	3.0	140.0	140.0	0.5	0.25
5/3/2004	3.0	139.5	139.5	-0.5	-0.25
2/2/2004	3.0	144.0	140.0	0.5	0.25
11/3/2003	3.0	143.5	143.5	0.0	0.00
8/4/2003	3.4	143.5	143.5	0.0	0.00
4/23/2003	2.6	143.5	143.5	-0.5	-0.25
2/3/2003	3.0	144.0	144.0	0.0	0.00
11/4/2002	3.0	144.0	144.0	0.0	0.00
8/5/2002	3.0	144.0	144.0	0.0	0.00
5/6/2002	3.0	144.0	144.0	-0.5	-0.25
2/4/2002	3.0	144.5	144.5	0.5	0.25
11/6/2001	2.9	144.0	144.0	0.0	0.00
8/10/2001	3.1	144.0	144.0	0.0	0.00
5/7/2001	3.0	144.0	144.0	0.5	0.25
2/5/2001	3.0	143.5	143.5	-1.0	-0.50
11/6/2000	3.0	144.5	144.5	0.5	0.25
8/7/2000	3.0	144.0	144.0	0.0	0.00
5/9/2000	2.9	144.0	144.0	-1.0	-0.50
2/11/2000	0.7	145.0	145.0	0.5	0.25
1/21/2000	2.4	144.5	144.5	0.0	0.00
11/8/1999	3.0	144.5	144.5	0.5	0.25
8/9/1999	3.0	144.0	144.0	-0.5	-0.25
5/10/1999	3.0	144.5	144.5	0.0	0.00
2/8/1999	3.0	144.5	144.5	-0.5	-0.25
11/9/1998	1.3	145.0	145.0	1.0	0.50
9/30/1998	1.7	124.5	144.0	0.5	0.25
8/10/1998	3.0	124.0	124.0	0.0	0.00
5/12/1998	2.9	124.0	124.0	-0.5	-0.25

2/12/1998	3.0	124.5	124.5	0.0	0.00
11/11/1997	3.0	124.5	124.5	0.5	0.25
8/11/1997	1.4	124.0	124.0	-1.0	-0.50
6/30/1997	4.6	125.0	125.0	0.0	0.00
2/10/1997	3.0	125.0	125.0	0.0	0.00
11/11/1996	3.0	125.0	125.0	1.0	0.50
8/13/1996	2.7	124.0	124.0	-2.0	-1.00
5/24/1996	3.3	126.0	126.0	1.5	0.75
2/13/1996	3.0	124.5	124.5	-0.5	-0.25
11/13/1995	3.0	125.0	125.0	1.0	0.50
8/15/1995	3.0	124.0	124.0	0.0	0.00
5/15/1995	3.0	124.0	124.0	-1.0	-0.50
2/13/1995	3.0	125.0	125.0	1.0	0.50
11/15/1994	1.6	124.0	124.0	-0.5	-0.25
9/28/1994	1.4	125.5	124.5	0.5	0.25
8/15/1994	3.0	125.0	125.0	0.5	0.25
5/17/1994	3.0	124.5	124.5	-0.5	-0.25
2/15/1994	3.0	125.0	125.0	0.0	0.00
11/16/1993	3.0	125.0	125.0	0.0	0.00
8/17/1993	3.0	125.0	125.0	-1.0	-0.50
5/18/1993	2.9	126.0	126.0	-1.0	-0.50
2/19/1993	3.0	127.0	127.0	2.0	1.00
11/19/1992	3.0	125.0	125.0	-0.5	-0.25
8/18/1992	3.0	125.5	125.5	0.5	0.25
5/18/1992		125.0	125.0		

Basic Statistics for DPIS-2-119C

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	S	(psid)	0.72
Variance	s^2	(psid)	0.51
Largest Positive Drift		(psid)	2.0
Largest Negative Drift		(psid)	-2.0
Number of Samples	N		68

Average	$\bar{x}$	(%)	0.01
Standard Deviation	s	(%)	0.36
Largest Positive Drift		(%)	1.00
Largest Negative Drift		(%)	-1.00


Drift Trend Plot for DPIS-2-119C
Drift Value (psid)
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-119C
+2s
-2s

Drift Data for DPIS-2-119D

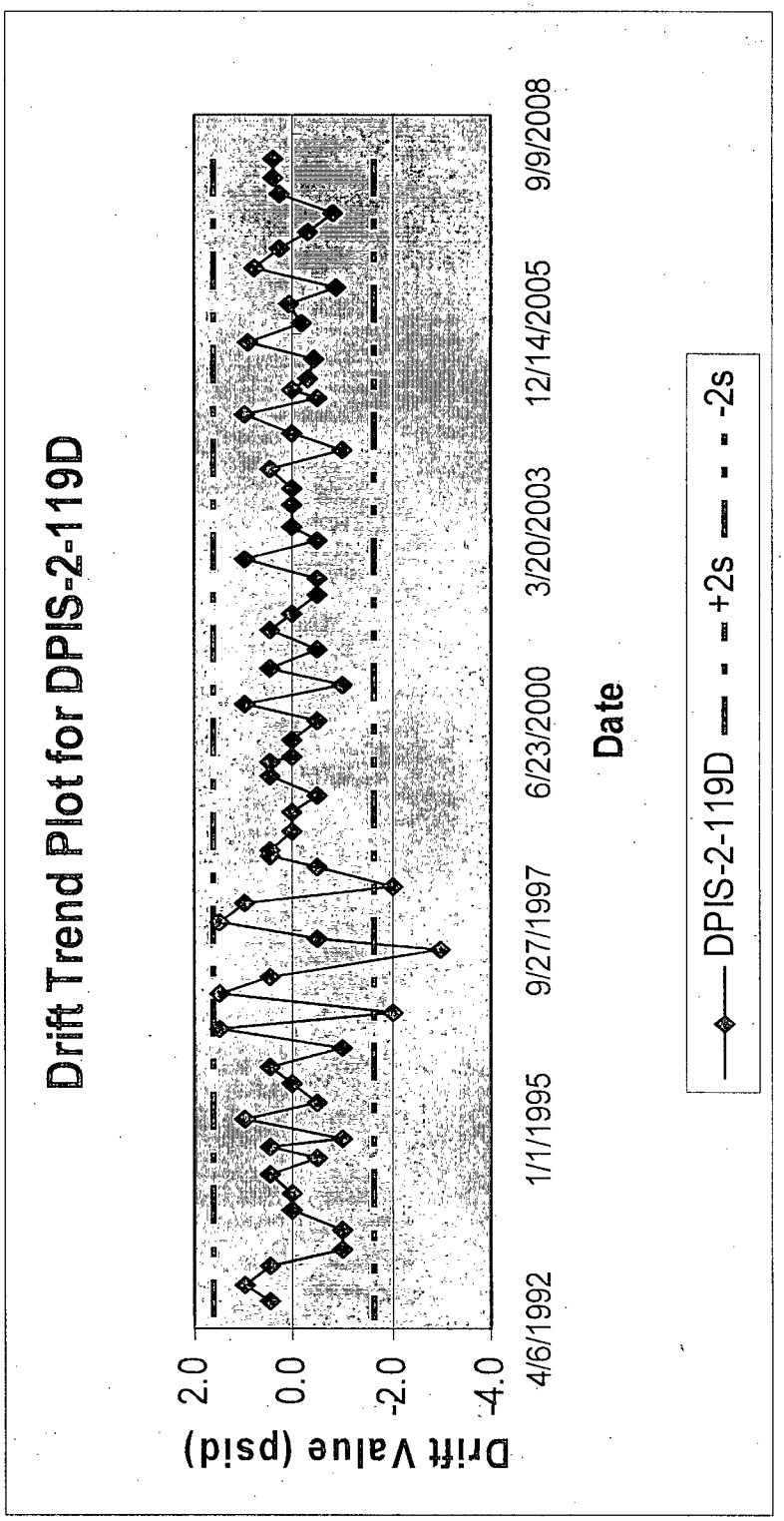
Date	Calibration Interval (Months)	As-Found	As-Left	Drift (psid)	Drift (%)
5/5/2008	3.0	142.8	142.8	0.4	0.20
2/5/2008	2.7	142.4	142.4	0.4	0.20
11/15/2007	3.3	142.0	142.0	0.3	0.15
8/6/2007	2.9	141.7	141.7	-0.8	-0.40
5/9/2007	3.0	142.5	142.5	-0.3	-0.15
2/8/2007	3.1	142.8	142.8	0.3	0.15
11/6/2006	3.0	142.5	142.5	0.8	0.40
8/7/2006	3.0	141.7	141.7	-0.9	-0.45
5/8/2006	3.0	142.6	142.6	0.1	0.05
2/6/2006	3.2	142.5	142.5	-0.2	-0.10
10/31/2005	3.0	142.7	142.7	0.9	0.45
8/1/2005	3.0	141.8	141.8	-0.4	-0.20
5/2/2005	1.6	142.2	142.2	-0.3	-0.15
3/13/2005	1.3	142.5	142.5	0.0	0.00
1/31/2005	3.0	142.5	142.5	-0.5	-0.25
11/1/2004	3.0	143.0	143.0	1.0	0.50
8/2/2004	3.0	142.0	142.0	0.0	0.00
5/3/2004	3.0	142.0	142.0	-1.0	-0.50
2/2/2004	3.0	143.0	143.0	0.5	0.25
11/3/2003	3.0	142.5	142.5	0.0	0.00
8/4/2003	3.4	142.5	142.5	0.0	0.00
4/23/2003	2.6	142.5	142.5	0.0	0.00
2/3/2003	3.0	142.5	142.5	-0.5	-0.25
11/4/2002	3.0	143.0	143.0	1.0	0.50
8/5/2002	3.0	142.0	142.0	-0.5	-0.25
5/6/2002	3.0	142.5	142.5	-0.5	-0.25
2/4/2002	3.0	143.0	143.0	0.0	0.00
11/6/2001	2.9	143.0	143.0	0.5	0.25
8/10/2001	3.1	142.5	142.5	-0.5	-0.25
5/7/2001	3.0	143.0	143.0	0.5	0.25
2/5/2001	3.0	142.5	142.5	-1.0	-0.50
11/6/2000	3.0	143.5	143.5	1.0	0.50
8/7/2000	3.0	142.5	142.5	-0.5	-0.25
5/9/2000	2.9	143.0	143.0	0.0	0.00
2/11/2000	0.7	143.0	143.0	0.0	0.00
1/22/2000	2.5	144.0	143.0	0.5	0.25
11/8/1999	3.0	143.5	143.5	0.5	0.25
8/9/1999	3.0	143.0	143.0	-0.5	-0.25
5/10/1999	3.0	143.5	143.5	0.0	0.00
2/8/1999	3.0	143.5	143.5	0.0	0.00
11/9/1998	1.3	143.5	143.5	0.5	0.25
9/30/1998	1.7	122.0	143.0	0.5	0.25
8/10/1998	3.0	121.5	121.5	-0.5	-0.25
5/12/1998	2.9	122.0	122.0	-2.0	-1.00

2/12/1998	3.0	124.0	124.0	1.0	0.50
11/11/1997	3.0	123.0	123.0	1.5	0.75
8/11/1997	1.4	121.5	121.5	-0.5	-0.25
6/30/1997	4.6	122.0	122.0	-3.0	-1.50
2/10/1997	3.0	125.0	125.0	0.5	0.25
11/11/1996	3.0	124.5	124.5	1.5	0.75
8/13/1996	2.7	123.0	123.0	-2.0	-1.00
5/24/1996	3.3	125.0	125.0	1.5	0.75
2/13/1996	3.0	123.5	123.5	-1.0	-0.50
11/13/1995	3.0	124.5	124.5	0.5	0.25
8/15/1995	3.0	124.0	124.0	0.0	0.00
5/15/1995	3.0	124.0	124.0	-0.5	-0.25
2/13/1995	3.0	124.5	124.5	1.0	0.50
11/15/1994	1.5	123.5	123.5	-1.0	-0.50
9/29/1994	1.5	124.5	124.5	0.5	0.25
8/15/1994	3.0	124.0	124.0	-0.5	-0.25
5/17/1994	3.0	124.5	124.5	0.5	0.25
2/15/1994	3.0	124.0	124.0	0.0	0.00
11/16/1993	3.0	124.0	124.0	0.0	0.00
8/17/1993	3.0	124.0	124.0	-1.0	-0.50
5/18/1993	2.9	125.0	125.0	-1.0	-0.50
2/19/1993	3.0	126.0	126.0	0.5	0.25
11/19/1992	3.0	125.5	125.5	1.0	0.50
8/18/1992	3.0	124.5	124.5	0.5	0.25
5/18/1992		124.0	124.0		

Basic Statistics for DPIS-2-119D

Average	$\bar{x}$	(psid)	0.0
Standard Deviation	s	(psid)	0.82
Variance	s^2	(psid)	0.68
Largest Positive Drift		(psid)	1.5
Largest Negative Drift		(psid)	-3.0
Number of Samples	n		68

Average	$\bar{x}$	(%)	-0.01
Standard Deviation	s	(%)	0.41
Largest Positive Drift		(%)	0.75
Largest Negative Drift		(%)	-1.50


Drift Trend Plot for DPIS-2-119D
Drift Value (psid)
2.0
0.0
-2.0
-4.0
4/6/1992
1/1/1995
9/27/1997
6/23/2000
3/20/2003
12/14/2005
9/9/2008
Date
DPIS-2-119D
+2s
-2s

Basic Statistics for Combined Data

Average	mean	(psid)	0.0
Standard Deviation	s	(psid)	0.88
Variance	s^2	(psid)	0.78
Largest Positive Drift		(psid)	4.5
Largest Negative Drift		(psid)	-4.5
Number of Samples	n		1094
Average	mean	(%)	0.00
Standard Deviation	s	(%)	0.44
Largest Positive Drift		(%)	2.25
Largest Negative Drift		(%)	-2.25

Outlier Test (t-Test) for Combined Data Set

Equipment ID	Calibration Interval (Months)	Drift (psid)	T	Outlier? YES/NO
DPIS-2-116A	3.0	0.1	0.10	NO
	2.7	-0.2	0.24	NO
	3.3	1.0	1.12	NO
	3.0	-0.8	0.92	NO
	2.9	-1.2	1.37	NO
	3.1	1.0	1.12	NO
	3.0	0.7	0.78	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.2	-0.5	0.58	NO
	3.0	0.3	0.33	NO
	3.0	0.0	0.01	NO
	1.7	0.0	0.01	NO
	1.2	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	1.4	-0.5	0.58	NO
	1.6	3.5	3.95	NO
	3.0	-3.0	3.41	NO
	3.0	0.5	0.56	NO
	3.0	-1.5	1.71	NO
	3.4	0.5	0.56	NO
	2.6	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	2.9	0.5	0.56	NO
	3.1	-0.5	0.58	NO
	3.0	1.5	1.69	NO
	3.0	-0.5	0.58	NO
	3.0	-2.0	2.27	NO
	3.0	1.5	1.69	NO
	2.9	-1.0	1.14	NO
	0.7	0.5	0.56	NO
	2.4	-1.5	1.71	NO
	3.0	0.0	0.01	NO
	3.0	4.0	4.52	YES
	3.0	-3.0	3.41	NO
	3.0	-1.0	1.14	NO

	1.3	1.5	1.69	NO
	1.7	-4.0	4.54	YES
	3.0	0.0	0.01	NO
	2.9	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	3.5	3.95	NO
	1.4	-4.5	5.11	YES
	4.6	4.0	4.52	YES
	3.0	-4.0	4.54	YES
	3.0	0.0	0.01	NO
	2.7	-2.0	2.27	NO
	3.3	3.0	3.39	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	1.6	-1.0	1.14	NO
	1.4	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	1.5	1.69	NO
	3.0	-1.0	1.14	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	2.9	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
DPIS-2-116B	3.0	-0.1	0.12	NO
	2.7	-0.5	0.58	NO
	3.3	1.1	1.24	NO
	3.0	-0.6	0.69	NO
	2.9	-0.9	1.03	NO
	3.1	1.1	1.24	NO
	3.0	0.5	0.56	NO
	3.0	-0.4	0.46	NO
	3.0	0.0	0.01	NO
	3.2	-0.4	0.46	NO
	3.0	1.1	1.24	NO
	3.0	-1.0	1.14	NO
	1.7	0.5	0.56	NO
	1.3	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO

3.0	-1.0	1.14	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
3.4	-0.5	0.58	NO
2.6	0.0	0.01	NO
3.0	1.0	1.12	NO
3.0	0.0	0.01	NO
3.0	-0.5	0.58	NO
3.0	-1.0	1.14	NO
3.0	1.0	1.12	NO
2.9	0.0	0.01	NO
3.1	-1.0	1.14	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.0	1.0	1.12	NO
3.0	-1.0	1.14	NO
2.9	-0.5	0.58	NO
0.7	0.5	0.56	NO
2.4	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
3.0	-0.5	0.58	NO
1.3	1.0	1.12	NO
1.7	0.3	0.33	NO
3.0	0.2	0.22	NO
2.9	-1.5	1.71	NO
3.0	1.0	1.12	NO
3.0	-0.5	0.58	NO
1.4	1.0	1.12	NO
4.6	-1.0	1.14	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
2.7	-1.0	1.14	NO
3.3	1.0	1.12	NO
3.0	-1.0	1.14	NO
3.0	1.5	1.69	NO
3.0	-0.5	0.58	NO
3.0	-0.5	0.58	NO
3.0	0.0	0.01	NO
1.5	0.5	0.56	NO
1.5	0.0	0.01	NO
3.0	-0.5	0.58	NO
3.0	1.0	1.12	NO
3.0	-0.5	0.58	NO

	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	2.9	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
DPIS-2-116C	3.0	-0.2	0.24	NO
	2.7	0.4	0.44	NO
	3.3	-0.2	0.24	NO
	3.0	-0.8	0.92	NO
	2.9	0.8	0.90	NO
	3.1	0.8	0.90	NO
	3.0	0.0	0.01	NO
	3.0	-1.1	1.26	NO
	3.0	0.0	0.01	NO
	3.2	1.0	1.12	NO
	3.0	0.4	0.44	NO
	3.0	-0.6	0.69	NO
	1.7	0.0	0.01	NO
	1.3	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.4	0.0	0.01	NO
	2.6	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	2.9	0.5	0.56	NO
	3.1	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	2.9	0.0	0.01	NO
	0.7	-0.2	0.24	NO
	2.4	1.2	1.35	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	0.0	0.01	NO

	3.0	0.0	0.01	NO
	1.3	1.0	1.12	NO
	1.7	0.0	0.01	NO
	3.0	0.0	0.01	NO
	2.9	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	1.4	-1.0	1.14	NO
	4.6	0.0	0.01	NO
	3.0	0.2	0.22	NO
	3.0	0.8	0.90	NO
	2.7	-1.5	1.71	NO
	3.3	1.5	1.69	NO
	3.0	-0.8	0.92	NO
	3.0	0.8	0.90	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	1.6	-0.5	0.58	NO
	1.4	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	2.9	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
DPIS-2-116D	3.0	-0.9	1.03	NO
	2.7	-0.3	0.35	NO
	3.3	1.0	1.12	NO
	3.0	-0.2	0.24	NO
	2.9	-1.4	1.60	NO
	3.1	1.3	1.46	NO
	3.0	0.3	0.33	NO
	3.0	-0.6	0.69	NO
	3.0	-0.1	0.12	NO
	3.2	-0.6	0.69	NO
	3.0	1.1	1.24	NO
	3.0	-0.1	0.12	NO
	1.6	0.0	0.01	NO
	1.3	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO

	3.0	-0.5	0.58	NO
	3.0	-1.0	1.14	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.4	0.5	0.56	NO
	2.6	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	2.9	1.5	1.69	NO
	3.1	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	2.9	0.5	0.56	NO
	0.7	-1.5	1.71	NO
	2.5	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	1.3	0.5	0.56	NO
	1.7	0.2	0.22	NO
	3.0	-0.2	0.24	NO
	2.9	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	1.4	-1.0	1.14	NO
	4.6	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	2.7	-2.0	2.27	NO
	3.3	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.5	0.5	0.56	NO
	1.5	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO

	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	-2.0	2.27	NO
	2.9	1.0	1.12	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
DPIS-2-117A	3.0	-0.5	0.58	NO
	2.7	-0.3	0.35	NO
	3.3	0.6	0.67	NO
	3.0	0.0	0.01	NO
	2.9	-0.5	0.58	NO
	3.1	0.2	0.22	NO
	3.0	0.2	0.22	NO
	3.0	-0.4	0.46	NO
	3.0	0.1	0.10	NO
	3.2	-0.9	1.03	NO
	3.0	0.9	1.01	NO
	3.0	0.5	0.56	NO
	1.7	-0.1	0.12	NO
	1.3	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.4	-0.5	0.58	NO
	2.6	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	2.9	1.0	1.12	NO
	3.1	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	2.9	0.2	0.22	NO
	0.7	-1.2	1.37	NO
	2.4	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO

	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	1.3	0.5	0.56	NO
	1.7	-0.4	0.46	NO
	3.0	0.4	0.44	NO
	2.9	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	1.4	-0.5	0.58	NO
	4.6	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	2.7	-1.5	1.71	NO
	3.3	1.0	1.12	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	-0.5	0.58	NO
	1.6	0.5	0.56	NO
	1.4	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	2.9	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
DPIS-2-117B	3.0	-2.0	2.27	NO
	2.7	-0.3	0.35	NO
	3.3	0.8	0.90	NO
	3.0	-0.4	0.46	NO
	2.9	-1.2	1.37	NO
	3.1	3.2	3.61	NO
	3.0	0.5	0.56	NO
	3.0	0.1	0.10	NO
	3.0	-1.2	1.37	NO
	3.2	-0.2	0.24	NO
	3.0	1.7	1.91	NO
	3.0	-0.1	0.12	NO
	1.7	1.0	1.12	NO
	1.3	-1.5	1.71	NO
	3.0	0.0	0.01	NO

3.0	-0.5	0.58	NO
3.0	-1.0	1.14	NO
3.0	-0.5	0.58	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.4	0.5	0.56	NO
2.6	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	-1.0	1.14	NO
3.0	1.0	1.12	NO
2.9	0.5	0.56	NO
3.1	-1.0	1.14	NO
1.2	1.5	1.69	NO
1.8	-1.5	1.71	NO
3.0	-0.5	0.58	NO
3.0	-0.5	0.58	NO
3.0	1.0	1.12	NO
2.9	1.0	1.12	NO
0.7	-0.5	0.58	NO
2.4	0.0	0.01	NO
3.0	1.0	1.12	NO
3.0	0.0	0.01	NO
3.0	-1.5	1.71	NO
3.0	1.5	1.69	NO
1.3	0.5	0.56	NO
1.7	4.5	5.09	YES
3.0	-0.5	0.58	NO
2.9	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
1.4	0.5	0.56	NO
4.6	-1.0	1.14	NO
3.0	0.0	0.01	NO
3.0	-0.5	0.58	NO
2.7	0.0	0.01	NO
3.3	1.0	1.12	NO
3.0	-0.3	0.35	NO
3.0	-0.2	0.24	NO
3.0	1.5	1.69	NO
3.0	-0.5	0.58	NO
3.0	-1.0	1.14	NO
1.5	0.5	0.56	NO
1.5	0.0	0.01	NO

	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	2.9	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
DPIS-2-117C	3.0	-0.6	0.69	NO
	2.7	0.1	0.10	NO
	3.3	0.5	0.56	NO
	3.0	-0.6	0.69	NO
	2.9	-0.6	0.69	NO
	3.1	0.8	0.90	NO
	3.0	0.4	0.44	NO
	3.0	-0.4	0.46	NO
	3.0	-0.2	0.24	NO
	3.2	-0.1	0.12	NO
	3.0	0.8	0.90	NO
	3.0	-0.3	0.35	NO
	1.7	0.0	0.01	NO
	1.3	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.4	0.44	NO
	3.0	-0.4	0.46	NO
	3.4	-0.5	0.58	NO
	2.6	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	2.9	0.5	0.56	NO
	3.1	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	2.9	0.0	0.01	NO
	0.7	-0.5	0.58	NO
	2.4	0.5	0.56	NO

	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	2.0	2.25	NO
	3.0	-2.0	2.27	NO
	1.3	1.0	1.12	NO
	1.7	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	2.9	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	1.4	-0.5	0.58	NO
	4.6	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	1.5	1.69	NO
	2.7	-2.5	2.84	NO
	3.3	0.5	0.56	NO
	3.0	0.3	0.33	NO
	3.0	2.2	2.48	NO
	3.0	-1.5	1.71	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.6	-0.5	0.58	NO
	1.4	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	2.9	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
DPIS-2-117D	3.0	-0.2	0.24	NO
	2.7	-0.6	0.69	NO
	3.3	1.4	1.57	NO
	2.9	-1.0	1.14	NO
	3.0	-1.1	1.26	NO
	3.1	0.3	0.33	NO
	3.0	2.4	2.71	NO
	3.0	-1.1	1.26	NO
	3.0	0.2	0.22	NO
	3.2	-0.7	0.80	NO
	3.0	1.7	1.91	NO
	3.0	-0.7	0.80	NO
	1.6	-1.5	1.71	NO

	1.3	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	2.0	2.25	NO
	3.0	-0.5	0.58	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.4	-1.0	1.14	NO
	2.6	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	1.5	1.69	NO
	3.0	-1.0	1.14	NO
	3.0	-0.5	0.58	NO
	3.0	-1.0	1.14	NO
	2.9	1.5	1.69	NO
	3.1	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	2.9	-0.5	0.58	NO
	0.7	-1.0	1.14	NO
	2.5	2.0	2.25	NO
	3.0	-1.5	1.71	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-1.5	1.71	NO
	1.3	0.0	0.01	NO
	1.7	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	2.9	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.4	-1.5	1.71	NO
	4.6	0.0	0.01	NO
	3.0	0.2	0.22	NO
	3.0	1.3	1.46	NO
	2.7	-2.0	2.27	NO
	3.3	1.5	1.69	NO
	3.0	-1.6	1.82	NO
	3.0	1.6	1.80	NO
	3.0	-0.5	0.58	NO
	3.0	-1.5	1.71	NO
	3.0	1.0	1.12	NO
	1.5	0.5	0.56	NO

	1.5	0.5	0.56	NO
	3.0	-1.5	1.71	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-1.5	1.71	NO
	2.9	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	1.0	1.12	NO
DPIS-2-118A	3.0	-0.3	0.35	NO
	2.7	-0.5	0.58	NO
	3.3	1.1	1.24	NO
	3.0	-0.3	0.35	NO
	2.9	-1.3	1.48	NO
	3.1	1.2	1.35	NO
	3.0	0.2	0.22	NO
	3.0	-0.1	0.12	NO
	3.0	-0.1	0.12	NO
	3.2	-0.4	0.46	NO
	3.0	1.5	1.69	NO
	3.0	-0.8	0.92	NO
	1.7	0.1	0.10	NO
	1.3	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	0.9	1.01	NO
	3.0	0.1	0.10	NO
	3.4	0.0	0.01	NO
	2.6	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	2.9	0.0	0.01	NO
	3.1	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	2.9	1.0	1.12	NO
	0.7	-1.5	1.71	NO

	2.4	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	1.3	1.0	1.12	NO
	1.7	0.0	0.01	NO
	3.0	0.0	0.01	NO
	2.9	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	1.4	-0.5	0.58	NO
	4.6	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	2.7	-1.5	1.71	NO
	3.3	1.5	1.69	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	1.6	0.0	0.01	NO
	1.4	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	2.9	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
DPIS-2-118B	3.0	0.0	0.01	NO
	2.7	-0.1	0.12	NO
	3.3	0.2	0.22	NO
	3.0	-0.2	0.24	NO
	2.9	-1.1	1.26	NO
	3.1	0.7	0.78	NO
	3.0	0.8	0.90	NO
	3.0	-0.6	0.69	NO
	3.0	0.1	0.10	NO
	3.2	-0.1	0.12	NO
	3.0	0.2	0.22	NO
	3.0	-0.3	0.35	NO

1.7	-0.2	0.24	NO
1.3	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.4	0.0	0.01	NO
2.6	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.0	-1.0	1.14	NO
3.0	1.0	1.12	NO
2.9	0.0	0.01	NO
3.1	-1.0	1.14	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
2.9	-1.5	1.71	NO
0.7	1.0	1.12	NO
2.4	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
1.3	0.5	0.56	NO
1.7	0.5	0.56	NO
3.0	-0.5	0.58	NO
2.9	-1.0	1.14	NO
3.0	-1.0	1.14	NO
3.0	1.5	1.69	NO
1.4	0.0	0.01	NO
4.6	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	0.5	0.56	NO
2.7	-1.5	1.71	NO
3.3	0.5	0.56	NO
3.0	1.0	1.12	NO
3.0	-0.5	0.58	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.0	0.01	NO

	1.5	0.0	0.01	NO
	1.5	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	2.9	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
DPIS-2-118C	3.0	0.1	0.10	NO
	2.7	0.6	0.67	NO
	3.3	0.3	0.33	NO
	3.0	0.0	0.01	NO
	2.9	-0.8	0.92	NO
	3.1	0.4	0.44	NO
	3.0	0.5	0.56	NO
	3.0	-0.6	0.69	NO
	3.0	0.4	0.44	NO
	3.2	-0.2	0.24	NO
	3.0	0.7	0.78	NO
	3.0	-0.3	0.35	NO
	1.7	-0.5	0.58	NO
	1.3	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.4	-0.5	0.58	NO
	2.6	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	2.9	0.5	0.56	NO
	3.1	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	2.9	0.0	0.01	NO

	0.7	-1.0	1.14	NO
	2.4	1.5	1.69	NO
	3.0	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	-0.3	0.35	NO
	3.0	-0.2	0.24	NO
	1.3	1.5	1.69	NO
	1.7	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	2.9	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	1.4	0.0	0.01	NO
	4.6	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	2.7	-1.5	1.71	NO
	3.3	0.5	0.56	NO
	3.0	0.1	0.10	NO
	3.0	1.4	1.57	NO
	3.0	-1.0	1.14	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	1.6	0.0	0.01	NO
	1.4	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	2.9	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
DPIS-2-118D	3.0	0.4	0.44	NO
	2.7	-0.6	0.69	NO
	3.3	0.0	0.01	NO
	2.9	0.1	0.10	NO
	3.0	0.1	0.10	NO
	3.1	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-0.9	1.03	NO
	3.0	0.2	0.22	NO
	3.2	-0.5	0.58	NO
	3.0	0.7	0.78	NO

3.0	-0.9	1.03	NO
1.6	0.5	0.56	NO
1.3	0.0	0.01	NO
3.0	-0.5	0.58	NO
3.0	1.0	1.12	NO
3.0	0.0	0.01	NO
3.0	-1.0	1.14	NO
3.0	0.5	0.56	NO
3.0	-1.0	1.14	NO
3.4	1.0	1.12	NO
2.6	0.0	0.01	NO
3.0	-1.0	1.14	NO
3.0	1.0	1.12	NO
3.0	-0.5	0.58	NO
3.0	-0.5	0.58	NO
3.0	0.0	0.01	NO
2.9	0.0	0.01	NO
3.1	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	-1.0	1.14	NO
2.9	0.0	0.01	NO
0.7	-1.0	1.14	NO
2.5	2.0	2.25	NO
3.0	-1.0	1.14	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	-1.0	1.14	NO
1.3	0.5	0.56	NO
1.7	0.5	0.56	NO
3.0	-0.5	0.58	NO
2.9	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	1.0	1.12	NO
1.4	-1.0	1.14	NO
4.6	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
2.7	-1.5	1.71	NO
3.3	0.0	0.01	NO
3.0	-1.5	1.71	NO
3.0	1.5	1.69	NO
3.0	1.0	1.12	NO
3.0	-1.0	1.14	NO

	3.0	1.0	1.12	NO
	1.5	-2.0	2.27	NO
	1.5	1.5	1.69	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	-3.5	3.97	NO
	3.0	2.0	2.25	NO
	2.9	2.0	2.25	NO
	3.0	0.5	0.56	NO
	3.0	-2.0	2.27	NO
	3.0	1.0	1.12	NO
DPIS-2-119A	3.0	-0.2	0.24	NO
	0.0	-0.1	0.12	NO
	2.7	-0.5	0.58	NO
	3.3	0.8	0.90	NO
	3.0	-0.9	1.03	NO
	2.9	0.1	0.10	NO
	3.1	0.6	0.67	NO
	3.0	0.2	0.22	NO
	3.0	0.0	0.01	NO
	3.0	-0.1	0.12	NO
	3.2	-0.8	0.92	NO
	3.0	1.5	1.69	NO
	3.0	-1.4	1.60	NO
	1.7	0.5	0.56	NO
	1.3	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.4	-0.5	0.58	NO
	1.6	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	1.3	1.46	NO
	3.0	-0.3	0.35	NO
	3.4	0.2	0.22	NO
	2.6	-0.7	0.80	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	-1.5	1.71	NO
	3.0	1.5	1.69	NO
	2.9	-0.5	0.58	NO
	3.1	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO

	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	2.9	1.0	1.12	NO
	0.7	-1.0	1.14	NO
	2.4	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	1.3	1.0	1.12	NO
	1.7	0.0	0.01	NO
	3.0	0.0	0.01	NO
	2.9	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.4	-1.0	1.14	NO
	4.6	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	2.7	-2.5	2.84	NO
	3.3	1.0	1.12	NO
	3.0	1.2	1.35	NO
	3.0	-0.7	0.80	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	1.6	0.0	0.01	NO
	1.4	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	1.0	1.12	NO
	3.0	-1.0	1.14	NO
	3.0	-1.0	1.14	NO
	2.9	0.0	0.01	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
DPIS-2-119B	3.0	-0.1	0.12	NO
	2.7	-0.5	0.58	NO
	3.3	1.1	1.24	NO
	3.0	-1.2	1.37	NO
	2.9	-0.5	0.58	NO
	3.1	0.8	0.90	NO
	3.0	0.7	0.78	NO
	3.0	-0.8	0.92	NO

3.0	0.4	0.44	NO
3.2	-0.5	0.58	NO
3.0	1.1	1.24	NO
3.0	-0.4	0.46	NO
1.6	-0.5	0.58	NO
1.3	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
3.0	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	-0.5	0.58	NO
3.4	0.5	0.56	NO
2.6	0.0	0.01	NO
0.3	-1.0	1.14	NO
2.7	3.5	3.95	NO
3.0	3.0	3.39	NO
3.0	4.0	4.52	YES
3.0	0.0	0.01	NO
3.0	-1.0	1.14	NO
2.9	1.5	1.69	NO
0.0	0.0	0.01	NO
3.1	0.5	0.56	NO
3.0	-1.0	1.14	NO
3.0	1.0	1.12	NO
3.0	1.0	1.12	NO
3.0	-1.0	1.14	NO
2.9	-0.5	0.58	NO
0.7	-0.5	0.58	NO
2.4	-0.5	0.58	NO
3.0	2.0	2.25	NO
3.0	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
1.3	0.5	0.56	NO
1.7	0.5	0.56	NO
3.0	-0.5	0.58	NO
2.9	-0.5	0.58	NO
3.0	0.5	0.56	NO
3.0	0.0	0.01	NO
1.4	0.0	0.01	NO
4.6	0.0	0.01	NO
3.0	0.0	0.01	NO
3.0	2.0	2.25	NO
2.7	-3.0	3.41	NO

	3.3	1.0	1.12	NO
	3.0	-0.3	0.35	NO
	3.0	0.3	0.33	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	1.5	0.0	0.01	NO
	1.5	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	3.0	1.5	1.69	NO
	3.0	-2.0	2.27	NO
	2.9	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
DPIS-2-119C	3.0	0.5	0.56	NO
	2.7	-0.4	0.46	NO
	3.3	0.7	0.78	NO
	3.0	0.9	1.01	NO
	2.9	-2.0	2.27	NO
	3.1	0.7	0.78	NO
	3.0	0.5	0.56	NO
	3.0	-0.3	0.35	NO
	3.0	0.0	0.01	NO
	3.2	-0.4	0.46	NO
	3.0	1.0	1.12	NO
	3.0	-0.6	0.69	NO
	1.7	0.0	0.01	NO
	1.3	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.4	0.0	0.01	NO
	2.6	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	2.9	0.0	0.01	NO

	3.1	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	2.9	-1.0	1.14	NO
	0.7	0.5	0.56	NO
	2.4	0.0	0.01	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	1.3	1.0	1.12	NO
	1.7	0.5	0.56	NO
	3.0	0.0	0.01	NO
	2.9	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.5	0.56	NO
	1.4	-1.0	1.14	NO
	4.6	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	1.0	1.12	NO
	2.7	-2.0	2.27	NO
	3.3	1.5	1.69	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	1.6	-0.5	0.58	NO
	1.4	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	2.9	-1.0	1.14	NO
	3.0	2.0	2.25	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
DPIS-2-119D	3.0	0.4	0.44	NO
	2.7	0.4	0.44	NO
	3.3	0.3	0.33	NO
	2.9	-0.8	0.92	NO
	3.0	-0.3	0.35	NO
	3.1	0.3	0.33	NO

	3.0	0.8	0.90	NO
	3.0	-0.9	1.03	NO
	3.0	0.1	0.10	NO
	3.2	-0.2	0.24	NO
	3.0	0.9	1.01	NO
	3.0	-0.4	0.46	NO
	1.6	-0.3	0.35	NO
	1.3	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.4	0.0	0.01	NO
	2.6	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	2.9	0.5	0.56	NO
	3.1	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	-1.0	1.14	NO
	3.0	1.0	1.12	NO
	3.0	-0.5	0.58	NO
	2.9	0.0	0.01	NO
	0.7	0.0	0.01	NO
	2.5	0.5	0.56	NO
	3.0	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	1.3	0.5	0.56	NO
	1.7	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	2.9	-2.0	2.27	NO
	3.0	1.0	1.12	NO
	3.0	1.5	1.69	NO
	1.4	-0.5	0.58	NO
	4.6	-3.0	3.41	NO
	3.0	0.5	0.56	NO
	3.0	1.5	1.69	NO
	2.7	-2.0	2.27	NO
	3.3	1.5	1.69	NO
	3.0	-1.0	1.14	NO

	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	-0.5	0.58	NO
	3.0	1.0	1.12	NO
	1.5	-1.0	1.14	NO
	1.5	0.5	0.56	NO
	3.0	-0.5	0.58	NO
	3.0	0.5	0.56	NO
	3.0	0.0	0.01	NO
	3.0	0.0	0.01	NO
	3.0	-1.0	1.14	NO
	2.9	-1.0	1.14	NO
	3.0	0.5	0.56	NO
	3.0	1.0	1.12	NO
	3.0	0.5	0.56	NO

Normality Test – D' Test

Data # (i)	Drift (psid)	Ti
1	-4.5	2459.3
2	-4.0	2182.0
3	-4.0	2178.0
4	-3.5	1902.3
5	-3.0	1627.5
6	-3.0	1624.5
7	-3.0	1621.5
8	-3.0	1618.5
9	-2.5	1346.3
10	-2.5	1343.8
11	-2.0	1073.0
12	-2.0	1071.0
13	-2.0	1069.0
14	-2.0	1067.0
15	-2.0	1065.0
16	-2.0	1063.0
17	-2.0	1061.0
18	-2.0	1059.0
19	-2.0	1057.0
20	-2.0	1055.0
21	-2.0	1053.0
22	-2.0	1051.0
23	-2.0	1049.0
24	-2.0	1047.0
25	-1.6	836.0
26	-1.5	782.3
27	-1.5	780.8
28	-1.5	779.3
29	-1.5	777.8
30	-1.5	776.3
31	-1.5	774.8
32	-1.5	773.3
33	-1.5	771.8
34	-1.5	770.3
35	-1.5	768.8
36	-1.5	767.3
37	-1.5	765.8
38	-1.5	764.3
39	-1.5	762.8
40	-1.5	761.3
41	-1.5	759.8
42	-1.5	758.3

43	-1.5	756.8
44	-1.5	755.3
45	-1.5	753.8
46	-1.5	752.3
47	-1.5	750.8
48	-1.5	749.3
49	-1.5	747.8
50	-1.5	746.3
51	-1.4	695.1
52	-1.4	693.7
53	-1.3	642.8
54	-1.2	592.2
55	-1.2	591.0
56	-1.2	589.8
57	-1.2	588.6
58	-1.2	587.4
59	-1.1	537.4
60	-1.1	536.2
61	-1.1	535.1
62	-1.1	534.0
63	-1.0	484.5
64	-1.0	483.5
65	-1.0	482.5
66	-1.0	481.5
67	-1.0	480.5
68	-1.0	479.5
69	-1.0	478.5
70	-1.0	477.5
71	-1.0	476.5
72	-1.0	475.5
73	-1.0	474.5
74	-1.0	473.5
75	-1.0	472.5
76	-1.0	471.5
77	-1.0	470.5
78	-1.0	469.5
79	-1.0	468.5
80	-1.0	467.5
81	-1.0	466.5
82	-1.0	465.5
83	-1.0	464.5
84	-1.0	463.5
85	-1.0	462.5
86	-1.0	461.5
87	-1.0	460.5
88	-1.0	459.5
89	-1.0	458.5

90	-1.0	457.5
91	-1.0	456.5
92	-1.0	455.5
93	-1.0	454.5
94	-1.0	453.5
95	-1.0	452.5
96	-1.0	451.5
97	-1.0	450.5
98	-1.0	449.5
99	-1.0	448.5
100	-1.0	447.5
101	-1.0	446.5
102	-1.0	445.5
103	-1.0	444.5
104	-1.0	443.5
105	-1.0	442.5
106	-1.0	441.5
107	-1.0	440.5
108	-1.0	439.5
109	-1.0	438.5
110	-1.0	437.5
111	-1.0	436.5
112	-1.0	435.5
113	-1.0	434.5
114	-1.0	433.5
115	-1.0	432.5
116	-1.0	431.5
117	-1.0	430.5
118	-1.0	429.5
119	-1.0	428.5
120	-1.0	427.5
121	-1.0	426.5
122	-1.0	425.5
123	-1.0	424.5
124	-1.0	423.5
125	-1.0	422.5
126	-1.0	421.5
127	-1.0	420.5
128	-1.0	419.5
129	-1.0	418.5
130	-1.0	417.5
131	-1.0	416.5
132	-1.0	415.5
133	-1.0	414.5
134	-1.0	413.5
135	-1.0	412.5
136	-1.0	411.5
137	-1.0	410.5

138	-1.0	409.5
139	-1.0	408.5
140	-1.0	407.5
141	-1.0	406.5
142	-1.0	405.5
143	-1.0	404.5
144	-1.0	403.5
145	-1.0	402.5
146	-1.0	401.5
147	-1.0	400.5
148	-1.0	399.5
149	-1.0	398.5
150	-1.0	397.5
151	-1.0	396.5
152	-1.0	395.5
153	-1.0	394.5
154	-1.0	393.5
155	-1.0	392.5
156	-1.0	391.5
157	-1.0	390.5
158	-1.0	389.5
159	-1.0	388.5
160	-1.0	387.5
161	-1.0	386.5
162	-1.0	385.5
163	-1.0	384.5
164	-1.0	383.5
165	-1.0	382.5
166	-1.0	381.5
167	-1.0	380.5
168	-1.0	379.5
169	-1.0	378.5
170	-0.9	339.8
171	-0.9	338.9
172	-0.9	338.0
173	-0.9	337.1
174	-0.9	336.2
175	-0.9	335.3
176	-0.9	334.4
177	-0.8	296.4
178	-0.8	295.6
179	-0.8	294.8
180	-0.8	294.0
181	-0.8	293.2
182	-0.8	292.4
183	-0.8	291.6
184	-0.8	290.8
185	-0.7	253.8

186	-0.7	253.0
187	-0.7	252.3
188	-0.7	251.6
189	-0.6	215.1
190	-0.6	214.5
191	-0.6	213.9
192	-0.6	213.3
193	-0.6	212.7
194	-0.6	212.1
195	-0.6	211.5
196	-0.6	210.9
197	-0.6	210.3
198	-0.6	209.7
199	-0.6	209.1
200	-0.6	208.5
201	-0.5	173.3
202	-0.5	172.8
203	-0.5	172.3
204	-0.5	171.8
205	-0.5	171.3
206	-0.5	170.8
207	-0.5	170.3
208	-0.5	169.8
209	-0.5	169.3
210	-0.5	168.8
211	-0.5	168.3
212	-0.5	167.8
213	-0.5	167.3
214	-0.5	166.8
215	-0.5	166.3
216	-0.5	165.8
217	-0.5	165.3
218	-0.5	164.8
219	-0.5	164.3
220	-0.5	163.8
221	-0.5	163.3
222	-0.5	162.8
223	-0.5	162.3
224	-0.5	161.8
225	-0.5	161.3
226	-0.5	160.8
227	-0.5	160.3
228	-0.5	159.8
229	-0.5	159.3
230	-0.5	158.8
231	-0.5	158.3
232	-0.5	157.8

233	-0.5	157.3
234	-0.5	156.8
235	-0.5	156.3
236	-0.5	155.8
237	-0.5	155.3
238	-0.5	154.8
239	-0.5	154.3
240	-0.5	153.8
241	-0.5	153.3
242	-0.5	152.8
243	-0.5	152.3
244	-0.5	151.8
245	-0.5	151.3
246	-0.5	150.8
247	-0.5	150.3
248	-0.5	149.8
249	-0.5	149.3
250	-0.5	148.8
251	-0.5	148.3
252	-0.5	147.8
253	-0.5	147.3
254	-0.5	146.8
255	-0.5	146.3
256	-0.5	145.8
257	-0.5	145.3
258	-0.5	144.8
259	-0.5	144.3
260	-0.5	143.8
261	-0.5	143.3
262	-0.5	142.8
263	-0.5	142.3
264	-0.5	141.8
265	-0.5	141.3
266	-0.5	140.8
267	-0.5	140.3
268	-0.5	139.8
269	-0.5	139.3
270	-0.5	138.8
271	-0.5	138.3
272	-0.5	137.8
273	-0.5	137.3
274	-0.5	136.8
275	-0.5	136.3
276	-0.5	135.8
277	-0.5	135.3
278	-0.5	134.8
279	-0.5	134.3

280	-0.5	133.8
281	-0.5	133.3
282	-0.5	132.8
283	-0.5	132.3
284	-0.5	131.8
285	-0.5	131.3
286	-0.5	130.8
287	-0.5	130.3
288	-0.5	129.8
289	-0.5	129.3
290	-0.5	128.8
291	-0.5	128.3
292	-0.5	127.8
293	-0.5	127.3
294	-0.5	126.8
295	-0.5	126.3
296	-0.5	125.8
297	-0.5	125.3
298	-0.5	124.8
299	-0.5	124.3
300	-0.5	123.8
301	-0.5	123.3
302	-0.5	122.8
303	-0.5	122.3
304	-0.5	121.8
305	-0.5	121.3
306	-0.5	120.8
307	-0.5	120.3
308	-0.5	119.8
309	-0.5	119.3
310	-0.5	118.8
311	-0.5	118.3
312	-0.5	117.8
313	-0.5	117.3
314	-0.5	116.8
315	-0.5	116.3
316	-0.5	115.8
317	-0.5	115.3
318	-0.5	114.8
319	-0.5	114.3
320	-0.5	113.8
321	-0.5	113.3
322	-0.5	112.8
323	-0.5	112.3
324	-0.5	111.8
325	-0.5	111.3
326	-0.5	110.8
327	-0.5	110.3

328	-0.5	109.8
329	-0.5	109.3
330	-0.5	108.8
331	-0.5	108.3
332	-0.5	107.8
333	-0.5	107.3
334	-0.5	106.8
335	-0.5	106.3
336	-0.5	105.8
337	-0.5	105.3
338	-0.5	104.8
339	-0.5	104.3
340	-0.5	103.8
341	-0.5	103.3
342	-0.5	102.8
343	-0.5	102.3
344	-0.5	101.8
345	-0.5	101.3
346	-0.5	100.8
347	-0.5	100.3
348	-0.5	99.8
349	-0.5	99.3
350	-0.5	98.8
351	-0.5	98.3
352	-0.5	97.8
353	-0.5	97.3
354	-0.5	96.8
355	-0.5	96.3
356	-0.5	95.8
357	-0.5	95.3
358	-0.5	94.8
359	-0.5	94.3
360	-0.5	93.8
361	-0.5	93.3
362	-0.5	92.8
363	-0.5	92.3
364	-0.5	91.8
365	-0.4	73.0
366	-0.4	72.6
367	-0.4	72.2
368	-0.4	71.8
369	-0.4	71.4
370	-0.4	71.0
371	-0.4	70.6
372	-0.4	70.2
373	-0.4	69.8
374	-0.4	69.4

375	-0.4	69.0
376	-0.4	68.6
377	-0.3	51.2
378	-0.3	50.9
379	-0.3	50.6
380	-0.3	50.3
381	-0.3	50.0
382	-0.3	49.7
383	-0.3	49.4
384	-0.3	49.1
385	-0.3	48.8
386	-0.3	48.4
387	-0.3	48.1
388	-0.3	47.8
389	-0.3	47.5
390	-0.3	47.2
391	-0.3	46.9
392	-0.2	31.1
393	-0.2	30.9
394	-0.2	30.7
395	-0.2	30.5
396	-0.2	30.3
397	-0.2	30.1
398	-0.2	29.9
399	-0.2	29.7
400	-0.2	29.5
401	-0.2	29.3
402	-0.2	29.1
403	-0.2	28.9
404	-0.2	28.7
405	-0.2	28.5
406	-0.2	28.3
407	-0.2	28.1
408	-0.1	14.0
409	-0.1	13.9
410	-0.1	13.7
411	-0.1	13.6
412	-0.1	13.5
413	-0.1	13.4
414	-0.1	13.3
415	-0.1	13.2
416	-0.1	13.1
417	-0.1	13.0
418	-0.1	12.9
419	-0.1	12.8
420	-0.1	12.7
421	0.0	0.0

422	0.0	0.0
423	0.0	0.0
424	0.0	0.0
425	0.0	0.0
426	0.0	0.0
427	0.0	0.0
428	0.0	0.0
429	0.0	0.0
430	0.0	0.0
431	0.0	0.0
432	0.0	0.0
433	0.0	0.0
434	0.0	0.0
435	0.0	0.0
436	0.0	0.0
437	0.0	0.0
438	0.0	0.0
439	0.0	0.0
440	0.0	0.0
441	0.0	0.0
442	0.0	0.0
443	0.0	0.0
444	0.0	0.0
445	0.0	0.0
446	0.0	0.0
447	0.0	0.0
448	0.0	0.0
449	0.0	0.0
450	0.0	0.0
451	0.0	0.0
452	0.0	0.0
453	0.0	0.0
454	0.0	0.0
455	0.0	0.0
456	0.0	0.0
457	0.0	0.0
458	0.0	0.0
459	0.0	0.0
460	0.0	0.0
461	0.0	0.0
462	0.0	0.0
463	0.0	0.0
464	0.0	0.0
465	0.0	0.0
466	0.0	0.0
467	0.0	0.0
468	0.0	0.0
469	0.0	0.0

470	0.0	0.0
471	0.0	0.0
472	0.0	0.0
473	0.0	0.0
474	0.0	0.0
475	0.0	0.0
476	0.0	0.0
477	0.0	0.0
478	0.0	0.0
479	0.0	0.0
480	0.0	0.0
481	0.0	0.0
482	0.0	0.0
483	0.0	0.0
484	0.0	0.0
485	0.0	0.0
486	0.0	0.0
487	0.0	0.0
488	0.0	0.0
489	0.0	0.0
490	0.0	0.0
491	0.0	0.0
492	0.0	0.0
493	0.0	0.0
494	0.0	0.0
495	0.0	0.0
496	0.0	0.0
497	0.0	0.0
498	0.0	0.0
499	0.0	0.0
500	0.0	0.0
501	0.0	0.0
502	0.0	0.0
503	0.0	0.0
504	0.0	0.0
505	0.0	0.0
506	0.0	0.0
507	0.0	0.0
508	0.0	0.0
509	0.0	0.0
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511	0.0	0.0
512	0.0	0.0
513	0.0	0.0
514	0.0	0.0
515	0.0	0.0
516	0.0	0.0

517	0.0	0.0
518	0.0	0.0
519	0.0	0.0
520	0.0	0.0
521	0.0	0.0
522	0.0	0.0
523	0.0	0.0
524	0.0	0.0
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526	0.0	0.0
527	0.0	0.0
528	0.0	0.0
529	0.0	0.0
530	0.0	0.0
531	0.0	0.0
532	0.0	0.0
533	0.0	0.0
534	0.0	0.0
535	0.0	0.0
536	0.0	0.0
537	0.0	0.0
538	0.0	0.0
539	0.0	0.0
540	0.0	0.0
541	0.0	0.0
542	0.0	0.0
543	0.0	0.0
544	0.0	0.0
545	0.0	0.0
546	0.0	0.0
547	0.0	0.0
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555	0.0	0.0
556	0.0	0.0
557	0.0	0.0
558	0.0	0.0
559	0.0	0.0
560	0.0	0.0
561	0.0	0.0
562	0.0	0.0
563	0.0	0.0

564	0.0	0.0
565	0.0	0.0
566	0.0	0.0
567	0.0	0.0
568	0.0	0.0
569	0.0	0.0
570	0.0	0.0
571	0.0	0.0
572	0.0	0.0
573	0.0	0.0
574	0.0	0.0
575	0.0	0.0
576	0.0	0.0
577	0.0	0.0
578	0.0	0.0
579	0.0	0.0
580	0.0	0.0
581	0.0	0.0
582	0.0	0.0
583	0.0	0.0
584	0.0	0.0
585	0.0	0.0
586	0.0	0.0
587	0.0	0.0
588	0.0	0.0
589	0.0	0.0
590	0.0	0.0
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610	0.0	0.0
611	0.0	0.0

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613	0.0	0.0
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615	0.0	0.0
616	0.0	0.0
617	0.0	0.0
618	0.0	0.0
619	0.0	0.0
620	0.0	0.0
621	0.0	0.0
622	0.0	0.0
623	0.0	0.0
624	0.0	0.0
625	0.0	0.0
626	0.0	0.0
627	0.0	0.0
628	0.0	0.0
629	0.0	0.0
630	0.0	0.0
631	0.0	0.0
632	0.0	0.0
633	0.0	0.0
634	0.0	0.0
635	0.0	0.0
636	0.0	0.0
637	0.0	0.0
638	0.0	0.0
639	0.0	0.0
640	0.0	0.0
641	0.0	0.0
642	0.0	0.0
643	0.0	0.0
644	0.0	0.0
645	0.0	0.0
646	0.0	0.0
647	0.0	0.0
648	0.0	0.0
649	0.0	0.0
650	0.0	0.0
651	0.0	0.0
652	0.0	0.0
653	0.0	0.0
654	0.0	0.0
655	0.0	0.0
656	0.0	0.0
657	0.0	0.0
658	0.0	0.0

659	0.0	0.0
660	0.0	0.0
661	0.1	11.3
662	0.1	11.4
663	0.1	11.5
664	0.1	11.6
665	0.1	11.7
666	0.1	11.8
667	0.1	11.9
668	0.1	12.0
669	0.1	12.1
670	0.1	12.2
671	0.1	12.3
672	0.1	12.4
673	0.1	12.6
674	0.2	25.3
675	0.2	25.5
676	0.2	25.7
677	0.2	25.9
678	0.2	26.1
679	0.2	26.3
680	0.2	26.5
681	0.2	26.7
682	0.2	26.9
683	0.2	27.1
684	0.2	27.3
685	0.2	27.5
686	0.2	27.7
687	0.2	27.9
688	0.3	42.1
689	0.3	42.4
690	0.3	42.7
691	0.3	43.1
692	0.3	43.4
693	0.3	43.7
694	0.3	44.0
695	0.3	44.3
696	0.3	44.6
697	0.4	59.8
698	0.4	60.2
699	0.4	60.6
700	0.4	61.0
701	0.4	61.4
702	0.4	61.8
703	0.4	62.2
704	0.4	62.6
705	0.4	63.0

706	0.4	63.4
707	0.4	63.8
708	0.5	80.3
709	0.5	80.8
710	0.5	81.3
711	0.5	81.8
712	0.5	82.3
713	0.5	82.8
714	0.5	83.3
715	0.5	83.8
716	0.5	84.3
717	0.5	84.8
718	0.5	85.3
719	0.5	85.8
720	0.5	86.3
721	0.5	86.8
722	0.5	87.3
723	0.5	87.8
724	0.5	88.3
725	0.5	88.8
726	0.5	89.3
727	0.5	89.8
728	0.5	90.3
729	0.5	90.8
730	0.5	91.3
731	0.5	91.8
732	0.5	92.3
733	0.5	92.8
734	0.5	93.3
735	0.5	93.8
736	0.5	94.3
737	0.5	94.8
738	0.5	95.3
739	0.5	95.8
740	0.5	96.3
741	0.5	96.8
742	0.5	97.3
743	0.5	97.8
744	0.5	98.3
745	0.5	98.8
746	0.5	99.3
747	0.5	99.8
748	0.5	100.3
749	0.5	100.8
750	0.5	101.3
751	0.5	101.8
752	0.5	102.3
753	0.5	102.8

754	0.5	103.3
755	0.5	103.8
756	0.5	104.3
757	0.5	104.8
758	0.5	105.3
759	0.5	105.8
760	0.5	106.3
761	0.5	106.8
762	0.5	107.3
763	0.5	107.8
764	0.5	108.3
765	0.5	108.8
766	0.5	109.3
767	0.5	109.8
768	0.5	110.3
769	0.5	110.8
770	0.5	111.3
771	0.5	111.8
772	0.5	112.3
773	0.5	112.8
774	0.5	113.3
775	0.5	113.8
776	0.5	114.3
777	0.5	114.8
778	0.5	115.3
779	0.5	115.8
780	0.5	116.3
781	0.5	116.8
782	0.5	117.3
783	0.5	117.8
784	0.5	118.3
785	0.5	118.8
786	0.5	119.3
787	0.5	119.8
788	0.5	120.3
789	0.5	120.8
790	0.5	121.3
791	0.5	121.8
792	0.5	122.3
793	0.5	122.8
794	0.5	123.3
795	0.5	123.8
796	0.5	124.3
797	0.5	124.8
798	0.5	125.3
799	0.5	125.8
800	0.5	126.3
801	0.5	126.8

802	0.5	127.3
803	0.5	127.8
804	0.5	128.3
805	0.5	128.8
806	0.5	129.3
807	0.5	129.8
808	0.5	130.3
809	0.5	130.8
810	0.5	131.3
811	0.5	131.8
812	0.5	132.3
813	0.5	132.8
814	0.5	133.3
815	0.5	133.8
816	0.5	134.3
817	0.5	134.8
818	0.5	135.3
819	0.5	135.8
820	0.5	136.3
821	0.5	136.8
822	0.5	137.3
823	0.5	137.8
824	0.5	138.3
825	0.5	138.8
826	0.5	139.3
827	0.5	139.8
828	0.5	140.3
829	0.5	140.8
830	0.5	141.3
831	0.5	141.8
832	0.5	142.3
833	0.5	142.8
834	0.5	143.3
835	0.5	143.8
836	0.5	144.3
837	0.5	144.8
838	0.5	145.3
839	0.5	145.8
840	0.5	146.3
841	0.5	146.8
842	0.5	147.3
843	0.5	147.8
844	0.5	148.3
845	0.5	148.8
846	0.5	149.3
847	0.5	149.8
848	0.5	150.3

849	0.5	150.8
850	0.5	151.3
851	0.5	151.8
852	0.5	152.3
853	0.5	152.8
854	0.5	153.3
855	0.5	153.8
856	0.5	154.3
857	0.5	154.8
858	0.5	155.3
859	0.5	155.8
860	0.5	156.3
861	0.5	156.8
862	0.5	157.3
863	0.5	157.8
864	0.5	158.3
865	0.5	158.8
866	0.5	159.3
867	0.5	159.8
868	0.5	160.3
869	0.5	160.8
870	0.5	161.3
871	0.5	161.8
872	0.5	162.3
873	0.5	162.8
874	0.5	163.3
875	0.5	163.8
876	0.5	164.3
877	0.5	164.8
878	0.5	165.3
879	0.5	165.8
880	0.5	166.3
881	0.5	166.8
882	0.5	167.3
883	0.5	167.8
884	0.5	168.3
885	0.5	168.8
886	0.5	169.3
887	0.5	169.8
888	0.5	170.3
889	0.5	170.8
890	0.5	171.3
891	0.5	171.8
892	0.5	172.3
893	0.5	172.8
894	0.5	173.3
895	0.5	173.8
896	0.5	174.3

897	0.5	174.8
898	0.5	175.3
899	0.5	175.8
900	0.5	176.3
901	0.5	176.8
902	0.5	177.3
903	0.5	177.8
904	0.5	178.3
905	0.5	178.8
906	0.5	179.3
907	0.6	215.7
908	0.6	216.3
909	0.6	216.9
910	0.7	253.7
911	0.7	254.4
912	0.7	255.1
913	0.7	255.8
914	0.7	256.6
915	0.7	257.3
916	0.7	258.0
917	0.8	295.6
918	0.8	296.4
919	0.8	297.2
920	0.8	298.0
921	0.8	298.8
922	0.8	299.6
923	0.8	300.4
924	0.8	301.2
925	0.8	302.0
926	0.8	302.8
927	0.8	303.6
928	0.9	342.4
929	0.9	343.4
930	0.9	344.3
931	0.9	345.2
932	1.0	384.5
933	1.0	385.5
934	1.0	386.5
935	1.0	387.5
936	1.0	388.5
937	1.0	389.5
938	1.0	390.5
939	1.0	391.5
940	1.0	392.5
941	1.0	393.5
942	1.0	394.5
943	1.0	395.5
944	1.0	396.5

945	1.0	397.5
946	1.0	398.5
947	1.0	399.5
948	1.0	400.5
949	1.0	401.5
950	1.0	402.5
951	1.0	403.5
952	1.0	404.5
953	1.0	405.5
954	1.0	406.5
955	1.0	407.5
956	1.0	408.5
957	1.0	409.5
958	1.0	410.5
959	1.0	411.5
960	1.0	412.5
961	1.0	413.5
962	1.0	414.5
963	1.0	415.5
964	1.0	416.5
965	1.0	417.5
966	1.0	418.5
967	1.0	419.5
968	1.0	420.5
969	1.0	421.5
970	1.0	422.5
971	1.0	423.5
972	1.0	424.5
973	1.0	425.5
974	1.0	426.5
975	1.0	427.5
976	1.0	428.5
977	1.0	429.5
978	1.0	430.5
979	1.0	431.5
980	1.0	432.5
981	1.0	433.5
982	1.0	434.5
983	1.0	435.5
984	1.0	436.5
985	1.0	437.5
986	1.0	438.5
987	1.0	439.5
988	1.0	440.5
989	1.0	441.5
990	1.0	442.5
991	1.0	443.5

992	1.0	444.5
993	1.0	445.5
994	1.0	446.5
995	1.0	447.5
996	1.0	448.5
997	1.0	449.5
998	1.0	450.5
999	1.0	451.5
1000	1.0	452.5
1001	1.0	453.5
1002	1.0	454.5
1003	1.0	455.5
1004	1.0	456.5
1005	1.0	457.5
1006	1.0	458.5
1007	1.0	459.5
1008	1.0	460.5
1009	1.0	461.5
1010	1.0	462.5
1011	1.0	463.5
1012	1.0	464.5
1013	1.0	465.5
1014	1.0	466.5
1015	1.0	467.5
1016	1.0	468.5
1017	1.0	469.5
1018	1.0	470.5
1019	1.0	471.5
1020	1.0	472.5
1021	1.0	473.5
1022	1.0	474.5
1023	1.0	475.5
1024	1.0	476.5
1025	1.0	477.5
1026	1.0	478.5
1027	1.1	527.4
1028	1.1	528.5
1029	1.1	529.6
1030	1.1	530.7
1031	1.1	531.8
1032	1.1	532.9
1033	1.1	534.0
1034	1.2	583.8
1035	1.2	585.0
1036	1.2	586.2
1037	1.3	636.3
1038	1.3	637.7
1039	1.3	639.0

1040	1.4	689.5
1041	1.4	690.9
1042	1.5	741.8
1043	1.5	743.3
1044	1.5	744.8
1045	1.5	746.3
1046	1.5	747.8
1047	1.5	749.3
1048	1.5	750.8
1049	1.5	752.3
1050	1.5	753.8
1051	1.5	755.3
1052	1.5	756.8
1053	1.5	758.3
1054	1.5	759.8
1055	1.5	761.3
1056	1.5	762.8
1057	1.5	764.3
1058	1.5	765.8
1059	1.5	767.3
1060	1.5	768.8
1061	1.5	770.3
1062	1.5	771.8
1063	1.5	773.3
1064	1.5	774.8
1065	1.5	776.3
1066	1.5	777.8
1067	1.5	779.3
1068	1.5	780.8
1069	1.5	782.3
1070	1.5	783.8
1071	1.6	837.6
1072	1.7	891.6
1073	1.7	893.3
1074	2.0	1053.0
1075	2.0	1055.0
1076	2.0	1057.0
1077	2.0	1059.0
1078	2.0	1061.0
1079	2.0	1063.0
1080	2.0	1065.0
1081	2.0	1067.0
1082	2.0	1069.0
1083	2.2	1178.1
1084	2.4	1287.6
1085	3.0	1612.5
1086	3.0	1615.5
1087	3.2	1726.4

1088	3.5	1891.8
1089	3.5	1895.3
1090	3.5	1898.8
1091	4.0	2174.0
1092	4.0	2178.0
1093	4.0	2182.0
1094	4.5	2459.3

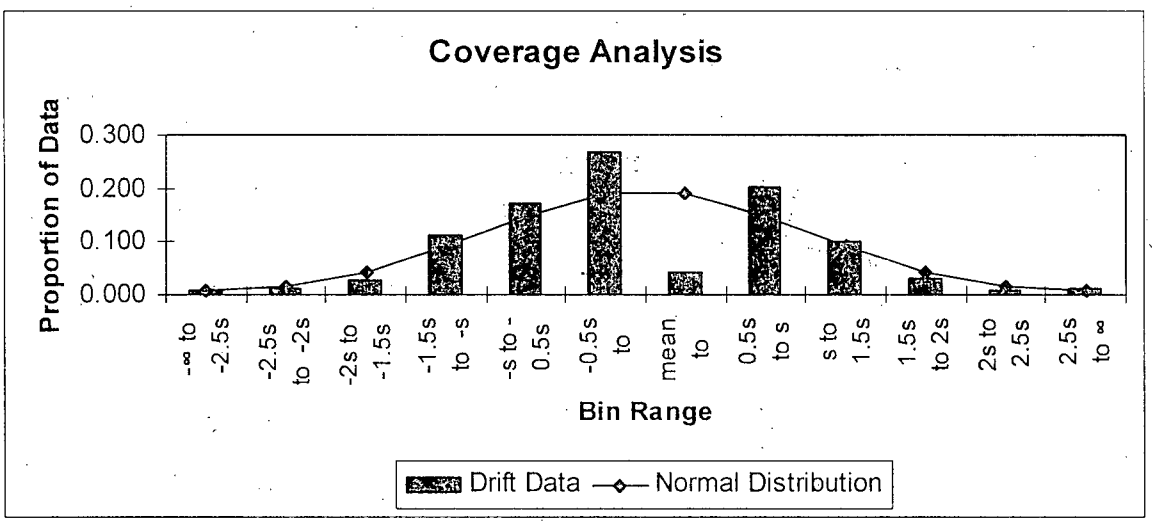
D' Test Analysis

D' Test		
S^2	852.5	
Total (n)	1094	
T	278877.9	
95% Significance Limits	9833.6	9959.7
D'	9551.5	

Since the result of the D' test show the calculated value of D' is outside the 95% significance interval, the assumption of normality is rejected. According to this statistical test, the data set does not fall under the criteria of a normal distribution.

Normality Test – Coverage Analysis

Bin #	Bin Range	# Per Bin	% Per Bin	Normal Distribution
1	-∞ to -2.5s	10	0.009	0.0062
2	-2.5s to -2s	14	0.013	0.0166
3	-2s to -1.5s	28	0.026	0.0440
4	-1.5s to -s	124	0.113	0.0919
5	-s to -0.5s	188	0.172	0.1498
6	-0.5s to $\bar{x}$	296	0.271	0.1915
7	$\bar{x}$ to 0.5s	47	0.043	0.1915
8	0.5s to s	220	0.201	0.1498
9	s to 1.5s	112	0.102	0.0919
10	1.5s to 2s	34	0.031	0.0440
11	2s to 2.5s	10	0.009	0.0166
12	2.5s to ∞	11	0.010	0.0062



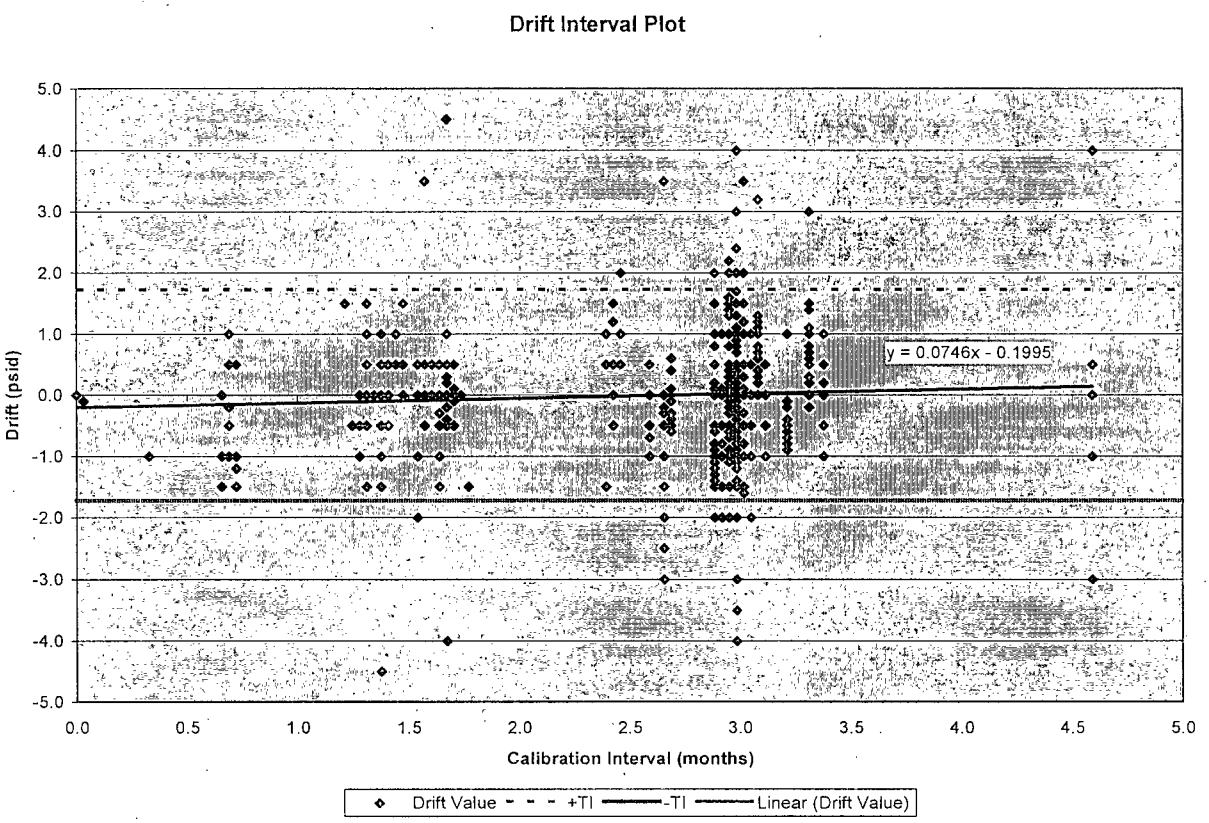
Of the 1094 data points, 1049 are found within 2 standard deviations of the mean. This is approximately equal to 95.9% of the data.

Drift Tolerance Interval (TI)

95%/95%
Tolarance
Interval

TI = s * TIF * NAF	
s =	0.88
TIF =	1.96
NAF =	1
TI =	**1.73**

Time Dependency Testing – Drift Interval Plot



Time Dependency Testing – Binning Analysis

1		2		3	
0 to 1.25 months		> 1.25 to 3.75 months		> 3.75 to 7.5 months	
CI (Months)	Drift (psid)	CI (Months)	Drift (psid)	CI (Months)	Drift (psid)
0.0	0.0	1.3	-0.5	4.6	4.0
0.0	-0.1	1.3	-0.5	4.6	-1.0
0.3	-1.0	1.3	-0.5	4.6	0.0
0.7	-1.5	1.3	-0.5	4.6	0.0
0.7	-1.0	1.3	-1.0	4.6	0.5
0.7	-1.0	1.3	-0.5	4.6	-1.0
0.7	0.0	1.3	0.0	4.6	0.0
0.7	0.5	1.3	1.5	4.6	0.0
0.7	-0.2	1.3	1.0	4.6	0.0
0.7	-0.5	1.3	1.0	4.6	0.0
0.7	-0.5	1.3	0.5	4.6	0.0
0.7	1.0	1.3	0.5	4.6	0.0
0.7	-1.0	1.3	-1.5	4.6	0.0
0.7	-0.5	1.3	0.5	4.6	0.0
0.7	0.5	1.3	1.0	4.6	0.0
0.7	0.5	1.3	0.0	4.6	-3.0
0.7	-1.2	1.3	1.0		
0.7	-1.5	1.3	0.0		
0.7	-1.0	1.3	0.5		
1.2	1.5	1.3	1.5		
1.2	-0.5	1.3	0.5		
		1.3	1.0		
		1.3	0.5		
		1.3	-0.5		
		1.3	1.0		
		1.3	0.5		
		1.3	0.0		
		1.3	0.0		
		1.3	0.0		
		1.3	0.0		
		1.3	0.0		
		1.4	-4.5		
		1.4	0.5		
		1.4	1.0		
		1.4	-1.0		
		1.4	-1.0		
		1.4	-0.5		
		1.4	0.5		
		1.4	-0.5		
		1.4	-1.5		

		1.4	-0.5		
		1.4	0.0		
		1.4	0.0		
		1.4	-1.0		
		1.4	-1.0		
		1.4	0.0		
		1.4	-1.0		
		1.4	-0.5		
		1.4	-0.5		
		1.4	0.5		
		1.4	0.0		
		1.4	-0.5		
		1.4	0.5		
		1.4	0.5		
		1.4	0.5		
		1.4	1.0		
		1.4	0.5		
		1.5	0.0		
		1.5	0.0		
		1.5	0.0		
		1.5	0.5		
		1.5	0.5		
		1.5	1.5		
		1.5	0.0		
		1.5	0.5		
		1.5	0.5		
		1.5	0.5		
		1.5	0.5		
		1.5	0.5		
		1.5	0.0		
		1.5	-2.0		
		1.5	0.0		
		1.5	-1.0		
		1.6	3.5		
		1.6	-0.5		
		1.6	-0.5		
		1.6	0.0		
		1.6	0.5		
		1.6	-0.5		
		1.6	0.5		
		1.6	0.0		
		1.6	0.0		
		1.6	-1.0		
		1.6	0.0		
		1.6	-1.5		
		1.6	0.5		
		1.6	-0.5		
		1.6	-0.3		

		1.7	-4.0		
		1.7	0.3		
		1.7	0.0		
		1.7	0.2		
		1.7	-0.4		
		1.7	1.0		
		1.7	4.5		
		1.7	-0.5		
		1.7	0.5		
		1.7	0.0		
		1.7	-0.2		
		1.7	0.5		
		1.7	0.5		
		1.7	0.5		
		1.7	0.0		
		1.7	0.5		
		1.7	0.0		
		1.7	0.5		
		1.7	0.5		
		1.7	0.5		
		1.7	0.0		
		1.7	-0.1		
		1.7	0.0		
		1.7	0.1		
		1.7	-0.5		
		1.7	0.5		
		1.7	0.0		
		1.8	-1.5		
		2.4	-1.5		
		2.4	0.5		
		2.4	0.5		
		2.4	1.0		
		2.4	-0.5		
		2.4	1.2		
		2.4	0.0		
		2.4	0.5		
		2.4	0.0		
		2.4	1.5		
		2.4	-0.5		
		2.4	0.0		
		2.5	1.0		
		2.5	2.0		
		2.5	2.0		
		2.5	0.5		
		2.6	-1.0		
		2.6	0.0		
		2.6	0.5		
		2.6	0.0		

		2.6	0.0		
		2.6	-0.5		
		2.6	-0.5		
		2.6	0.0		
		2.6	0.5		
		2.6	0.0		
		2.6	-1.0		
		2.6	0.0		
		2.6	-0.7		
		2.6	0.0		
		2.6	-0.5		
		2.6	0.0		
		2.7	-0.2		
		2.7	-2.0		
		2.7	-1.0		
		2.7	-1.5		
		2.7	-2.0		
		2.7	-0.3		
		2.7	-1.5		
		2.7	0.0		
		2.7	-2.5		
		2.7	-2.0		
		2.7	-0.5		
		2.7	-1.5		
		2.7	-1.5		
		2.7	-1.5		
		2.7	-1.5		
		2.7	-0.5		
		2.7	-2.5		
		2.7	3.5		
		2.7	-3.0		
		2.7	-2.0		
		2.7	-2.0		
		2.7	-0.5		
		2.7	0.4		
		2.7	-0.3		
		2.7	-0.3		
		2.7	0.1		
		2.7	-0.6		
		2.7	-0.1		
		2.7	0.6		
		2.7	-0.6		
		2.7	-0.5		
		2.7	-0.4		
		2.7	0.4		
		2.9	-1.2		
		2.9	0.5		
		2.9	-1.0		

		2.9	-1.0		
		2.9	-0.9		
		2.9	0.0		
		2.9	-0.5		
		2.9	0.0		
		2.9	0.8		
		2.9	0.5		
		2.9	0.0		
		2.9	0.0		
		2.9	-1.4		
		2.9	1.5		
		2.9	0.5		
		2.9	1.0		
		2.9	-0.5		
		2.9	1.0		
		2.9	0.2		
		2.9	-1.0		
		2.9	-1.2		
		2.9	0.5		
		2.9	1.0		
		2.9	-1.0		
		2.9	-0.6		
		2.9	0.5		
		2.9	0.0		
		2.9	-0.5		
		2.9	1.5		
		2.9	-0.5		
		2.9	1.0		
		2.9	-1.3		
		2.9	0.0		
		2.9	1.0		
		2.9	-0.5		
		2.9	-1.1		
		2.9	0.0		
		2.9	-1.5		
		2.9	-1.0		
		2.9	-0.8		
		2.9	0.5		
		2.9	0.0		
		2.9	-1.0		
		2.9	0.0		
		2.9	0.0		
		2.9	2.0		
		2.9	0.1		
		2.9	-0.5		
		2.9	1.0		
		2.9	0.0		
		2.9	-0.5		

		2.9	1.5		
		2.9	-0.5		
		2.9	0.0		
		2.9	-2.0		
		2.9	0.0		
		2.9	-1.0		
		2.9	-1.0		
		2.9	0.5		
		2.9	0.0		
		2.9	-1.0		
		2.9	-0.5		
		2.9	-1.5		
		2.9	-1.0		
		2.9	0.0		
		2.9	0.0		
		2.9	0.0		
		2.9	-1.0		
		2.9	-1.0		
		2.9	1.0		
		2.9	0.0		
		2.9	-1.0		
		2.9	0.0		
		2.9	0.1		
		2.9	-0.5		
		2.9	-0.5		
		2.9	-0.5		
		2.9	-0.5		
		2.9	-0.8		
		2.9	-2.0		
		3.0	0.5		
		3.0	1.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	-0.1		
		3.0	1.0		
		3.0	-1.0		
		3.0	0.2		
		3.0	0.0		
		3.0	1.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.2		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		

		3.0	0.8		
		3.0	0.8		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.9		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.2		
		3.0	1.0		
		3.0	0.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.4		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.5		
		3.0	-2.0		
		3.0	1.0		
		3.0	1.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	-0.2		
		3.0	-1.0		
		3.0	0.0		
		3.0	-0.6		
		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	1.5		
		3.0	2.2		
		3.0	1.0		
		3.0	-0.5		
		3.0	-0.2		
		3.0	-1.1		
		3.0	-1.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	1.3		
		3.0	1.6		
		3.0	1.0		
		3.0	-1.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	1.0		

		3.0	1.0		
		3.0	1.0		
		3.0	-1.0		
		3.0	0.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.1		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.5		
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		3.0	0.0		
		3.0	-0.5		
		3.0	0.4		
		3.0	0.1		
		3.0	0.0		
		3.0	-1.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	1.5		
		3.0	1.0		
		3.0	1.0		
		3.0	-0.2		
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		3.0	-1.0		
		3.0	-0.1		
		3.0	-1.0		
		3.0	-1.0		
		3.0	-0.5		
		3.0	2.0		
		3.0	0.3		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		

		3.0	1.0		
		3.0	1.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.4		
		3.0	-0.3		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	1.5		
		3.0	0.5		
		3.0	1.0		
		3.0	-0.5		
		3.0	0.1		
		3.0	-0.8		
		3.0	0.7		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.3		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-3.0		
		3.0	0.5		
		3.0	-1.5		
		3.0	1.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	-0.5		
		3.0	1.5		
		3.0	-0.5		
		3.0	-2.0		
		3.0	0.0		
		3.0	4.0		
		3.0	-3.0		
		3.0	-1.0		
		3.0	-4.0		
		3.0	0.5		
		3.0	1.5		
		3.0	-1.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.6		
		3.0	0.5		
		3.0	-0.4		
		3.0	0.0		
		3.0	1.1		
		3.0	-1.0		

		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	1.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.8		
		3.0	0.0		
		3.0	-1.1		
		3.0	0.0		
		3.0	0.4		
		3.0	-0.6		
		3.0	0.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.2		
		3.0	-0.5		

		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.2		
		3.0	0.3		
		3.0	-0.6		
		3.0	-0.1		
		3.0	1.1		
		3.0	-0.1		
		3.0	-0.5		
		3.0	1.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	-2.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.2		
		3.0	-0.4		
		3.0	0.1		
		3.0	0.9		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		

		3.0	0.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	-1.0		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	-0.4		
		3.0	0.5		
		3.0	0.1		
		3.0	-1.2		
		3.0	1.7		
		3.0	-0.1		
		3.0	0.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	-1.5		
		3.0	1.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-0.6		
		3.0	0.4		
		3.0	-0.4		
		3.0	-0.2		
		3.0	0.8		

		3.0	-0.3		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.4		
		3.0	-0.4		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	2.0		
		3.0	-2.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	1.0		
		3.0	-1.0		
		3.0	2.4		
		3.0	-1.1		
		3.0	0.2		
		3.0	1.7		
		3.0	-0.7		
		3.0	-0.5		
		3.0	2.0		
		3.0	-0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.5		
		3.0	1.5		
		3.0	-1.0		
		3.0	-0.5		
		3.0	1.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	-1.5		
		3.0	0.5		
		3.0	0.5		
		3.0	-1.5		
		3.0	0.2		
		3.0	-1.5		

		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.5		
		3.0	-0.3		
		3.0	-0.3		
		3.0	0.2		
		3.0	-0.1		
		3.0	-0.1		
		3.0	1.5		
		3.0	-0.8		
		3.0	0.0		
		3.0	0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.9		
		3.0	0.1		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	1.0		
		3.0	-1.0		
		3.0	-1.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.2		
		3.0	0.8		
		3.0	-0.6		
		3.0	0.1		
		3.0	0.2		
		3.0	-0.3		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		

		3.0	-0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.6		
		3.0	0.4		
		3.0	0.7		
		3.0	-0.3		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.5		
		3.0	-0.3		
		3.0	-0.2		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.9		
		3.0	0.2		
		3.0	0.7		

		3.0	-0.9		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	-1.0		
		3.0	0.5		
		3.0	-3.5		
		3.0	2.0		
		3.0	-0.9		
		3.0	0.2		
		3.0	0.0		
		3.0	-0.1		
		3.0	1.5		
		3.0	-1.4		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.5		
		3.0	1.3		
		3.0	-0.3		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-1.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		

		3.0	0.5		
		3.0	1.0		
		3.0	-1.0		
		3.0	-1.0		
		3.0	-1.2		
		3.0	0.7		
		3.0	-0.8		
		3.0	0.4		
		3.0	1.1		
		3.0	-0.4		
		3.0	0.0		
		3.0	0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	3.0		
		3.0	4.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	1.0		
		3.0	2.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	1.0		
		3.0	-0.5		
		3.0	1.5		
		3.0	-2.0		
		3.0	0.9		
		3.0	0.5		
		3.0	-0.3		
		3.0	0.0		
		3.0	1.0		
		3.0	-0.6		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.5		

		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.8		
		3.0	-0.9		
		3.0	0.1		
		3.0	0.9		
		3.0	-0.4		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	1.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	-1.0		
		3.0	3.5		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	-0.5		
		3.0	-1.0		

		3.0	-0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	-0.8		
		3.0	0.0		
		3.0	0.0		
		3.0	0.0		
		3.0	1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	-0.5		
		3.0	0.5		
		3.0	0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	0.0		
		3.0	-0.3		
		3.0	1.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.3		
		3.0	-1.5		
		3.0	1.0		
		3.0	0.0		
		3.0	1.0		
		3.0	-1.6		
		3.0	-0.5		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.0		
		3.0	1.5		
		3.0	1.0		
		3.0	0.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.1		
		3.0	-1.0		
		3.0	1.0		
		3.0	0.5		

		3.0	1.0		
		3.0	-1.5		
		3.0	1.0		
		3.0	0.5		
		3.0	1.0		
		3.0	1.0		
		3.0	1.2		
		3.0	0.5		
		3.0	1.0		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.3		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	0.0		
		3.0	2.0		
		3.0	0.5		
		3.0	1.5		
		3.0	-1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	1.0		
		3.0	0.5		
		3.0	0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	0.5		
		3.0	-1.0		
		3.0	0.5		
		3.0	0.0		
		3.0	0.0		
		3.0	0.5		

		3.0	-2.0		
		3.0	-0.5		
		3.0	0.0		
		3.0	0.5		
		3.0	1.0		
		3.0	0.0		
		3.0	-0.5		
		3.0	1.0		
		3.0	1.0		
		3.1	1.0		
		3.1	1.1		
		3.1	0.8		
		3.1	1.3		
		3.1	0.2		
		3.1	3.2		
		3.1	0.8		
		3.1	0.3		
		3.1	1.2		
		3.1	0.7		
		3.1	0.4		
		3.1	0.0		
		3.1	0.6		
		3.1	0.8		
		3.1	0.7		
		3.1	0.3		
		3.1	-0.5		
		3.1	-1.0		
		3.1	-1.0		
		3.1	-1.0		
		3.1	0.0		
		3.1	-1.0		
		3.1	-0.5		
		3.1	-1.0		
		3.1	0.0		
		3.1	-1.0		
		3.1	-0.5		
		3.1	-0.5		
		3.1	0.0		
		3.1	0.5		
		3.1	0.0		
		3.1	-0.5		
		3.2	-0.5		
		3.2	-0.4		
		3.2	1.0		
		3.2	-0.6		
		3.2	-0.9		
		3.2	-0.2		
		3.2	-0.1		

		3.2	-0.7		
		3.2	-0.4		
		3.2	-0.1		
		3.2	-0.2		
		3.2	-0.5		
		3.2	-0.8		
		3.2	-0.5		
		3.2	-0.4		
		3.2	-0.2		
		3.3	1.0		
		3.3	3.0		
		3.3	1.1		
		3.3	1.0		
		3.3	-0.2		
		3.3	1.5		
		3.3	1.0		
		3.3	1.0		
		3.3	0.6		
		3.3	1.0		
		3.3	0.8		
		3.3	1.0		
		3.3	0.5		
		3.3	0.5		
		3.3	1.4		
		3.3	1.5		
		3.3	1.1		
		3.3	1.5		
		3.3	0.2		
		3.3	0.5		
		3.3	0.3		
		3.3	0.5		
		3.3	0.0		
		3.3	0.0		
		3.3	0.8		
		3.3	1.0		
		3.3	1.1		
		3.3	1.0		
		3.3	0.7		
		3.3	1.5		
		3.3	0.3		
		3.3	1.5		
		3.4	0.5		
		3.4	-0.5		
		3.4	0.0		
		3.4	0.5		
		3.4	-0.5		
		3.4	0.5		
		3.4	-0.5		

		3.4	-1.0		
		3.4	0.0		
		3.4	0.0		
		3.4	-0.5		
		3.4	1.0		
		3.4	0.2		
		3.4	0.5		
		3.4	0.0		
		3.4	0.0		

Bin #	Bin Range (months)	Count	% of Total Data	Valid? YES/NO
1	0 to 1.25	21	1.9	NO
2	> 1.25 to 3.75	1057	96.6	YES
3	> 3.75 to 7.5	16	1.5	NO

Bin #	Drift Average	Drift Standard Deviation	Average CI	Data Count
1	-0.4	0.82	0.7	21
2	0.0	0.88	2.8	1057
3	0.0	1.35	4.6	16

ESM-03.02-APP-III sets forth criteria to perform the binning analysis. One of the requirements is that there are multiple valid bins. A bin is considered valid if it contains at least 5 data points and 10% of the total data. Only the middle bin (> 1.25 to 3.75) meets the criteria. Therefore, the complete binning analysis cannot be performed on this data. Per the instruction in ESM-03.02-APP-III, the data is considered **moderately time dependent**.

QF-0545 (FP-E-MOD-11) Rev. 0

NMC Committed to Nuclear Excellence
Fleet Modification Process

Design Information Transmittal (DIT)

From: Charles Nelson

To: Greg Rainey - Sargent & Lundy

Mod or Tracking Number: CA-95-075 Date: 03/20/08 DIT No: EPU-0258

Mod Title: Main Steam Line High Flow Setpoint

Plant: Monticello Unit 1 ☒ Unit 2 ☐ Common ☐ Quality Classification: Safety Related

SUBJECT:High Main Steam Flow Analytical Limit and Tech Spec Limit

Check if applicable:

☒ **This DIT confirms information previously transmitted orally on 3/20/2008 by C. Nelson .**

☐ **This information is preliminary. See explanation below.**

SOURCE OF INFORMATION (Source documents should be uniquely identified)

The EPU Tech Spec limit and Analytical Limit will remain the same as prior to EPU in terms of absolute steam pressure; 151.95 psid and 160.63 psid, respectively. Based on the increase in rated flow from 7.259x10^6 lbs/hr to 8.335x10^6 lbs/hr, these limits correspond to 123.64% of EPU rated flow and 127.124% of EPU rated flow, respectively.

DESCRIPTION OF INFORMATION (Write the information being transmitted or list each document being transmitted)

The Tech Spec limit will be established at 123.64% of EPU rated steam flow (151.95 psid) and the Analytical Limit will be established at 127.124% of EPU rated flow (160.63 psid).

DISTRIBUTION (Recipients should receive all attachments unless otherwise indicated. All attachments are uncontrolled unless otherwise indicated)

C. Nelson - NMC
S. Malak - S&L
R. Dhiman - S&L
G. Rainey - S&L

PREPARED BY (The Preparer and Approver may be the same person.)

C. Nelson	EPU Project	C Nelson	3/20/08
Preparer Name	Position	Signature	Date

APPROVED BY (The cognizant Engineering Supervisor has release authority. Consult the Design Interface Agreement or local procedures to determine who else has release authority.)

S. Hammer	EPU Project		3/20/08
Approver Name	Position	Signature	Date

QF-0545 (FP-E-MOD-11) Rev. 0

NMC Committed to Nuclear Excellence Fleet Modification Process	Design Information Transmittal (DIT)

A copy of the DIT (along with any attachments not on file) should be sent to the modification file

QF-0545 (FP-E-MOD-11) Rev. 0

NMC Committed to Nuclear Excellence
Fleet Modification Process

Design Information Transmittal (DIT)

From: Charles Nelson

To: Greg Rainey - Sargent & Lundy

Mod or Tracking Number: CA-95-075 Date: 03/21/08 DIT No: EPU-0259

Mod Title: Main Steam Line High Flow Setpoint

Plant: Monticello Unit 1 ☒ Unit 2 ☐ Common ☐ Quality Classification: Safety Related

SUBJECT:High Main Steam Flow Current Flow Relationship

Check if applicable:

☒ **This DIT confirms information previously transmitted orally on 3/21/2008 by C. Nelson.**

☐ **This information is preliminary. See explanation below.**

SOURCE OF INFORMATION (Source documents should be uniquely identified)

CA-95-075, Revision 0

DESCRIPTION OF INFORMATION (Write the information being transmitted or list each document being transmitted)

The current revision of CA-95-075 establishes that 140% of the current rated flow corresponds to 147.7 psid. This relationship is used to determine the relationship between percent of EPU rated flow and pressure.

DISTRIBUTION (Recipients should receive all attachments unless otherwise indicated. All attachments are uncontrolled unless otherwise indicated)

C. Nelson - NMC
S. Malak - S&L
R. Dhiman - S&L
G. Rainey - S&L

PREPARED BY (The Preparer and Approver may be the same person.)

C. Nelson	EPU Project	C Nelson	3/21/08
Preparer Name	Position	Signature	Date

APPROVED BY (The cognizant Engineering Supervisor has release authority. Consult the Design Interface Agreement or local procedures to determine who else has release authority.)

S. Hammer	EPU Project	S Hammer	3/21/08
Approver Name	Position	Signature	Date

QF-0545 (FP-E-MOD-11) Rev. 0

NMC Committed to Nuclear Excellence Fleet Modification Process	Design Information Transmittal (DIT)

A copy of the DIT (along with any attachments not on file) should be sent to the modification file

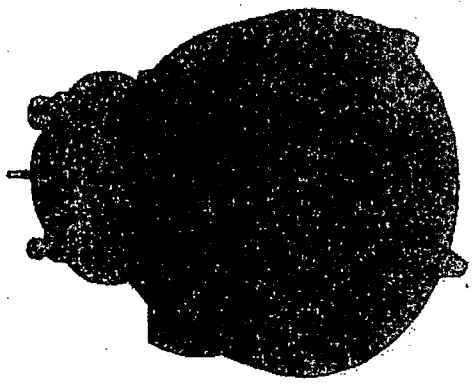
BARTON PRODUCT BULLETIN 288A/289A(S)

Differential Pressure Indicating Switches

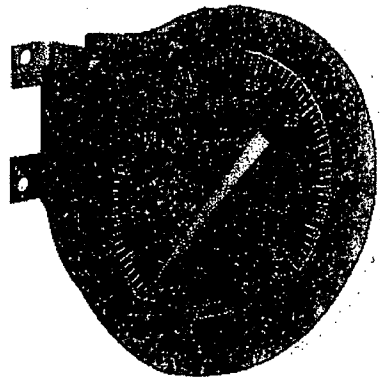
LIQUID LEVEL · DIFFERENTIAL PRESSURE · FLOW RATE

PRODUCT DESCRIPTION

The differential pressure indicating switches described in this bulletin are responsive to relatively low magnitudes of pressure differences at high static pressures.



MODEL 289B



MODEL 288A

These units are employed to energize alarm or control circuits at predetermined limits of flow through pipelines, liquid level in pressurized vessels or pressure loss across devices, such as filters. For monitoring flow rates, they are used in conjunction with a primary element, such as an orifice in the line.

These switches will withstand overranges equal to their rated safe working pressure. They are offered in a wide range of differential and pressure ratings with either snap-action mechanical contacts or magnetically operated mercury contacts in either a NEMA 4 watertight or an explosion-proof case.

Actuation of these switches is either by a Barton Model 199 or Model 224 Rupture-Proof Differential Pressure Unit. Accuracy, stability of calibration, negligible static pressure shift, and minimum maintenance are inherent features of these units.

Switches are supplied with the Model 199 unit where maximum sensitivity is required in the lower differential pressure ranges, where a field range change is anticipated or when a built-in pulsation dampener is desired to control response time of the instrument.

On the other hand, the Model 224 unit is employed to actuate the switch where the differential range specified exceeds that available with the 199 unit or where size and weight are prime consideration.

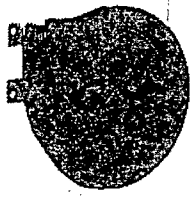
BARTON ITT

TYPICAL MODELS AVAILABLE

Switch Model No.	Actuator Model No.	Contacts	Type Contact	Integral Relays Available	Case With 6" Dial
277	199	Mercury	SPST	No	Weather-Proof
278	224	Mercury	SPST	No	Weather-Proof
279	199	Mercury	SPST	No	Explosion-Proof
280	224	Mercury	SPST	No	Explosion-Proof
288A	224	Snap-Acting	SPDT	Yes	Weather-Proof
289A	199	Snap-Acting	SPDT	Yes	Weather-Proof
290A	224	Snap-Acting	SPDT	Yes	Explosion-Proof
291A	199	Snap-Acting	SPDT	Yes	Explosion-Proof
290B	224	Snap-Acting	SPDT	Yes	Explosion-Proof, Group B; NEMA-4
291B	199	Snap-Acting	SPDT	Yes	Explosion-Proof, Group B; NEMA-4

GENERAL INFORMATION

SWITCH ACTUATED BY MODEL 199 DIFFERENTIAL PRESSURE UNIT



SWITCH ACTUATED BY MODEL 224 DIFFERENTIAL PRESSURE UNIT

GENERAL
Selection of the proper instrument for a particular application will depend upon the pressure rating required, the materials of construction that are suitable for contact with the measured fluid, the required differential pressure range, and desired weight and volume displacement for the actuating unit. Selection will also depend upon the type of contacts wanted and if the indicating mechanism and contacts should be housed in a NEMA 4 watertight or explosion-proof case.

CASE — NEMA 4 WATERTIGHT
The case is die-cast aluminum and is finished with a weather-resistant black epoxy resin paint. The cover glass is secured in the bezel with an elastomer ring, thus reducing the possibility of accidental glass breakage. This ring also acts as a seal between the bezel and the case and insures a moisture, fume and dust-free atmosphere for the indicator and switch mechanism.

CASE — EXPLOSION-PROOF
This case is certified for Class I, Division 1, Groups C & D, explosion-proof service. The large cover glass allows maximum readability of the indicating pointer. Switches and all adjustments are readily accessible when the bolted cover is removed.

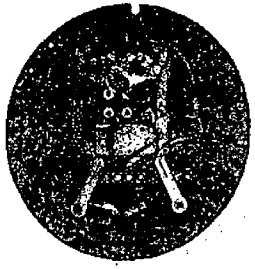
SCALES
The 6" diameter indicating scale can be graduated uniformly for measurement of differential pressure or liquid level or square root for direct reading of flow rate. Special scales can be furnished for indicating the quantity of liquid in tanks.

INDICATING MECHANISM
The indicating pointer traverses a 270° arc, providing excellent readability. It is driven by a precision-made jewelled rotary movement that employs a thermally stable Ni-Span-C hair spring. The movement has micrometer screws for convenient zero and range adjustments. Zero and range adjustments may be made without removing the scale plate or the pointer. Linear adjustments are readily accessible after the removal of the scale plate. The rotary movement and the pointer are fully protected from overrange in either direction.

SWITCH ACTION
Barton indicating switches are available with either one or two fully adjustable contacts. They can be set for high or low, or both high and low when two contacts are furnished. Accuracy of indication, narrow deadband and repeatability of switch action at set point are outstanding features.

BARTON ITT

SWITCH CONTACTS



INTERIOR VIEW (SNAP-ACTING SWITCHES)

INTERIOR VIEW (MERCURY SWITCHES)

OPERATION
The switch contacts are adjustable over the entire scale. Setting of the switch set points is accomplished by merely adjusting the control screw located flush with the scale. The contact setting is indicated by a small scale on the face of the scale plate.

SNAP-ACTING CONTACTS
The mechanically actuated snap-acting type contacts are chosen for their reliability under severe shock and vibration conditions. Maximum flexibility is provided, since either contact can be set to open or close the circuit with increasing or decreasing differential pressure. This is accomplished by simply reversing the external lead wires at the terminal block.

SPECIFICATIONS — SNAP-ACTING

Type ..... SPDT
AC Rating ..... 8 Amps up to 125V
2.5 Amps up to 250V
DC Rating:
Inductive ..... 2.5 Amps up to 30V
Resistive ..... 4.0 Amps up to 30V
Electrical Connections:
Standard ..... ½" NPT Female
Optional ..... Up to 8' long flexible conduit terminating with ½" NPT connector

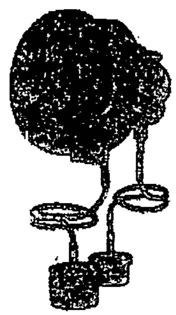
MERCURY CONTACTS
These contacts are operated by magnetic attraction through a glass container. Electrical contact is made by capillary action in an inert atmosphere and therefore is not as subject to breakdown from current arcing.

SPECIFICATIONS — MERCURY

Type ..... SPST
AC Rating ..... 1 Amp up to 125V
0.5 Amp up to 240V
DC Rating ..... 0.25 Amp up to 125V to 230V
Electrical Connections:
Standard ..... ½" NPT Female
Optional ..... Up to 8' long flexible conduit terminating with ½" NPT male connector

BARTON ITT

SPECIAL APPLICATION SWITCHES



SWITCH WITH EXTERNAL BELLOWS SENSING ELEMENT

The system illustrated is a standard instrument with a length of tubing and sealed bellows connected to the high and low pressure housings. The bellows, tubing and housings are evacuated and liquid-filled at the factory. Measurement or control of corrosive, high temperature or dangerous fluids are typical applications for a filled system. In liquid level applications, the need for a reference leg is eliminated. Installation where gage lines are subject to freezing, clogging, condensate formation, gas entrapment, hydrate formation, etc., are also applications for the filled system.

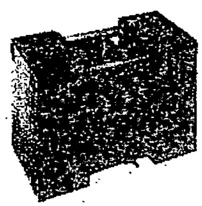
SWITCH WITH INTERNAL RELAYS

All models employing snap-acting switches may be furnished with one or two relays mounted within the case. The addition of a relay allows greater flexibility of switching action and increased current handling capacity without the need for external mounting and wiring. This feature is often of considerable importance where explosion-proof housings are required.

SPECIFICATIONS — OPTIONAL RELAYS

Type .... DPDT
AC Rating:
- Contact:
  - Inductive .... 5 Amps up to 115V
  - Resistive .... 10 Amps up to 115V
- Coil:
  - 6V, 12V, 24V, 115V .... 5 VA Max.

DC Rating:
- Contact:
  - Inductive .... 5 Amps up to 28.5V
  - Resistive .... 10 Amps up to 28.5V
- Coil:
  - 6V, 12V, 24V, 120V .... 2 W Max.



SWITCH WITH SEAL WELDED ACTUATOR

Special applications exist for a switch actuated by a positive leak-proof differential pressure unit. For such applications, the housings and gage lines are seal-welded at the factory. Welds may be certified to comply with applicable specifications by testing with a helium mass spectrometer. A typical specification allows 0.01 micron cubic feet per hour helium leak rate.

The measurement of corrosive, toxic, radioactive, or very expensive materials are usual applications for a seal-welded unit. These applications include liquid rocket propellants, hydrozene, nitrogen, tetroxide, UDMH, helium and hydrogen.

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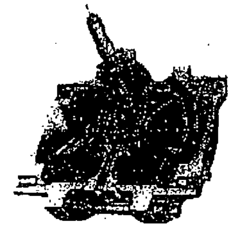
DIFFERENTIAL PRESSURE UNITS



MODEL 199 DPU CUTAWAY

MODEL 224 DPU CUTAWAY

DESCRIPTION

The Model 199 and Model 224 Rupture-Proof Differential Pressure Units both consist of a Bellows Unit Assembly and removable pressure housings; although they differ in details of construction, they incorporate the same basic features.

In both models flexible bellows are secured to a center plate. The movable bellows are rigidly connected by a dual valve stem that passes through the center plate. Valve seats in the passage through the center plate form a seal with the valves spaced on the stem. Contacting the valve stem in the center plate is a drive arm pivoted on the end of a sealed torque tube. The interior of the bellows and center plate is filled with a clean, non-corrosive, low freezing point liquid. A free-floating bellows is attached to the high pressure bellows to allow for expansion or contraction of the fill liquid, thus providing positive temperature compensation. The strength of the springs shown in the illustrations determines the differential pressure range of the unit.

OPERATION

In operation, pressure is applied to the high and low chambers surrounding the bellows. Any difference in pressure causes the bellows to move until the spring effect of the unit balances out for force thus generated. The linear motion of the bellows, which is proportional to the differential pressure, is transmitted as a rotary motion through the torque tube assembly. If the bellows are subjected to a pressure difference greater than the differential pressure range of the unit, a valve mounted on the center stem seats against its corresponding valve seat. As the valve closes, it "traps" the fill liquid in the bellows; thus the bellows are fully supported and cannot be ruptured regardless of the over pressure applied. Since opposed valves are provided, full protection is afforded against an "overrange" in either direction.

FEATURES OF THE ACTUATING UNITS

Bellows Construction — Individual diaphragms, stamped and formed from 316 stainless steel or beryllium copper, are assembled by highly specialized techniques. Bellows thus formed have exacting linearity characteristics, as well as long cycle life, free from the effects of work hardening commonly encountered with the hydraulically formed or mechanically rolled types.

Torque Tube — The torque tube employed in the units eliminates the possibility of leakage and required no lubrication. The needle bearing that supports the inboard end of the torque tube, and the ball bearing that is attached to the follower drive arm, operate with a minimum of friction. As a result the initial high degree of sensitivity is maintained for the life of the instrument.

Temperature Compensator — The auxiliary free-floating bellows attached to the high pressure bellows automatically protect the unit from zero and calibration drift when the instrument is subjected to a change in ambient temperature.

Pulsation Dampener (available only on Model 199) — The pulsation dampener in the Model 199 is externally adjustable and provides for direct control of response time of the instrument from approximately one second to several minutes for full-scale travel of the bellows.

Calibration Springs — Select materials and refined specifications are employed in the calibration springs. They have an extremely low hysteresis characteristic and exceptional temperature stability.

Self-Draining or Venting — Connection on the top and bottom of the housing provide automatic draining of liquids or venting of gases.

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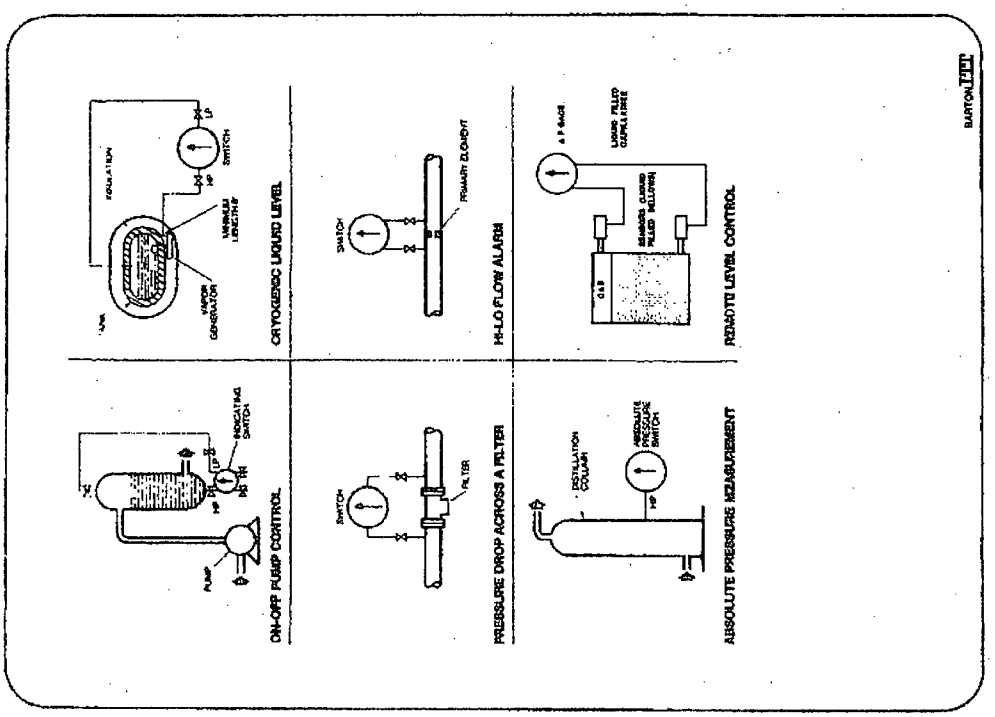

GENERAL SPECIFICATIONS

MODEL 198

Meter Body		Absolute Differential Pressure Ranges	
Std*-psi	Housing Materials	3/4" O.D.	2½" O.D.
1,000	Cast Aluminum 356TB	Stainless Steel Bellows 0-10" to 0-400" w.c. Inconel Bellows 0-20" to 0-400" w.c.	Stainless Steel or Inconel Bellows 0-15 psi to 0-75 psi
1,000	Forged Stainless Steel 316		
2,500	Forged Steel A.S.I. C1018		
3,000	Forged Stainless Steel 316		
3,000	Forged Monel K-500		
4,500	Forged Alloy Steel 4142		
6,000	Forged Alloy Steel 4142		
6,000	Forged Stainless Steel 329		
Net Volume in cu. in.	L.P. Head	20	35
	H.P. Head	25	31
Displacement in cu. in. for full-scale travel		1.5	0.5

NOTES:
Other ranges and types of connections, including metric, MS, J.I.C., etc.) are available upon request.
Special bellows and housing materials can be made available upon request (e.g. Inconel 625).
Outline dimensional drawings are available upon request.

MODEL 224

Meter Body		Absolute Differential Pressure Ranges				Pressure Connections	
		Stainless Steel Bellows		Beryllium Copper Bellows			
Std*-psi	Housing Material	¾" O.D.	1" O.D.	¾" O.D.	1" O.D.	Trip	Bodies
500	Forged Brass (ASTM-B124-C)	0-20" w.c. to 0-40 psi	0-40 psi to 0-400 psi	0-20" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	¼" NPT	¾" NPT
500	Stainless Steel (316)					¼" NPT	¾" NPT
1,000	Brass (Yield Spec. CDA-Alloy Comp. 2)			0-40" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	¼" NPT	¾" NPT
1,000	Copper Nickel (70-30) MIL-C-15726			0-40" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	MS16142-4	MS16142-4
1,000	Cold Rolled Steel (C1018) Stainless Steel (316)	0-20" w.c. to 0-34.5 psi	0.60 psi to 0-400 psi	0-20" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	¼" NPT	¾" NPT
2,000	Cold Rolled Steel (C1018) Stainless Steel (316)	0-40" w.c. to 0-34.5 psi	0.60 psi to 0-400 psi	0-40" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	¼" NPT	¾" NPT
6,000	Cold Rolled Steel (C1018) Stainless Steel (316)	0-100" w.c. to 0-34.5 psi	0.60 psi to 0-400 psi	0-100" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	¼" NPT AMINCO ¼" QDT	¾" NPT AMINCO ¼" QDT
10,000	Alloy Steel (4140)	0-100" w.c. to 0-34.5 psi	1.00 psi to 0-400 psi	0-100" w.c. to 0-34.5 psi	0-35 psi to 0-400 psi	AMINCO ¼" QDT	AMINCO ¼" QDT
Net Volume in cu. in.	L.P. Head	1.00	2.51	1.00	2.51		
	H.P. Head	1.56	2.42	1.56	2.42		
Displacement in cu. in. for full-scale travel		.14	.05	.14	.05		

NOTES:
Other ranges and types of connections, including metric, MS, J.I.C., etc.) are available upon request.
Special bellows and housing materials can be made available upon request (e.g. Inconel 625).
Outline dimensional drawings are available upon request.

BARTON

PERFORMANCE SPECIFICATIONS

ACCURACY OF INDICATION
±1% of full-scale differential pressure

At Point of Switch Actuation ..... ±1½% of full scale differential pressure
Switch Deadband ..... 5% maximum of full scale differential pressure
Temperature Limits ..... -60°F to +200°F
Accuracy of Repeatability ..... ±0.2% of full scale

SPECIAL INSTRUMENTS

(Suppressed Ranges, Reverse Rotation, DPDT Switches, Sealed Systems, Reduced Ranges)

Low DP Ranges, less than 150" w.c.:

Pointer Accuracy ..... 2% (3% at set point)
Pointer Repeatability ..... ½%
Switch Deadband ..... 7% maximum
Switch Repeatability ..... ½%

High DP Ranges, 151" w.c. and higher:

Pointer Accuracy ..... 1½% (2½% at set point)
Pointer Repeatability ..... ½%
Switch Deadband ..... 6% maximum
Switch Repeatability ..... ½%

DIMENSIONS

Specify model number and housing rating. A certified dimensional drawing will be furnished on request.

INDICATING SWITCHES ORDERING INFORMATION

Model Number
Housing pressure rating (SWP)
Housing material
Bellows material
Material contacting bellows
Differential pressure range
Type of scale (square root) (uniform)
Scale graduations
Mounting:* (pipe) (wall) (flush panel)
Number of contacts (single) or (double)
Low contact (close) (open) at (w.c.) (psi) on (increasing) (decreasing) pressure
High contact (close) (open) at (w.c.) (psi) on (increasing) (decreasing) pressure
Relay (if required:) Coil voltage, contact rating

*Explosion-proof models — pipe mounting only.

The ITT Barton standard warranty is available for inspection upon request.

YOUR LOCAL REPRESENTATIVE

ITT Barton
900 S. Turnbull Canyon Road
City of Industry, CA 91749-1882
Tele. (818) 961-2547 Telex: 67-7475

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ITT Barton
ITT Fluid Technology Corporation

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CLASS I
April 1972

MODIFIED STEAMLINE FLOW-LIMITING VENTURI TEST RESULTS

E. L. Strickland

Approved:
D. McDaniel, Manager
Startup and Training

ATOMIC POWER EQUIPMENT DEPARTMENT ● GENERAL ELECTRIC COMPANY
SAN JOSE, CALIFORNIA 95114

GENERAL ELECTRIC

18/65 S&T
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ABSTRACT

Differential pressure versus steam-flow rates were obtained at the Monticello Nuclear Power Station for up to 120% of rated steamline flow using modified steamline flow-limiting venturis. The experimental data were least squares fit to an exponential function and compared with predicted performance.

1. INTRODUCTION

Between February 1 and February 24, 1972 the Monticello Nuclear Power Station (MNPS) of the Northern States Power Company was returned to power after an extended outage. During this outage the main steamline flow limiters, venturi tubes supplied by the Permutit Company, had been modified to remove some manufacturing defects. These defects did not affect the ability of the devices to limit maximum steam flow to 200% of rated steam flow, but by degrading the measurable pressure differential did affect the ability of the devices to measure the steamline flow rate. This document discusses the performance of the modified venturi tubes for flow measurements as determined from data recorded during the February 1 to February 24 startup. Differential pressure data recorded on March 10 and 11 are also included.

2. SUMMARY AND CONCLUSIONS

The modified steamline flow limiters installed in the Monticello Station respond to steam flow in a consistent manner that correlates well with the theoretically expected performance. Assuming no errors in measuring either differential pressure across the flow limiters or reactor feedwater, the flow limiters have an effective discharge coefficient of 0.97 compared to a predicted value of 1.0. This is equivalent to an error in differential pressure of 2.5 psid (4%), or in total feedwater flow rate of 200,000 lb/h (3%), or some combination of both. It is recognized that the reported feedwater flow rate may be low by 0.5% to 1.0% since the control rod drive water flow rate was not recorded. Whether the measured discharge coefficient or the predicted discharge coefficient is correct is not known at this time, but the difference is not large enough for concern. This performance satisfies all reasonable expectations for the equipment.

3. DISCUSSION

3.1 BACKGROUND

The Monticello Nuclear Power Station, owned and operated by the Northern States Power Company, is equipped with steamline flow restrictors supplied by the Permutit Company. One function of these devices is to limit the maximum possible steam flow through each of the four steamlines to no more than 200% of the design steam-flow rate. A second function is to provide a measurement of the steam flow rate through each steamline. During the startup testing of the station, September 8, 1970, to July 5, 1971, it was observed that the differential pressure measured at any steam-flow rate was approximately a factor of 3 less than the expected value supplied by the vendor. It was noted that while lower than expected the measured differential pressure behaved in a repeatable manner and plotted parallel to the predicted Δp versus flow curve.

Because of the differences between predicted and observed Δp versus flow performance for the Permutit flow restrictors an experimental program was undertaken by GE-APED at the San Jose facility to determine the cause of the differences, and how the flow restrictors could be modified to make them respond more nearly as originally designed. This program determined that the low differential pressure readings were caused by a leakage path from a high pressure region into the throat tap piezometer ring. This leakage path in no way affected the ability of the flow restrictor to limit the maximum steam-flow rate to the intended value. A modification to the throat tap was defined which was expected to make the measured Δp versus flow rate close to the predicted performance. This experimental program is reported in detail in Reference 1.

The Monticello Station was the first unit to return to power following modification of the steam-flow limiters as described in Reference 1. The data discussed in this report were taken during and following the return to power of the Monticello Station.

3.2 DATA RECORDING

The differential pressure across each steamline flow limiter at Monticello is measured by four Barton Differential Pressure Indicator Switches (dPIS). These are in addition to any GE/MAC sensors which are part of the feedwater control circuits. Figure 1 is a schematic drawing of the installation. The Barton dPIS are spanned to read 0—200 psid. The calibration, zero shift with pressure, and hysteresis of the 16 Barton dPIS (4 on each of 4 steamlines) were checked before the station was returned to power and again during an interruption in the power increase for turbine repairs. All differential pressure readings discussed here are based upon these Barton dPIS.

The total steam flow rate from the reactor is determined by a mass balance drawn around the reactor pressure vessel. The only term in this mass balance of significance is the reactor feedwater. (Control rod drive water flow is 0.5% to 1.0% of the value of the feedwater flow.) The feedwater measurement instrumentation was calibrated during the outage when the steam nozzles were being modified. The output of the feedwater nozzle differential pressure device is read by the process computer and converted numerically to feedwater flow rate. It is also read by station instrumentation and converted electrically to become the value of feedwater flow rate displayed in the control room. All values of total steam flow rate reported here are equivalent to the feedwater flow rate displayed in the control room with the exception of the data recorded on 10 March and 11 March, 1972, when only the computer output was recorded. When both were recorded the computer value for feedwater is up to 2% lower than the control room recorder value.

The reported values of reactor pressure and electrical output are those recorded by station personnel using normal plant instrumentation.

3.3 DATA REDUCTION

There are two physical effects which can not be measured directly but which directly affect the validity and usefulness of the results. One of these is the presence of a zero offset, possibly caused by a water leg between the steamline tap and the condensing chambers or a temperature difference in the instrument lines between the condensing chambers and the instrument rack. The second is the steam flow rate mismatch between the steamlines caused by small differences in line geometries.

The presence of a zero offset can be checked by closing a single main steam isolation valve (MSIV) when the reactor is operating near 50% power and then recording the readings of all dPIS. This was done at Monticello and average offsets were found for each line. These average offsets were used to correct the measured differential pressures in the calculations presented here. The zero offset values do change with time and are between 0.4 psid and 2.5 psid. The effect of the offset is to give a larger than actual differential pressure indication. The magnitude of the offset is small relative to the differential pressure values measured at significant flow rates.

The steam-flow mismatch can be estimated from calculations if these calculations include in sufficient detail the as-built steamline geometries. A more straightforward method is to apportion the steam flow between the steamlines on the basis of the measured differential pressures. The relative flow values should be accurate since all Δp instrumentation was recalibrated using a common method. The second method is the one used to determine individual steamline flow rates.

The complete data-reduction method used can be illustrated best using an actual set of plant data. This is done in Table 1. All the data recorded during this startup of the Monticello plant were reduced in this manner and are plotted on Figure 2. The data recorded on 10 March and 11 March were not used in finding the "best-fit" curve because the feedwater data were recorded only from the computer.

It is of interest to compare the observed after-modification differential pressure versus flow behavior with that which would be predicted using the ASME expression for flow of a compressible fluid through a venturi. Section 7 of Reference 2 gives the following expression:

$$W_h = 359\, CFd^2 F_a Y_a \sqrt{h_w \rho_1} \qquad (1)$$

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Table 1

Date ..... February 15, 1972
Time 0945
Station Output ..... 400 MWe
Reactor Pressure (P_R) ..... 982 psig
Total Feedwater Flow Rate [W] $4.70*10^6$ lb/h

dPIS Readings						
Instrument Number	Reading (psid)	Average dp	Measured Correction Factor (Zero Offset)	Corrected Average dp $[\Delta p_i]$	$(\Delta p_i)^{1/2}$	Line Steam-Flow Rate (lb/h) $[W_i]$
116A	29.8					
116B	31.4	30.75	−1.51	29.24	5.41	$1.1795*10^6$
116C	29.3					
116D	32.5					
117A	29.6					
117B	33.2	31.40	−2.5	28.90	5.38	$1.1729*10^6$
117C	32.0					
117D	30.8					
118A	31.2					
118B	28.5	29.025	−0.475	28.55	5.34	$1.1642*10^6$
118C	28.0					
118D	28.4					
119A	32.9					
119B	31.7	31.625	−2.125	29.50	5.43	$1.1838*10^6$
119C	29.5					
119D	32.4					

NOTE: $W_i = (\Delta p_i)^{1/2} * \frac{W/4}{\frac{1}{4}\sum_i (\Delta p_i)^{1/2}} = \frac{(\Delta p_i)^{1/2}}{\sum_i (\Delta p_i)^{1/2}} * W$

For the Monticello Steam-Flow Limiters this can be reduced to:

$$\Delta p = (4.273 \times 10^{-11})\, v_1 \frac{W^2}{Y_a^2} \qquad (2)$$

Where

Δp = psid
v_1 = ft^3/lb
W = lb/h
Y_a = dimensionless

Note that in equation (2) both v_1 and Y_a are functions of the inlet pressure to the venturi. Figure 3 is a plot of v_1 versus pressure. Figure 4 is a plot of Y_a^2 versus r, the ratio of throat to inlet pressures for a venturi. In order to make a meaningful comparison of analytical and experimental values it is necessary for the analytical prediction of Δp to be based upon pressures similar to those existing when the measurements were taken. Figure 5 is the intended operating reactor pressure versus reactor power map for the Monticello reactor. Note that the operating pressure data on Figure 5 are plotted against electrical power and hence are subject to changes in turbine-generator performance. Figure 6 is a plot of the calculated Δp based upon equation 2, Figures 3, 4 and 5 and the design pressure drop from the reactor pressure vessel to the inlet to the steam flow limiters. At full power this design pressure drop is 11 psi. Also shown on Figure 6 is the calculated Δp assuming a constant 1015 psia inlet pressure and the "best fit" line to the data taken between 1 February and 24 February, 1972.

4. RESULTS

The data recorded by Northern States Power Company personnel at Monticello and reduced as described in Section 3.3 are plotted in Figure 2 along with the best "least squares" fit to the data. Also, these data were fit separately for each individual steam-flow limiter. The complete set of data were refit including only Δp versus flow data for line flows greater than 40%, 45%, and 50% of rated. The coefficients of these fit curves are listed in Table 2. Included in Table 2 is the standard error of estimate, sometimes called the root-mean-square difference between the data points and the fit curve. The experimental data were compared with the curve calculated for a nozzle discharge coefficient of unity. The standard error of estimate for this comparison is shown in Table 2. The calculated curve of differential pressure does not plot as the square of the flow because of the changing pressure with changing flow and the accuracy of the calculations. It is not known why the corrected experimental data do not behave as the square of the flow. Possible reasons include unaccounted-for pressure effects, feedwater flow measurement errors, and small instrumentation errors. All fitting of the experimental data is based upon the assumption that the measured values are exactly correct. In this case the effective average nozzle discharge coefficient can be calculated to be 0.97. Note that this effective C = 0.97 includes the effects of all measurement errors including those in the feedwater flow rate. As can be seen from Figure 7 the feedwater flow rate can not be accurately confirmed by secondary plant measurements such as turbine-generator output. A difference of 1 psid (1.7% of the rated flow differential pressure) is equivalent to a difference of 10,000 lb/h, 0.58% of the rated steam flow rate.

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Table 2
FIT DATA

$$\Delta p_i = A(W_i * 10^{-6})^B$$

All Lines	A	B	σ	$\sigma_{1.0}$
All data	21.49	2.088	0.816	2.12
Power >40%	21.59	2.034	0.798	2.20
Power >45%	21.69	2.017	0.796	2.41
Power >60%	21.65	2.021	0.864	2.70
Single Lines Power >45%				
Line 116	21.47	2.031	0.773	2.22
Line 117	21.70	2.020	0.799	2.53
Line 118	21.72	2.018	0.791	2.51
Line 119	21.86	1.993	0.862	2.53
Theoretical Curve C = 1.0	20.32	2.009	0.0789	——

σ is the "standard error of the estimate" for the best fit curve

$$\sigma = \left[\frac{\sum_i (\Delta p_i \text{ (data)} - \Delta p_i \text{ (calc from fit)})^2}{N-1}\right]^{1/2}$$

$\sigma_{1.0}$ is the "standard error of the estimate" where the calculated Δp_i values are based upon an assumed venturi discharge coefficient of 1.0.

The units of σ are psid.

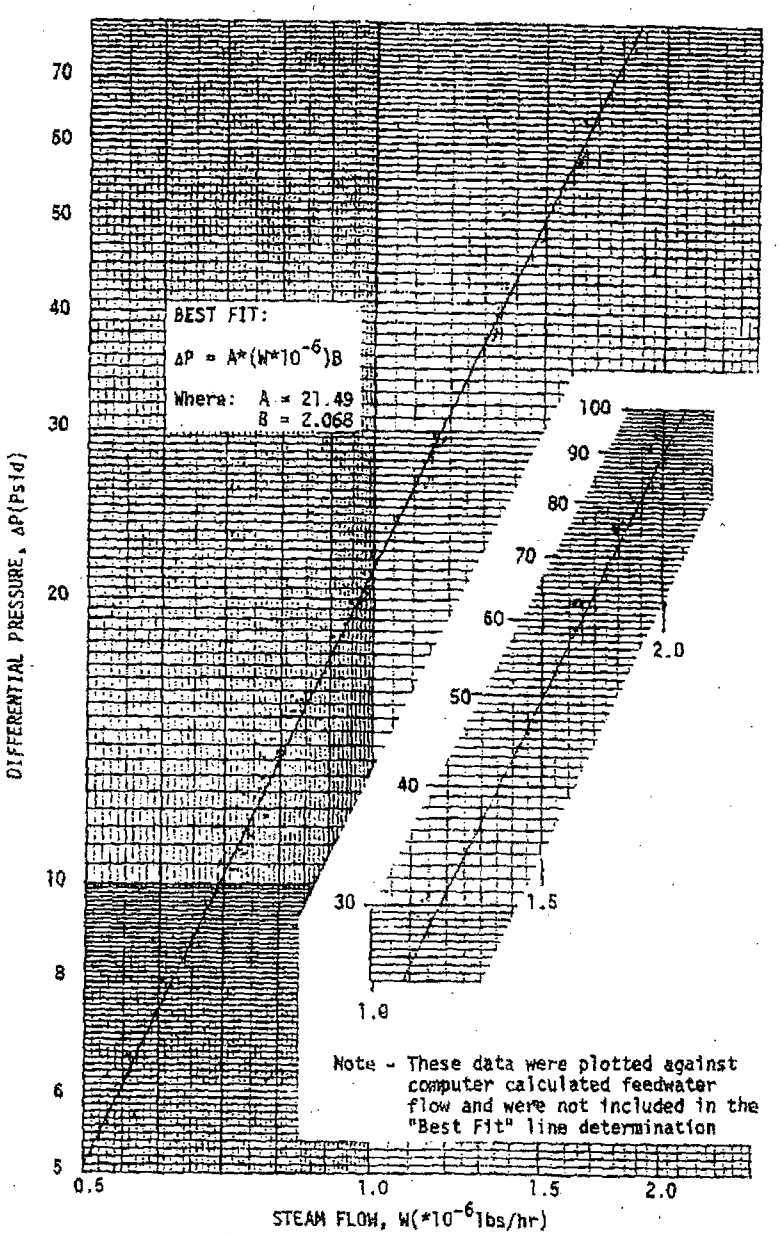

Figure 2. Measured Differential Pressure versus Steam Flow

RECORD OF TELEPHONE CONVERSATION

(818) 961-2547

DATE	TIME	TO BE CONFIRMED
7-4-90		☐ YES ☐ NO

FROM: Warren S. Monson (NAME) — Bechtel Power - Setpoint Group (COMPANY OR DEPARTMENT)

TO: Sam Kumemoto (NAME) — ITT Barton Model 288A Eng. (COMPANY OR DEPARTMENT)

SUBJECT(S) DISCUSSED: Model 288A Pressure Switch

REMARKS:

Mr. Kumemoto stated that the error for static pressure is .25% F.S. per 1000 lb. overrange pressure.