Florida
Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

November 28, 1995
3F1195-25

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Technical Specification Change Request No. 202, Supplement 1
24 Month Fuel Cycle Surveillance Extensions

References: FPC to NRC letter, 3F0595-01, dated May 31, 1995

Dear Sir:

On October 10, 1995 a teleconference was conducted between NRC Staff and Florida Power Corporation (FPC) Engineering and Licensing personnel to discuss FPC's proposed Technical Specification change request to extend most refueling interval surveillances to 24 months. During that teleconference several concerns were expressed with the techniques used by FPC to justify the increased surveillance interval. FPC provides the following discussion in response to those concerns. Also, revised copies of the three instrument drift studies included in the original submittal are attached.

1. Provide justification that drift data is not time dependent.

FPC's primary setpoint methodology pertaining to instrument drift is to use vendor stated drift terms when available. This setpoint calculation methodology is in accordance with Instrument Society of America (ISA) ISA-S67.04, Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." This standard endorses the use of vendor stated drift terms in lieu of drift terms derived from historical calibration data. Given this, if vendor stated drift data is available, it will be utilized and projected out to 30 months for development of string error and setpoint calculations. Use of historical drift data for determination of setpoints is a secondary method which is used only if vendor stated drift data is not available.

Vendor stated drift data is available for all of the protection systems whose surveillance interval is being extended. This includes the following systems and associated CHANNEL CALIBRATION:

A001

Reactor Protection System (RPS) Instrumentation (SR 3.3.1.6)

Engineered Safeguards Actuation System (ESAS) Instrumentation (SR 3.3.5.3)

Emergency Feedwater Initiation and Control (EFIC) System (SR 3.3.11.3)

In cases where historical drift data is used for determining setpoints, FPC will perform a linear regression analysis on the drift data from each drift study to indicate the instrument's drift trend. This will be accomplished by performing the analysis on the absolute value of the difference between as-left and as-found data. By using this technique, the tendency for the magnitude of the drift change as a function of time can be estimated. This information will be used as one of the tools to determine if an instrument is exhibiting time dependent drift. It should be noted that the data for the independent variable (the calibration interval) may tend to be clumped around certain calibration intervals. This could result in no correlation in a regression analysis since the regression line will pivot around the major contributing calibration interval. This trend will be used in conjunction with plots of drift data versus calibration interval and drift data versus calibration date to aid in the evaluation of time dependency.

A 30 month drift term will be projected according to the following criteria:

a. If calibration data is spread over sufficient intervals to provide confidence in the results of the tools utilized above to establish time dependency, one of two methods will be applied:

   i. If the results show instrument drift appears to be time dependent based on the regression analysis, a 30 month drift term will be projected utilizing the same method to project vendor stated drift terms as specified in ISA 67.04 Part II. The drift term for each period is random and independent. Given this, the square root of the sum of the squares of the individual drift periods will be used. FPC will utilize the average calibration interval as the period and the drift value for the average interval is assumed to be the 95%/95% tolerance value. In this case, the projected 30 month drift term would be derived as follows:

$$30MO.DRIFT = \sqrt{(TOL)^2 + \left(\frac{TOL*(30-AI)}{AI}\right)^2}$$

   Where AI = Average calibration interval of historical data, and TOL = 95%/95% Tolerance

   ii. If the results show instrument drift appears to be time independent, the calculated 95%/95% tolerance value will be used as the projected 30 month drift term.

b. If the results of the tools utilized above do not provide sufficient confidence to establish time dependency, a 30 month drift term will be projected using the equation in 1.a.i above.

2. Justify the practice of omitting from the calculation drift data which did not meet the as-found acceptance criteria.

FPC has re-evaluated the treatment of outlier data. Drift studies are being revised such that data exceeding procedure as-found tolerances will be excluded from the data set only if it is a failure for reasons other than drift and it fails the Critical Values of T-Test (described on page 5 of the attachment to the original submittal). A discussion documenting the reason for removal of data will be incorporated in each drift study where data is removed. The three drift studies included in this submittal have been revised based on the new data exclusion criteria. The revision of the other drift studies is continuing. Also, please note that this methodology change will cause a change in the drift study results reported in the **Surveillance Interval Changes** section of the attachment to the original submittal from the middle of page 8 through the end of page 21. However, since the methodology has been made more conservative, the final results will be more conservative than those reported in the original submittal.

3. What significance level was used in the Critical Values of T-Test?

FPC utilized the upper 5% significance level critical value, based on the appropriate sample size, to perform the Critical Values of T-Test.

4 Describe why multiple data points for a single instrument can be considered independent.

The concern with this issue is using all data points in a multi-point calibration for a single instrument. We agree that in many cases the drift data points from a multi-point calibration may not be independent. These points would need to be independent to do a fully valid quantitative statistical analysis. Most of the instruments in the study have been replaced since original plant startup. This tends to reduce the available calibration data for these instruments and produces small data sets. Engineering judgement dictates that all data points be utilized to ensure the sample size does not get too small and result in overly conservative drift values. Using worst case values, averaged values or single points of interest from calibrations may lead to overly conservative drift values, which, when used to develop setpoints, may cause them to be overly conservative. This could lead to system spurious actuations, reduced operating margin for plant operation, and setpoints near the limits of instruments ranges. Instead, FPC has adopted a methodology which uses statistical techniques, but is at least partially based on qualitative reasoning. During normal calibration process for most instruments, the instrument is loaded from 0% to 100% span and back to 0% again. Data is taken at 0%, 25%, 50% 75%, 100%, 75%, 50%, 25%, and 0%; resulting in 9 data points. The FPC methodology averages the redundant data at 25%, 50%, and 75% span, leaving 5 data points which are normally included in the data base.

We believe, however, this practice is still conservative since the difference between as-left and as-found values is actually the sum of maintenance and test equipment error, temperature difference error, vibration effects, instrument readability, and journeyman technique, as well as drift. These factors are already included as terms in channel uncertainty calculations, with the exception of journeyman technique. FPC's methodology attributes all of these errors to drift. Note also that FPC will continue to monitor instrument drift under the 24 month (nominal) calibration cycle as described in FPC's response to Request 7 from NRC Generic Letter 91-04. If the methodology used in the drift studies is not valid, it should be easily detectable by that program.

Additionally, FPC defends our practice of using all calibration data points in the drift studies for the following reasons:

a. Except on rare occasions, the equipment has performed within specified as-found tolerances. The drift data is bounded by the calculated 95%/95% tolerance interval based on the present calibration interval and we expect similar performance at a 30 month calibration interval. Given this, there is no equipment performance reason to include additional conservatism by reducing the sample size that would result in a larger 95/95 percent tolerance factor.

b. Monitoring of instrument performance over the calibrated span is useful for the following reasons:

   i. Evaluation of instrument performance near a point of interest (near a setpoint) enhances our capability to monitor and trend drift in that region.

   ii. Evaluation of instrument performance at other regions could be useful in determining impending instrument failures.

c. If worst case values were used, drift values determined for each instrument type (make and model) would not be representative of their true performance. Larger values of drift would be calculated due to other influences on the differences between the as-found and as-left data because of such factors as maintenance and test equipment (M&TE), temperature, and mechanical jarring.

d. When using worst case values, errors due to technique, measurement & test equipment, physical jarring and temperature effects would be amplified. Any differences in as-found and as-left data as a result of these influences could potentially be a significant contributor to the calculated value of drift, when drift may not have been involved at all. If the worst case value is a result of these errors and not drift, the instrument's calculated drift value will not truly be representative of the equipment's drift performance.

e. Other factors that can account for differences between as-left and as-found data such as technique, measurement & test equipment and temperature effects are already included in our setpoint determination

methodology. Utilizing worst case data for drift determination would potentially be taking these errors into account twice.

5. Questions regarding resistance temperature detector (RTD) performance:

   a. What industry groups have shown RTD drift is minimal and random?

      The principle study used for this evaluation was performed by the Analysis and Measurement Services Corp. (AMS), and published as NUREG/CR-5560, "Aging of Nuclear Plant Resistance Temperature Detectors," in June, 1990. In that study, laboratory testing of thirty nuclear grade RTD's over a thirty month period checked for drift and failures due to normal aging experienced as a result of thermal cycling and calibration. Some failures were experienced, but the majority of RTD's maintained a random pattern of drift within a band of ±0.2°C (±0.11°F). These results are supported by the series of studies culminating in EPRI Report TR-103099, "Effects of Resistance Temperature Detector Aging on Cross Calibration Techniques," published in June, 1994. This report concluded that "RTD's are inherently stable and after the initial burn-in period (months) the element attains a stable condition from which it may never drift sufficiently to exceed the accuracy requirements set by each facility for their respective Reactor Coolant Systems."

   b. What is the more rigorous methodology being used at Crystal River 3 to compare temperature strings?

      Since January, 1992, a program to trend the drift of primary plant RTD's has been in place which checks the on-line performance of both the T_{hot} and T_{cold} sensors. As part of this program data is collected from an averaged sixteen minutes of plant computer data for each monitored RTD. The data is plotted once each week. Equivalent range sensors are plotted together. This trending program has been used to verify all primary plant RTD's are not exhibiting drift, but are exhibiting stable performance. An RTD linear bridge miscalibration (≈2°F) was rapidly identified by this trending program in 1994.

6. Discussion on as-found and as-left values

   If as-found data is not within the as-left tolerances specified in calibration procedures, technicians are required to adjust the equipment to satisfy the as-left acceptance criteria. Equipment whose data is not found within as-found tolerances is considered to be inoperable. The equipment will not be considered operable until it is returned to within the as-left tolerances of the procedure. The following steps from SP-132, Engineered Safeguards Channel Calibration, are typical of those found in most calibration procedures.

"4.1.1 Transmitter Calibration

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4.1.1.6 IF any "As Found" data is NOT within the tolerance specified on the String Calibration Data Sheet,
THEN perform the following:

- o Circle the Out of Tolerance Reading in Red.
- o Initiate a Precursor Card.
- o Consult with the I&C Supervisor and NSSOD to determine if a Problem Report is required. (Reference ITS 3.3.5)
- o Ensure a Problem Report is initiated if required. (Only 1 Problem Report is required per string.)
- o Fill out the Out-Of-Tolerance Log Sheet (Enclosure 19).

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4.1.1.10 IF the transmitter can not be calibrated to the required "As Left" tolerances,
THEN notify the I&C Supervisor and initiate a Work Request for repair/replacement."

Should you need further information for your review, we will be happy to provide whatever we can.

Sincerely,

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

Attachments

PMB:AEF

xc: Regional Administrator, Region II
Senior Resident Inspector
NRC Project Manager

STATE OF FLORIDA

COUNTY OF CITRUS

P. M. Beard, Jr. states that he is the Senior Vice President, Nuclear Operations for Florida Power Corporation; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission the information attached hereto; and that all such statements made and matters set forth therein are true and correct to the best of his knowledge, information, and belief.

P. M. Beard, Jr.
Senior Vice President
Nuclear Operations

P. M. Beard, Jr., personally known to me. Subscribed and sworn to before me, a Notary Public in and for the State and County above named, this 28th day of November, 1995.

LYNNE S. Smith
Notary Public (print)

Notary Public (signature)

Notary Public, State of Florida at Large

My Commission Expires:

Notary Public, State of Florida at Large
My Commission Expires Dec. 18, 1995
Bonded thru Agent's Notary Brokerage

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER	)	
	)	DOCKET NO. 50-302
FLORIDA POWER CORPORATION	)	

CERTIFICATE OF SERVICE

P. M. Beard, Jr. deposes and says that the following has been served on the Designated State Representative and Chief Executive of Citrus County, Florida, by deposit in the United States mail, addressed as follows:

Chairman,
Board of County Commissioners
of Citrus County
Citrus County Courthouse
Inverness, FL 34450

Administrator,
Radiological Health Services
Department of Health and
Rehabilitative Services
1323 Winewood Blvd.
Tallahassee, FL 32301

A copy of Technical Specification Change Request No. 202, Supplement 1

FLORIDA POWER CORPORATION

P.M. Beard, Jr.
Senior Vice President
Nuclear Operations

P. M. BEARD, JR., PERSONALLY KNOWN TO ME. SWORN TO AND SUBSCRIBED BEFORE ME THIS 28th DAY OF NOVEMBER 1995

LYNNE S. SMITH
Notary Public (print)

Notary Public (signature)

Notary Public, State of Florida at Large
My Commission Expires:
Notary Public, State of Florida at Large
My Commission Expires Dec. 18, 1995
Bonded thru Agent's Notary Brokerage

SURVEILLANCE REQUIREMENT - 3.3.1.6, (6)
REACTOR PROTECTION SYSTEM
REACTOR BUILDING HIGH PRESSURE

I. SURVEILLANCE PROCEDURE/DEVICES:

A. Surveillance procedure: SP-112.

B. Calibrated device included in the instrument Drift Data analysis:

DEVICE: Pressure Switch
MANUFACTURER: Static "O"-Ring
MODEL: 12N-K5-CM2
RANGE: .25 to 12 psig.
CALIBRATED SPAN: 11.75 psig.
TAG NUMBERS: BS-59-PS, BS-60-PS, BS-61-PS, & BS-62-PS
DEVICE DRIFT VALUE: None Stated

II. NRC GENERIC LETTER 91-04 Analysis Criteria and DRIFT STUDY RESULTS:

1. ***"Confirm that instrument drift as determined by "As-Found" and "As-Left" calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval."***

   Per Refueling interval surveillance procedure, SP-112, "Calibration of the Reactor Protection System", the pressure switches listed above, have not exceeded acceptable "As-Found" surveillance procedure tolerances, for the surveillance intervals investigated, except as described below.

   One raw calibration data point for BS-62-PS, on 4/2/94, was found to have exceeded the calibration procedure "As-Found" tolerance in the conservative direction. BS-62-PS has performed within $\pm$ 0.6% during previous calibrations and BS-59, 60 & 61-PS have not been found outside their "As-Found" tolerance during any calibration. Equipment operating outside of the "As-Found" tolerance is considered a failure and will lead to replacement if unsatisfactory performance continues. The raw "As-Found" data has never exceeded the ITS Allowable Value of $\leq$4 psig. Raw calibration data points which have exceeded "As-Found" tolerance: 1 of 16 or 6%.

2. ***"Confirm that the values of drift for each instrument type, (make, model and range) and application have been determined with a high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant data."***

   Standard statistical methodologies were utilized in this DRIFT STUDY. The following references were consulted to establish the techniques used in this evaluation.

   1. ISA-S67.04, Part I Standard, Setpoints for Nuclear Safety-Related Instrumentation

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2. ISA-S67.04, Part II Recommended Practice, Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation
3. EPRI document TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs", Project 2409-21, final Report dated March 1994
4. American Society of Testing and Materials (ASTM) standard E178-1980, (re-approved 1989), "Standard Practice for Dealing With Outlying Observations."
5. ANSI N15.15-1974, American National Standard Assessment of the Assumption of Normality
6. Probability and Statistics 4th Edition, Irwin Miller/John E Freund/Richard A. Johnson

The summary of the EPRI project observations, from section 9, "CONCLUSIONS" is as follows:

A. Instrument drift tends to increase with instrument span.

B. Instrument drift tends to be bounded by a normal distribution.

C. Instrument drift rarely showed any significant indication of time dependency.

D. Instrument drift data often showed no bias for the direction of drift.

E. OUTLIER checks are necessary to detect data errors.

The methods utilized in the drift study, can be summarized as follows:

A. Instrument calibration data, ("As-Found" and "As-Left"), was obtained from, (typically), five intervals of the appropriate refueling interval surveillance procedure. The number of intervals may change if instruments have been replaced with a different type, etc.

B. A spread sheet computer program, which can be run on a personal computer was utilized for ease of analysis. Florida Power Corporation utilizes Microsoft Excel, running under a Microsoft Windows environment. See the **"SPREAD SHEET FORMAT"** section below for an explanation of the spread sheet data and calculations.

C. The "RAW" "As Found" and "As Left" data was obtained from the associated Refueling interval surveillance procedure and entered onto the spread sheet.

D. Drift data information for an interval was obtained by subtracting the instruments previous calibration "As-Left" data from the current calibration "As-Found" data. This difference was divided by the calibrated span and the drift data was expressed as a PERCENT OF SPAN.

E. Drift data was analyzed and the MEAN and STANDARD DEVIATION was determined.

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REACTOR PROTECTION SYSTEM
REACTOR BUILDING HIGH PRESSURE

F. Outliers were identified by performing a statistical "critical values of T" test. The outlier criteria value was determined based on the number of total drift points. Outliers could result from raw calibration data which has exceeded the surveillance procedure "As-Found" tolerance, procedural or personnel errors, M&TE problems, or other deficiencies or failures. "As-Found" data that exceeded procedural "As-Found" tolerances and was identified as an OUTLIER was evaluated for possible removal from the data set. If the unsatisfactory data was the result of an influence other than drift, the reason was documented and the outlier removed from the data set.

G. The tolerance band for the data was calculated by multiplying each calculated STANDARD DEVIATION by the appropriate 95%/95% tolerance factor. This factor indicates a 95% level of confidence, that 95% of the instrument drift data is contained within the tolerance band.

H. Drift data was tested to verify the assumption that the data is "NORMAL". Either a D'-test or W-test was performed. If the drift data failed these tests, then a "COVERAGE ANALYSIS" was performed. The coverage analysis requires drift data be analyzed to determine if the data is bounded by a normal distribution. A "DATA HISTOGRAM" was plotted, as well as a comparison table of the actual distribution of the drift data versus the expected probability distribution to show drift data is normally bounded.

I. To evaluate time dependency, a regression analysis on the absolute value of drift data was performed. The regression line was plotted with the absolute values of drift versus interval (in months) to show a correlation between drift and calibration interval. The regression trend line was used as trend only and was not used to extrapolate the 30-month drift term. Also charted was drift data versus calibration, ("As-Found"), date. The charts were then evaluated to aid in the determination of the equipments tendency to exhibit time dependent drift.

SPREAD SHEET FORMAT

The surveillance procedure data was arranged in a spread sheet format which displays the following information:

A. Instrument Tag Number/Channel/Descriptor,

B. "As-Found" and "As-Left" calibration dates of the surveillance procedure, which are used to Calculate the calibration "INTERVAL"s,

C. Raw "As-Found" and "As-Left" device data, (voltage, pressure, etc.),

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REACTOR PROTECTION SYSTEM
REACTOR BUILDING HIGH PRESSURE

D. "DRIFT DATA", (difference between "As-Found" and "As-Left" data divided by the calibrated SPAN of the instrument, expressed in PERCENT of SPAN),

E. "OUTLIER detection by critical values of T" test,

F. Range, Calibrated Span, "As-Found" and "As-Left" tolerances, Instrument Error/Setpoint calculation number, device setpoint, Technical Specification Limiting Value, etc. is provided for reference.

G. Drift data statistical information: MEAN, STANDARD DEVIATION, OUTLIER CRITERIA, number of drift data points, number of OUTLIERs excluded, 95%/95% "k" value, and the calculated ± 95%/95% tolerance values.

H. The D'-test or W-test for "normal" data assumption is performed. If the data fails the appropriate test, a drift data Histogram and coverage analysis is performed.

I. Regression analysis of the drift data which was used to allow chart the absolute value of drift versus interval with regression trend line.

J. The projected 30-month drift term derived.

K. Drift data, surveillance interval, "As-Found" dates, ±95%/95% tolerance values, and zero % values were provided for charting.

RESULTS

One raw calibration data point for BS-62-PS, on 4/2/94, was found to have exceeded the calibration procedure "As-Found" tolerance in the conservative direction. The T-Test identified this data point as an OUTLIER. Since the outlier identified in 1994 was from the last calibration performed, no subsequent data is available to demonstrate drift is not the cause. Based on this, the outlier was retained in the data set. It should be noted that BS-62-PS has performed within ± 0.6% during previous calibrations and BS-59, 60 & 61-PS have not been found outside their "As-Found" tolerance during any calibration. Equipment operating outside of the "As-Found" tolerance is considered a failure and will lead to replacement if unsatisfactory performance continues. The raw "As-Found" data has never exceeded the Tech. Spec. limit of 4 psig. Raw calibration data points which have exceeded "As-Found" tolerance: 1 of 16 or 6%.

±95%/95% Tolerances:
BS-59,60,61,62-PT
+ 1.7%, + 0.19 psig
- 2.2%, - 0.26 psig

SURVEILLANCE REQUIREMENT - 3.3.1.6. (6)
REACTOR PROTECTION SYSTEM
REACTOR BUILDING HIGH PRESSURE

3. ***"Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type, make, model number and range) and application that performs a safety function. Provide a list of the channels by Technical Specification section that identifies these instrument applications."***

The drift data calculations for each Surveillance Requirement, establishes the "±95%/95%" Tolerance Factor. This calculated value indicates a 95% level of confidence, that 95% of the population, (instrument drift data), will be within the stated interval.

The following methodology was utilized to establish the projected 30-month drift term:

1) If drift data is determined to be time independent by using linear regression analysis, a graph of drift data versus calibration interval and a graph of drift data versus calibration ("As-Found") date, then the 95%/95% Tolerance values will be used as the projected 30-month drift.

2) If drift data is determined to be time dependent from the above method, then the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

3) If drift data does not support the determination of time dependency (all data based on 18-month calibration), the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

RESULTS

The RB Pressure HIGH Pressure Switch Drift Data passed the W-TEST, (the data is "normal"). Calibration data was clumped around 12 month and 18 month intervals allowing the slope of the regression line to pivot around a single data point. This reduced the confidence that the negative slope of the regression line was in fact demonstrating time independent drift. Method 3 above was utilized to calculate a projected 30 month drift term.

As indicated on page one, the Surveillance Requirement and instruments covered by this analysis, are as follows:

SURVEILLANCE REQUIREMENT - 3.3.1.6, (6)
REACTOR PROTECTION SYSTEM
REACTOR BUILDING HIGH PRESSURE

Surveillance Requirement: 3.3.1.6, (6); Reactor Protection System, Initiation - Reactor Building Pressure - HIGH

Surveillance procedure: SP-112.

Technical Specification Allowable Value: ≤ 4 psig.

Surveillance procedure setpoint: 3.34 psig.

Tag Numbers: Channel "A": BS-59-PS,
Channel "B": BS-60-PS,
Channel "C": BS-61-PS,
Channel "D": BS-62-PS

Projected 30-Month Drift Value
BS-59,60,61,62-PT
+ 2.1%, + 0.25 psig
- 2.9%, - 0.33 psig

4. ***"Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed Technical Specification changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that the safety limits and safety analysis assumptions are not exceeded."***

The RPS Error Calculation includes 0.507 psig of margin in the development of the setpoint. The margin bounds the projected 30-month drift term derived above confirming that no changes are required to the Technical Specifications or the safety analysis.

5. ***"Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown. Licensees must confirm that the instrument errors caused by drift will not affect the capability to achieve safe shutdown."***

The RPS Reactor Building Pressure Switches are utilized for inputs to:

A. RPS REACTOR BUILDING HIGH PRESSURE, (4 psig), Reactor Trip Actuation
B. RPS REACTOR BUILDING HIGH PRESSURE, (4 psig), Alarm

The pressure switches analyzed in this Drift study are not utilized for control of plant parameters, other than the RPS "TRIP" functions which was evaluated in (4) above.

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6. ***"Confirm that all conditions and assumptions of the setpoint and safety analysis have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for CHANNEL CHECKS, CHANNEL FUNCTIONAL TESTS and CHANNEL CALIBRATIONS."***

   Since the results of the drift study are bound by the setpoint analysis margin, the condition and assumptions of setpoint and safety analysis remain valid. The calculation for these reactor building pressure switches provide the required surveillance procedure setpoint, "As-Left" and "As-Found" procedure tolerances. The revised "As-Left" and "As-Found" surveillance procedure tolerances, will be incorporated into the appropriate CHANNEL CHECKS, CHANNEL FUNCTIONAL TEST or CHANNEL CALIBRATION surveillance procedures, as required.

7. ***"Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and its effect on safety.***

   The instrument "DRIFT PROGRAM" is an ongoing program which will monitor future surveillance procedure "As-Found" and "As-Left" data, and will incorporate new data into the Drift Study spread sheets with the existing Drift Data. The revised Drift Data MEAN, STANDARD DEVIATION, ± 95%/95% TOLERANCE INTERVALS, etc., will be compared with the existing Drift Data, to ensure the conclusions reached in this report remain valid.

S.R. 3.3.1.6, (6)

SP-112
BS-59, 60, 61 & 62-PS
Reactor Building HIGH Pressure

Surveillance Procedure:	SP-112	Calibration	Interval	Trip	Drift Data					
TAG NUMBER		Date	(Months)	Data	Outlier Evaluation					
BS-59-PS	As Left	9/30/88		3.300						
RPS CHANNEL A	As Found	4/3/90	18.1	3.210	-0.77%					
PS CAB. 3A1	As Left	4/3/90		3.320	DATA IS OK					
	As Found	9/16/91	17.5	3.300	-0.17%					
	As Left	11/8/91		3.280	DATA IS OK					
	As Found	3/24/93	18.2	3.350	0.60%					
	As Left	3/24/93		3.350	DATA IS OK					
	As Found	4/2/94	12.3	3.320	-0.26%					
	As Left	4/2/94		3.320	DATA IS OK					
BS-60-PS	As Left	9/30/88		3.350						
RPS CHANNEL B	As Found	4/3/90	18.1	3.290	-0.51%					
PS CAB. 3A2	As Left	4/3/90		3.290	DATA IS OK					
	As Found	9/16/91	17.5	3.250	-0.34%					
	As Left	11/8/91		3.330	DATA IS OK					
	As Found	3/24/93	18.2	3.430	0.85%					
	As Left	3/24/93		3.430	DATA IS OK					
	As Found	4/2/94	12.3	3.310	-1.02%					
	As Left	4/2/94		3.310	DATA IS OK					
BS-61-PS	As Left	9/30/88		3.250						
RPS CHANNEL C	As Found	4/3/90	18.1	3.180	-0.60%					
PS CAB. 3A3	As Left	4/3/90		3.320	DATA IS OK					
	As Found	9/16/91	17.5	3.330	0.09%					
	As Left	11/8/91		3.340	DATA IS OK					
	As Found	3/24/93	18.2	3.400	0.51%					
	As Left	3/24/93		3.400	DATA IS OK					
	As Found	4/2/94	12.3	3.340	-0.51%					
	As Left	4/2/94		3.340	DATA IS OK					
BS-62-PS	As Left	9/30/88		3.340						
RPS CHANNEL D	As Found	4/3/90	18.1	3.380	0.34%					
PS CAB. 3A4	As Left	4/3/90		3.300	DATA IS OK					
	As Found	9/16/91	17.5	3.280	-0.17%					
	As Left	11/8/91		3.270	DATA IS OK					
	As Found	3/24/93	18.2	3.200	-0.60%					
	As Left	3/24/93		3.300	DATA IS OK					
	As Found	4/2/94	12.3	3.080	-1.87%					
	As Left	4/2/94		3.350	DATA IS OK					
Pressure Range:	25 to 12	psig		Mean:	-0.28%				Percent	psig
Pressure Span:	11.75	psig		Standard Deviation:	0.65%			+95%/95%:	1.7%	0.19
SP-112 Setpoint:	3.34	psig		Number of Points:	16			-95%/95%:	-2.2%	-0.26
TS Limiting value:	<=4	psig	Percent	Outliers Excluded:	0			Projected 30 Month Drift Value:	2.1%	0.25
SP-112 As Found Tol:	0.19	psig	1.62%	Outlier Criteria:	2.443				-2.9%	-0.33
SP-112 As Left Tol:	0.19	psig	1.62%	95%/95% k:	2.954					
Setpoint Calculation:	I-95-0003			Average Interval:	16.52					

DATE: 11/3/95

FILE: [4#RBPS.RPS]4 PSIG RB PRESS SWITCH DATA

SP-112

BS-59, 60, 61 & 62-PS

Reactor Building HIGH Pressure

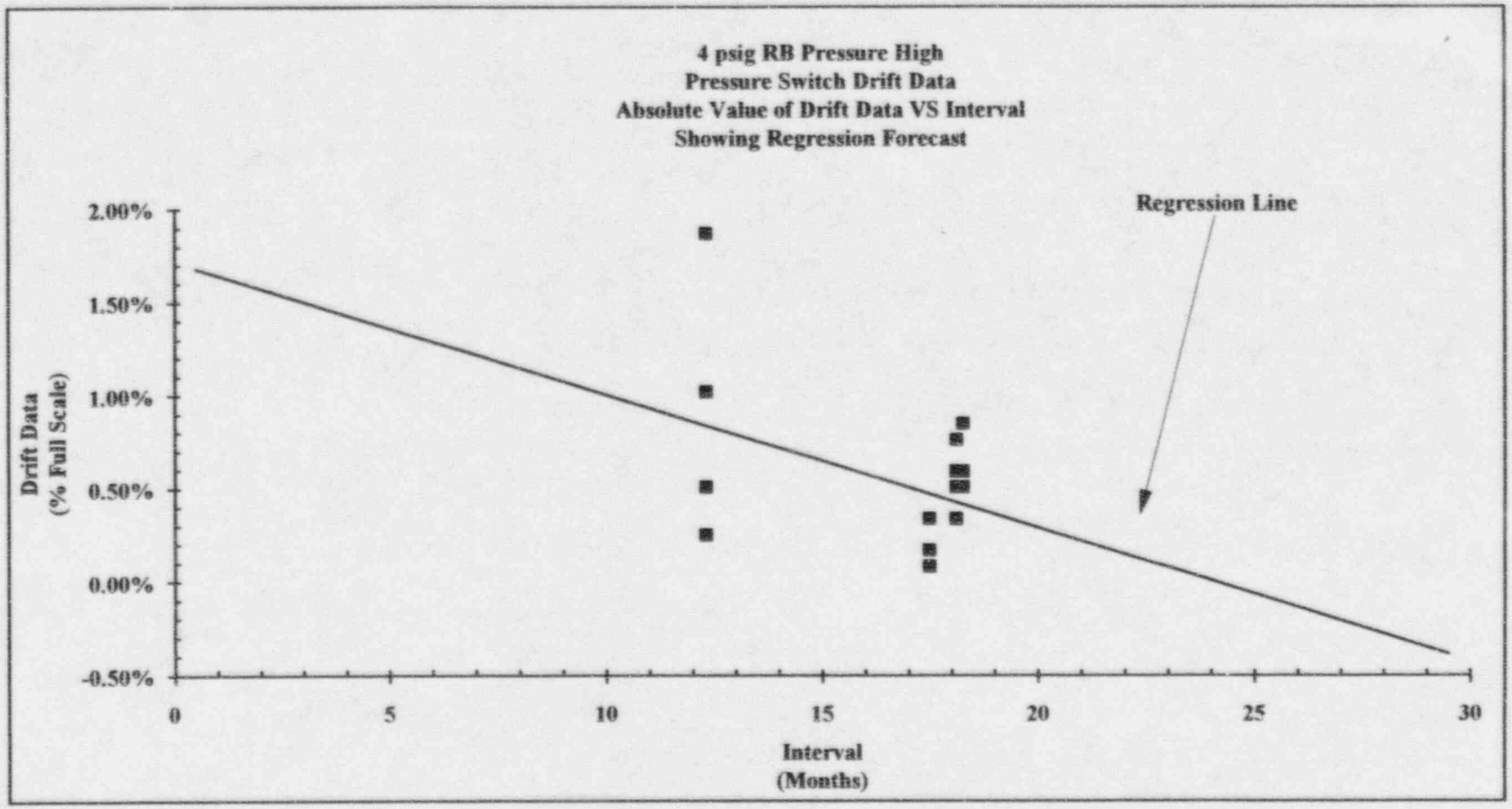
S.R. 3.3.1.6, (6)

W-TEST DATA		Coefficients	Sorted Test Data		B terms	# of Pts.	Data	Sorted		
Number of Points:	16	0.5056	-1.87%	0.85%	1.38%	1	-0.77%	-1.87%		
Variance (s^2):	4.28E-05	0.3290	-1.02%	0.60%	0.53%	2	-0.17%	-1.02%		
S^2:	6.42E-04	0.2521	-0.77%	0.51%	0.32%	3	0.60%	-0.77%		
B:	2.57%	0.1939	-0.60%	0.34%	0.18%	4	-0.26%	-0.60%		
B^2:	6.59E-04	0.1447	-0.60%	0.09%	0.10%	5	-0.51%	-0.60%		
W = (B^2 / S^2):	1.027	0.1005	-0.51%	-0.17%	0.03%	6	-0.34%	-0.51%		
Critical W @ 95%:	0.887	0.0593	-0.51%	-0.17%	0.02%	7	0.85%	-0.51%		
W Test:	PASS	0.0196	-0.34%	-0.26%	0.00%	8	-1.02%	-0.34%		
CHART DATA						9	-0.60%	0.85%		
Calibration	Drift					10	0.09%	0.60%		
Interval	Data			Zero		11	0.51%	0.51%		
11		1.66%	-2.21%	0.00%		12	-0.51%	0.34%		
18	-0.77%	1.66%	-2.21%	0.00%		13	0.34%	0.09%		
17	-0.17%	1.66%	-2.21%	0.00%		14	-0.17%	-0.17%		
18	0.60%	1.66%	-2.21%	0.00%		15	-0.60%	-0.17%		
12	-0.26%	1.66%	-2.21%	0.00%		16	-1.87%	-0.26%		
18	-0.51%	1.66%	-2.21%	0.00%						
17	-0.34%	1.66%	-2.21%	0.00%						
18	0.85%	1.66%	-2.21%	0.00%						
12	-1.02%	1.66%	-2.21%	0.00%						
18	-0.60%	1.66%	-2.21%	0.00%						
17	0.09%	1.66%	-2.21%	0.00%						
18	0.51%	1.66%	-2.21%	0.00%						
12	-0.51%	1.66%	-2.21%	0.00%						
18	0.34%	1.66%	-2.21%	0.00%						
17	-0.17%	1.66%	-2.21%	0.00%						
18	-0.60%	1.66%	-2.21%	0.00%						
12	-1.87%	1.66%	-2.21%	0.00%						
19		1.66%	-2.21%	0.00%						

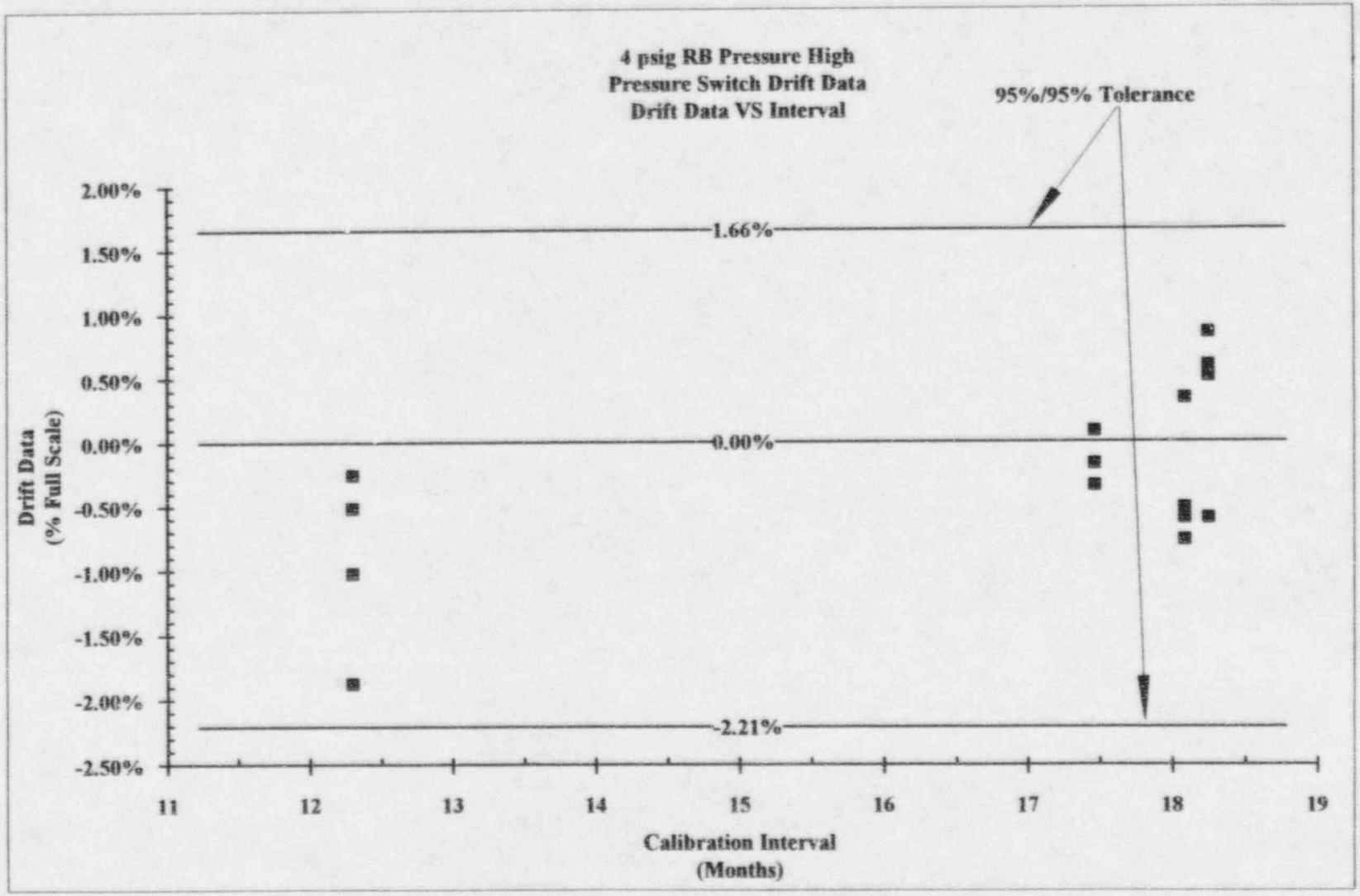
BS-59, 60, 61 & 62-PS
Reactor Building HIGH Pressure

12	-0.26%	0.26%		*Regression Statistics*						
12	-1.02%	1.02%								
12	-0.51%	0.51%		Multiple R	0.419262236					
12	-1.87%	1.87%		R Square	0.175780823					
17	-0.17%	0.17%		Adjusted R Square	0.116908024					
17	-0.34%	0.34%		Standard Error	0.004051817					
17	0.09%	0.09%		Observations	16					
17	-0.17%	0.17%								
18	-0.77%	0.77%		*Analysis of Variance*						
18	-0.51%	0.51%			*df*	*Sum of Squares*	*Mean Square*	*F*	*Significance F*	
18	-0.60%	0.60%		Regression	1	4.90181E-05	4.90181E-05	2.985773182	0.105981725	
18	0.34%	0.34%		Residual	14	0.000229841	1.64172E-05			
18	0.60%	0.60%		Total	15	0.000278859				
18	0.85%	0.85%								
18	0.51%	0.51%			*Coefficients*	*Standard Error*	*t Statistic*	*P-value*	*Lower 95%*	*Upper 95%*
18	-0.60%	0.60%								
1	1.68%			Intercept	0.017514557	0.006886419	2.543347646	0.022492576	0.002744645	0.032284469
2	1.61%			x1	-0.000712439	0.000412305	-1.727938998	0.104523689	-0.001596747	0.000171869
3	1.54%									
4	1.47%									
5	1.40%									
6	1.32%									
7	1.25%									
8	1.18%									
9	1.11%									
10	1.04%									
11	0.97%									
12	0.90%									
13	0.83%									
14	0.75%									
15	0.68%									
16	0.61%									
17	0.54%									
18	0.47%									
19	0.40%									
20	0.33%									
21	0.26%									
22	0.18%									
23	0.11%									
24	0.04%									
25	-0.03%									
26	-0.10%									
27	-0.17%									
28	-0.24%									
29	-0.31%									
30	-0.39%									

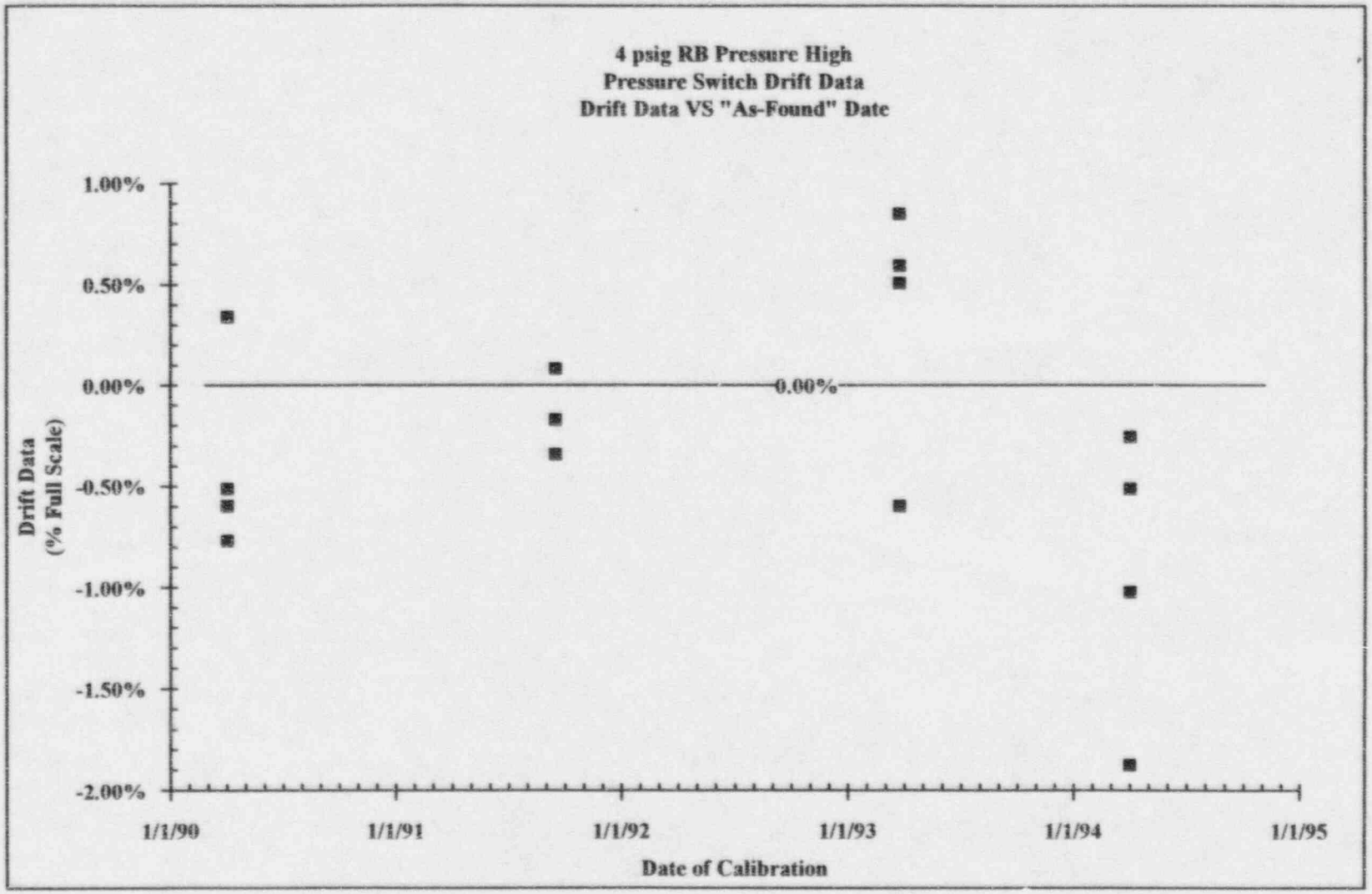
Surveillance Requirement 3.3.1.6, (6)
BS-59, 60, 61 & 62-PS



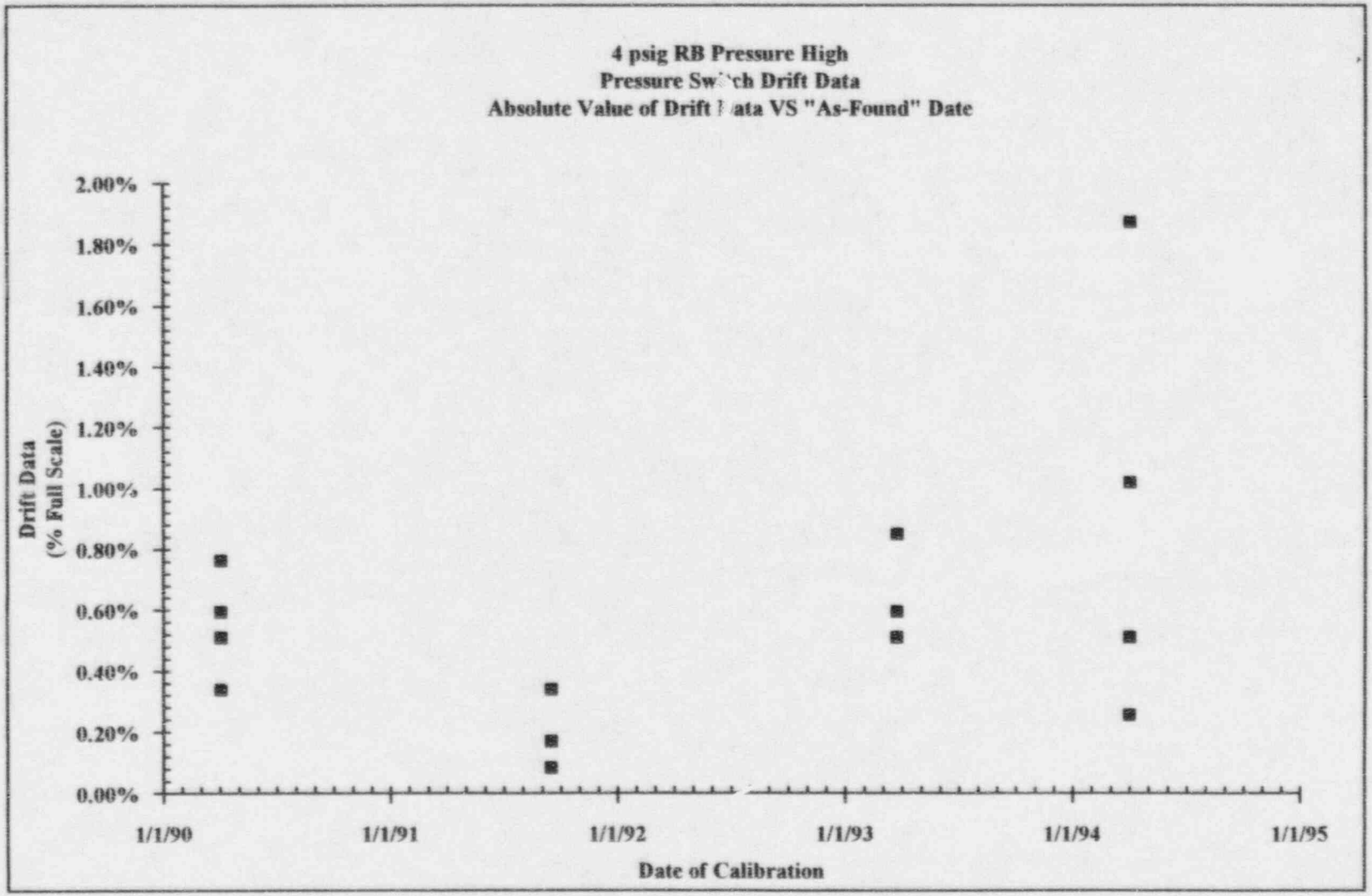
Surveillance Requirement 3.3.1.6, (6)
BS-59, 60, 61 & 62-PS



Surveillance Requirement 3.3.1.6, (6)
BS-59, 60, 61 & 62-PS



Surveillance Requirement 3.3.1.6, (6)
BS-59, 60, 61 & 62-PS



SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

I. SURVEILLANCE PROCEDURE & DEVICES:

A. Surveillance procedure: SP-161C.

B. Calibrated devices included in the individual instrument Drift Data analysis:

1. **DEVICE:** Pressure Transmitter
   MANUFACTURER: Rosemount
   MODEL: 1154GP9RA
   RANGE: 0 to 3000 psi
   SPAN: 0 to 3000 psi
   TAG NUMBERS: RC-158-PT & RC-159-PT
   DEVICE 30-MONTH DRIFT VALUE: $\pm$ 0.2% URL. (Upper Range Limit), for 30 months, from vendor manual; or $\pm$ (3000/3000 x $0.2\%^2$)$^{1/2}$ or $\pm$ 0.2%).

2. **DEVICE:** Current To Voltage Converter
   MANUFACTURER: Foxboro
   MODEL: 2AI-I2V
   INPUT SPAN: 4 to 20 mA DC
   OUTPUT SPAN: 0 to 10 volts DC
   TAG NUMBERS: RC-158-PY-1 & RC-159-PY1
   DEVICE DRIFT VALUE: None Stated

3. **DEVICE:** Voltage Buffer
   MANUFACTURER: Foxboro
   MODEL: N2A0-VAI
   INPUT SPAN: 0 to 10 volts DC
   OUTPUT SPAN: 0 to 10 volts DC
   TAG NUMBERS: RC-158-PY3 & RC-159-PY3
   DEVICE DRIFT VALUE: None Stated

4. **DEVICE:** Pressure Indicator
   MANUFACTURER: Bailey
   MODEL: RY
   INPUT SPAN: 0 to 10 volts DC
   INDICATING RANGE: 0 to 3000 psig
   TAG NUMBERS: RC-158-PI-2 & RC-159-PI-2
   DEVICE DRIFT VALUE: None Stated

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

5. **DEVICE:** Pressure Recorder
MANUFACTURER: Foxboro
MODEL: N227P-1R6-CS-N/SRC
INPUT SPAN: 0 to 10 volts DC
INDICATING RANGE: 0 to 3000 psig
TAG NUMBERS: RC-158-PIR
DEVICE DRIFT VALUE: None Stated

II. NRC GENERIC LETTER 91-04 Analysis Criteria and DRIFT STUDY RESULTS:

1. ***"Confirm that instrument drift as determined by "As-Found" and "As-Left" calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval."***

Per Refueling interval surveillance procedure, SP-161C, "Remote Shutdown Instrument Calibration", the components listed on the preceding page have not exceeded acceptable "As-Found" surveillance procedure tolerances, for the surveillance intervals investigated.

INDICATOR LOOP: Raw calibration data points which have exceeded "As-Found" tolerance: 0 of 40.

RECORDER LOOP: Raw calibration data points which have exceeded "As-Found" tolerance: 0 of 25.

2. ***"Confirm that the values of drift for each instrument type, (make, model and range) and application have been determined with a high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant data."***

Standard statistical methodologies were utilized in this DRIFT STUDY. The following references were consulted to establish the techniques used in this evaluation.

1. ISA-S67.04, Part I Standard, Setpoints for Nuclear Safety-Related Instrumentation
2. ISA-S67.04, Part II Recommended Practice, Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation
3. EPRI document TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs", Project 2409-21, final Report dated March 1994
4. American Society of Testing and Materials (ASTM) standard E178-1980, (re-approved 1989), "Standard Practice for Dealing With Outlying Observations."
5. ANSI N15.15-1974, American National Standard Assessment of the Assumption of Normality

SURVEILLANCE REQUIREMENT - 3.3.17.2. (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

6. Probability and Statistics 4th Edition, Irwin Miller/John E Freund/Richard A. Johnson

The summary of the EPRI project observations, from section 9, "CONCLUSIONS" is as follows:

A. Instrument drift tends to increase with instrument span.

B. Instrument drift tends to be bounded by a normal distribution.

C. Instrument drift rarely showed any significant indication of time dependency.

D. Instrument drift data often showed no bias for the direction of drift.

E. OUTLIER checks are necessary to detect data errors.

The methods utilized in the drift study, can be summarized as follows:

A. Instrument calibration data, ("As-Found" and "As-Left"), was obtained from, (typically), five intervals of the appropriate refueling interval surveillance procedure. The number of intervals may change if instruments have been replaced with a different type, etc.

B. A spread sheet computer program, which can be run on a personal computer was utilized for ease of analysis. Florida Power Corporation utilizes Microsoft Excel, running under a Microsoft Windows environment. See the **"SPREAD SHEET FORMAT"** section below for an explanation of the spread sheet data and calculations.

C. The "RAW" "As Found" and "As Left" data was obtained from the associated Refueling interval surveillance procedure and entered onto the spread sheet.

D. Drift data information for an interval was obtained by subtracting the instruments previous calibration "As-Left" data from the current calibration "As-Found" data. This difference was divided by the calibrated span and the drift data was expressed as a PERCENT OF SPAN.

E. Drift data was analyzed and the MEAN and STANDARD DEVIATION was determined.

F. Outliers were identified by performing a statistical "critical values of T" test. The outlier criteria value was determined based on the number of total drift points. Outliers could result from raw calibration data which has exceeded the surveillance procedure "As-Found" tolerance, procedural or personnel errors, M&TE problems, or other deficiencies or failures. "As-Found" data that exceeded procedural "As-Found" tolerances and was identified as an OUTLIER was evaluated for possible

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

removal from the data set. If the unsatisfactory data was the result of an influence other than drift, the reason was documented and the outlier removed from the data set.

G. The tolerance band for the data was calculated by multiplying each calculated STANDARD DEVIATION by the appropriate 95%/95% tolerance factor. This factor indicates a 95% level of confidence, that 95% of the instrument drift data is contained within the tolerance band.

H. Drift data was tested to verify the assumption that the data is "NORMAL". Either a D'-test or W-test was performed. If the drift data failed these tests, then a "COVERAGE ANALYSIS" was performed. The coverage analysis requires drift data be analyzed to determine if the data is bounded by a normal distribution. A "DATA HISTOGRAM" was plotted, as well as a comparison table of the actual distribution of the drift data versus the expected probability distribution to show drift data is normally bounded.

I. To evaluate time dependency, a regression analysis on the absolute value of drift data was performed. The regression line was plotted with the absolute values of drift versus interval (in months) to show a correlation between drift and calibration interval. The regression trend line was used as trend only and was not used to extrapolate the 30-month drift term. Also charted was drift data versus calibration, ("As-Found"), date. The charts were then evaluated to aid in the determination of the equipments tendency to exhibit time dependent drift.

SPREAD SHEET FORMAT

The surveillance procedure data was arranged in a spread sheet format which displays the following information:

A. Instrument Tag Number/Channel/Descriptor,

B. "As-Found" and "As-Left" calibration dates of the surveillance procedure, which are used to Calculate the calibration "INTERVAL"s,

C. Raw "As-Found" and "As-Left" device data, (voltage, pressure, etc.),

D. "DRIFT DATA", (difference between "As-Found" and "As-Left" data divided by the calibrated SPAN of the instrument, expressed in PERCENT of SPAN),

E. "OUTLIER detection by critical values of T" test,

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

F. Range, Calibrated Span, "As-Found" and "As-Left" tolerances, Instrument Error/Setpoint calculation number, device setpoint, Technical Specification Limiting Value, etc. is provided for reference.

G. Drift data statistical information: MEAN, STANDARD DEVIATION, OUTLIER CRITERIA, number of drift data points, number of OUTLIERs excluded, 95%/95% "k" value, and the calculated ± 95%/95% tolerance values.

H. The D'-test or W-test for "normal" data assumption is performed. If the data fails the appropriate test, a drift data Histogram and coverage analysis is performed.

I. Regression analysis of the drift data which was used to allow chart the absolute value of drift versus interval with regression trend line.

J. The projected 30-month drift term derived.

K. Drift data, surveillance interval, "As-Found" dates, ±95%/95% tolerance values, and zero % values were provided for charting.

RESULTS

INDICATOR LOOP: Three OUTLIERs were identified. However, the OUTLIERs do not exceed the "As-Found" procedure tolerance. Hence, these OUTLIERS are ACCEPTABLE and will not be removed from the Drift Data. Raw calibration data points which have exceeded "As-Found" tolerance: 0 of 40.

RECORDER LOOP: No OUTLIERs were identified. Raw calibration data points which have exceeded "As-Found" tolerance: 0 of 25.

±95%/95% Tolerances:

RC-158/159-PI-2	RC-158-PIR
+ 0.70%, 20.9 psig	+1.32%, 39.5 psig
- 0.61%, -18.4 psig	- 1.07%, -32.0 psig

3. ***"Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type, (make, model number and range) and application that performs a safety function. Provide a list of the channels by Technical Specification section that identifies these instrument applications."***

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

The drift data calculations for each Surveillance Requirement, establishes the "±95%/95%" Tolerance Factor. This calculated value indicates a 95% level of confidence, that 95% of the population, (instrument drift data), will be within the stated interval.

The following methodology was utilized to establish the projected 30-month drift term:

1) If drift data is determined to be time independent by using linear regression analysis, a graph of drift data versus calibration interval and a graph of drift data versus calibration ("As-Found") date, then the 95%/95% Tolerance values will be used as the projected 30-month drift.

2) If drift data is determined to be time dependent from the above method, then the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

3) If drift data does not support the determination of time dependency (all data based on 18-month calibration), the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

RESULTS

INDICATOR LOOP: The RC Wide Range Pressure Indicators drift data, did not pass the W-TEST. However, a "COVERAGE ANALYSIS" was performed on the data, including a "DATA HISTOGRAM" chart and also a "NORMAL DISTRIBUTION" comparison. A review of the drift data histogram, indicates a high "kurtosis", (large peak), at 0% drift, (27 of 40 Drift Data points), which virtually assure that the data will fail a normality test.

The "Actual" coverage distribution envelopes the "Expected Value", from 0 to 1.5 sigma. However, the "Actual" Histogram distribution is slightly smaller than the "Expected Value", at 2 sigma, (90% vs 95.45%, a difference two drift data points). The "Actual" again envelopes the "Expected" at 3.5 sigma, (100% vs 99.95%) and above. For the purposes of this drift study, the drift data will be considered "normal".

The regression analysis chart indicates slight time dependent drift, however other associated charts indicate that the drift data is neither calibration interval dependent nor time, (age), dependent. Based on this, the projected 30-month drift term has been derived using method (2) above and is as follows:

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

Projected 30-Month Drift Value
RC-158/159-PI-2
+ 1.20%, 35.78 psig
- 1.10%, -31.50 psig

RECORDER LOOP: The RC Wide Range Pressure Recorder Drift Data, passed the W-TEST, (the data is "normal").

The Regression analysis chart indicates slight time dependent drift, however other associated charts indicate that the Drift Data is neither calibration interval dependent nor time, (age), dependent. Based on this, the projected 30-month drift term has been derived using method (2) above and is as follows:

Projected 30-Month Drift Value
RC-158-PIR
+ 2.70%, 81.02 psig
- 2.20%, -65.66 psig

As indicated on page one, the Surveillance Requirement and instruments covered by this analysis, are as follows:

Surveillance Requirement: 3.3.17.2, (3); Post Accident Monitoring -- RCS Pressure - Wide Range.

Surveillance procedure: SP-161C.

Technical Specification Allowable Value: None, since this is Post Accident Monitoring instrumentation only.

Surveillance Procedure Setpoint: No setpoints are associated with this Post Accident Monitoring Instrumentation.

Tag Numbers: RC-158-PT, RC-158-PY-1, RC-158-PY3 & RC-158-PI-2 & RC-158-PIR
RC-159-PT, RC-159-PY1, RC-159-PY3, RC-159-PI-2

4. ***"Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed Technical Specification changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that the safety limits and safety analysis assumptions are not exceeded."***

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

These Post Accident Monitoring, (PAM), indicators have no setpoints, hence no setpoint analysis changes will be required.

5. ***"Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown. Licensees must confirm that the instrument errors caused by drift will not affect the capability to achieve safe shutdown."***

Per the Instrument Accuracy Calculation, (I88-0020, Rev. 7), and FPC drawing, 205-047 RC-02, the RCS Wide Range Pressure loops input to:

A. RCS Wide Range Pressure Recorder at MCB (RC-158-PT loop only).
B. RCS Wide Range Pressure Indicators at MCB.
C. RCS Wide Range Pressure Indicators at RSP.
D. RCS Wide Range Pressure to RECALL.
E. RCS Wide Range Pressure to ATWS-DSS.

With the exception of the outputs to ATWS-DSS, all the above functions are recording and indication only. Per the methodology utilized in the revised Instrument Accuracy Calculation, a new ATWS-DSS setpoint has been provided, and incorporated into the associated surveillance procedures.

The instruments associated with this surveillance requirement will not produce results that adversely affect safe shutdown of the plant for the following reasons:

1) The string accuracy calculation develops post accident errors that are significantly larger than the projected 30 month drift terms derived in this drift study.

2) Readability (½ of minor division) of RC-158-PIR is ± 25 psig and readability of RC-158/159-PI2 is ± 50 psig. Technicians can only record readings in these increments implying readability is a major contributor to the differences between "As-Found" and "As-Left" data.

3) Other factors that can influence the difference between "As-Found" and "As-Left" data such as M&TE, temperature effects, vibration, power supply effects and normal humidity/radiation effects are already taken into account in the string accuracy calculation.

4) Equipment performance has produced no occurrences of data being found outside procedure "As-found" tolerances. Based on this, it is expected that the equipment will continue to perform satisfactorily as prescribed by the surveillance procedures.

SURVEILLANCE REQUIREMENT - 3.3.17.2, (3)
POST ACCIDENT MONITORING
RCS PRESSURE (WIDE RANGE)

6. ***"Confirm that all conditions and assumptions of the setpoint and safety analysis have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for CHANNEL CHECKS, CHANNEL FUNCTIONAL TESTS and CHANNEL CALIBRATIONS."***

   Engineering has revised and upgraded the Instrument Accuracy Calculation, (I88-0020, Rev. 7), for these PAM devices. The majority of string devices have no 30-month drift error terms. However, revised "As-Left" and "As-Found" calibration tolerances and the revised ATWS-DSS setpoints will be incorporated into the appropriate CHANNEL CHECK, CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION surveillance procedures, as required.

7. ***"Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and its effect on safety."***

   The instrument "DRIFT PROGRAM" is an ongoing program which will monitor future surveillance procedure "As-Found" and "As-Left" data, and will incorporate new data into the Drift Study spread sheets with the existing Drift Data. The revised Drift Data MEAN, STANDARD DEVIATION, ± 95%/95% TOLERANCE INTERVALS, etc., will be compared with the existing Drift Data, to ensure the conclusions reached in this report remain valid.

SP-161C
RC-158-PIR
RCS PRESSURE INDICATION – WIDE RANGE

SP-161C		Calibration	Interval	Five Point Data					Drift Data & Outlier Evaluation.				
TAG NUMBER		Date	(Months)	0%	25%	50%	75%	100%	0%	25%	50%	75%	100%
RC-158-PIR (PEN)	As Left	9/2/89		0	750	1525	2250	3000					
RC-158-PT Replaced 9-89	As Found	3/30/90	6.9	0	750	1500	2250	3000	0.00%	0.00%	-0.83%	0.00%	0.00%
	As Left	5/27/90		9	757.5	1500	2245	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
4-20-94 As-Found & As-Left	As Found	11/7/91	17.4	25	770	1530	2270	3000	0.53%	0.42%	1.00%	0.83%	0.00%
Data Taken at 96.7% Vs	As Left	11/7/91		10	760	1510	2260	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
100%. Data Extrapolated To	As Found	6/29/92	7.7	2	760	1515	2250	3000	-0.27%	0.00%	0.17%	-0.33%	0.00%
100% To Be Consistent	As Left	6/29/92		2	760	1515	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
With Previous Data.	As Found	4/5/93	9.2	0	750	1500	2250	3000	-0.07%	-0.33%	-0.50%	0.00%	0.00%
	As Left	4/5/93		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	4/20/94	12.5	25	775	1525	2250	3000	0.83%	0.83%	0.83%	0.00%	0.00%
	As Left	4/20/94		25	775	1525	2275	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK

RC-158-PIR (PEN) Range:	0 to 3000	psig						Mean:	0.12%			Percent	psig
SP-161C As Found Tol.:	50	psig	1.67%					Standard Deviation:	0.45%		+95%/-5%:	1.32%	39.5
SP-161C As Left Tol.:	30	psig	1.00%					Number of Points:	25		-95%/95%:	-1.07%	-32.0
Loop Accuracy Calculation:	I88-0020, Rev. 7							Outliers Excluded:	0	Projected 30-Mo. Drift Value:		2.7%	81.02
								Outlier Criteria:	2.663			-2.2%	-65.66
								95%/95% k:	2.631				
								Average Interval:	10.74				

W-TEST DATA		Coefficients	Sorted Test Data		B terms	# of Pts.	Data	Sorted	# of Pts.	Data	Sorted		
Number of Points:	25	0.4450	-0.83%	1.00%	0.82%	1	0.00%	-0.83%	14	-0.50%	1.00%		
Variance (s^2):	2.05E-05	0.3069	-0.50%	0.83%	0.41%	2	0.53%	-0.50%	15	0.83%	0.83%		
S^2:	4.91E-04	0.2543	-0.33%	0.83%	0.30%	3	-0.27%	-0.33%	16	0.00%	0.83%		
B:	2.14E-02	0.2148	-0.33%	0.83%	0.25%	4	-0.07%	-0.33%	17	0.83%	0.83%		
B^2:	4.56E-04	0.1822	-0.27%	0.83%	0.20%	5	0.83%	-0.27%	18	-0.33%	0.83%		
W = (B^2 / S^2):	0.929	0.1539	-0.07%	0.53%	0.09%	6	0.00%	-0.07%	19	0.00%	0.53%		
Critical W @ 95%:	0.918	0.1283	0.00%	0.42%	0.05%	7	0.42%	0.00%	20	0.00%	0.42%		
W Test:	PASS	0.1046	0.00%	0.17%	0.02%	8	0.00%	0.00%	21	0.00%	0.17%		
		0.0823	0.00%	0.00%	0.00%	9	-0.33%	0.00%	22	0.00%	0.00%		
		0.0610	0.00%	0.00%	0.00%	10	0.83%	0.00%	23	0.00%	0.00%		
		0.0403	0.00%	0.00%	0.00%	11	-0.83%	0.00%	24	0.00%	0.00%		
		0.0200	0.00%	0.00%	0.00%	12	1.00%	0.00%	25	0.00%	0.00%		
						13	0.17%	0.00%					

RCS PRESSURE INDICATION -- WIDE RANGE

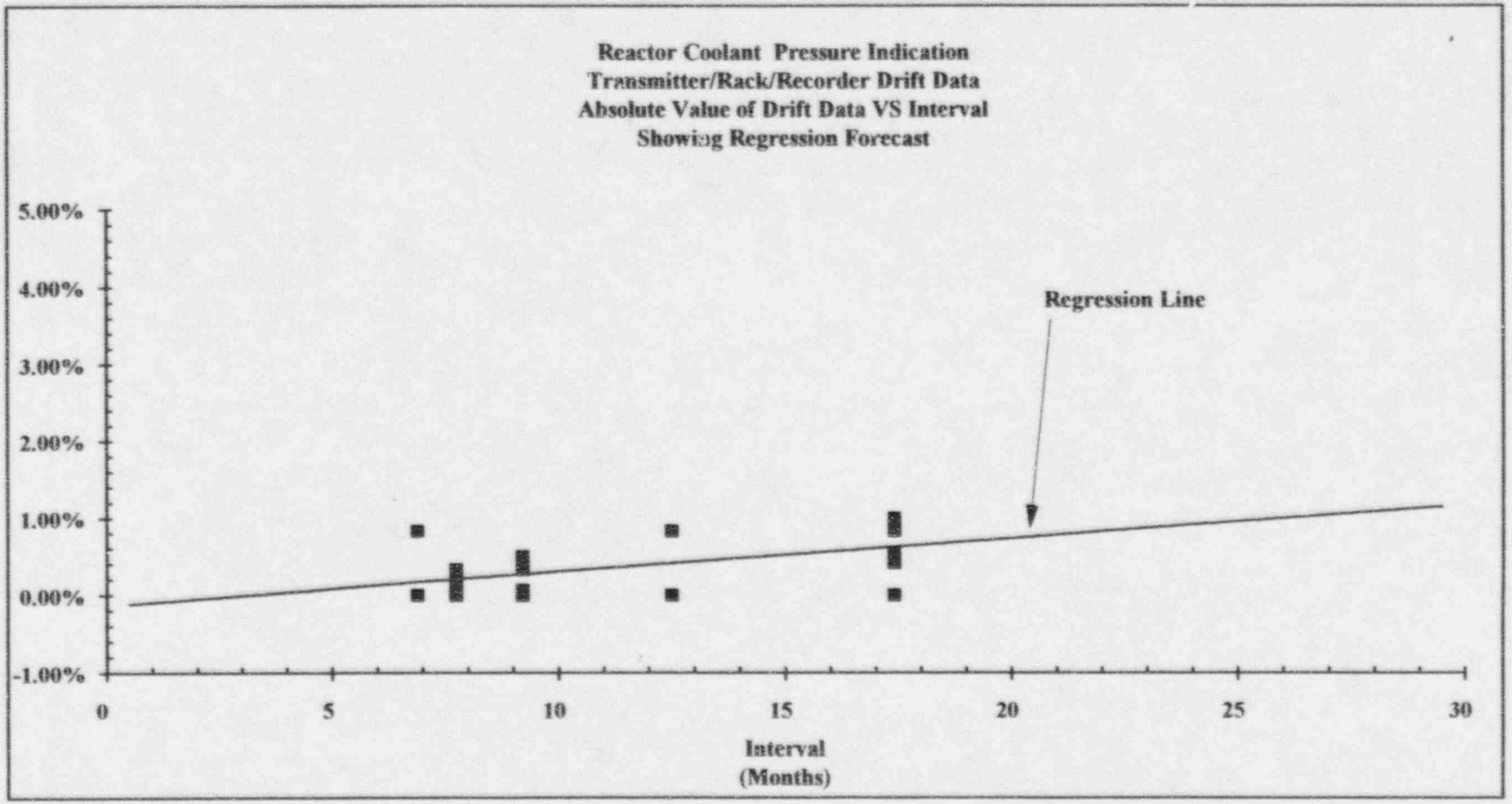
Chart Data Calibration Interval	Five Point Drift Data					95%/95% Limits		Zero %
	0%	25%	50%	75%	100%			
6						1.32%	-1.07%	0.00%
7	0.00%	0.00%	-0.83%	0.00%	0.00%	1.32%	-1.07%	0.00%
17	0.53%	0.42%	1.00%	0.83%	0.00%	1.32%	-1.07%	0.00%
8	-0.27%	0.00%	0.17%	-0.33%	0.00%	1.32%	-1.07%	0.00%
9	-0.07%	-0.33%	-0.50%	0.00%	0.00%	1.32%	-1.07%	0.00%
12	0.83%	0.83%	0.83%	0.00%	0.00%	1.32%	-1.07%	0.00%
18						1.32%	-1.07%	0.00%
7	0.00%	0.00%				Regression Statistics		
7	0.00%	0.00%						
7	-0.83%	0.83%				Multiple R	0.4746537	
7	0.00%	0.00%				R Square	0.22529613	
7	0.00%	0.00%				Adjusted R Square	0.19161335	
8	-0.27%	0.27%				Standard Error	0.00322229	
8	0.00%	0.00%				Observations	25	
8	0.17%	0.17%						
8	-0.33%	0.33%				Analysis of Variance		
8	0.00%	0.00%					df	Sum of Squares
9	-0.07%	0.07%				Regression	1	6.94503E-05
9	-0.33%	0.33%				Residual	23	0.000238812
9	-0.50%	0.50%				Total	24	0.000308262
9	0.00%	0.00%						
9	0.00%	0.00%					Coefficients	Standard Error
12	0.83%	0.83%						
12	0.83%	0.83%				Intercept	-0.0015473	0.001913848
12	0.83%	0.83%				x1	0.04%	0.00016783
12	0.00%	0.00%						
12	0.00%	0.00%						
17	0.53%	0.53%						
17	0.42%	0.42%						
17	1.00%	1.00%						
17	0.83%	0.83%						
17	0.00%	0.00%						
1	-0.11%							
2	-0.07%							
3	-0.02%							
4	0.02%							
5	0.06%							
6	0.11%							
7	0.15%							

Mean Square	F	Significance F
6.94503E-05	6.688763566	0.016509311
1.03831E-05		

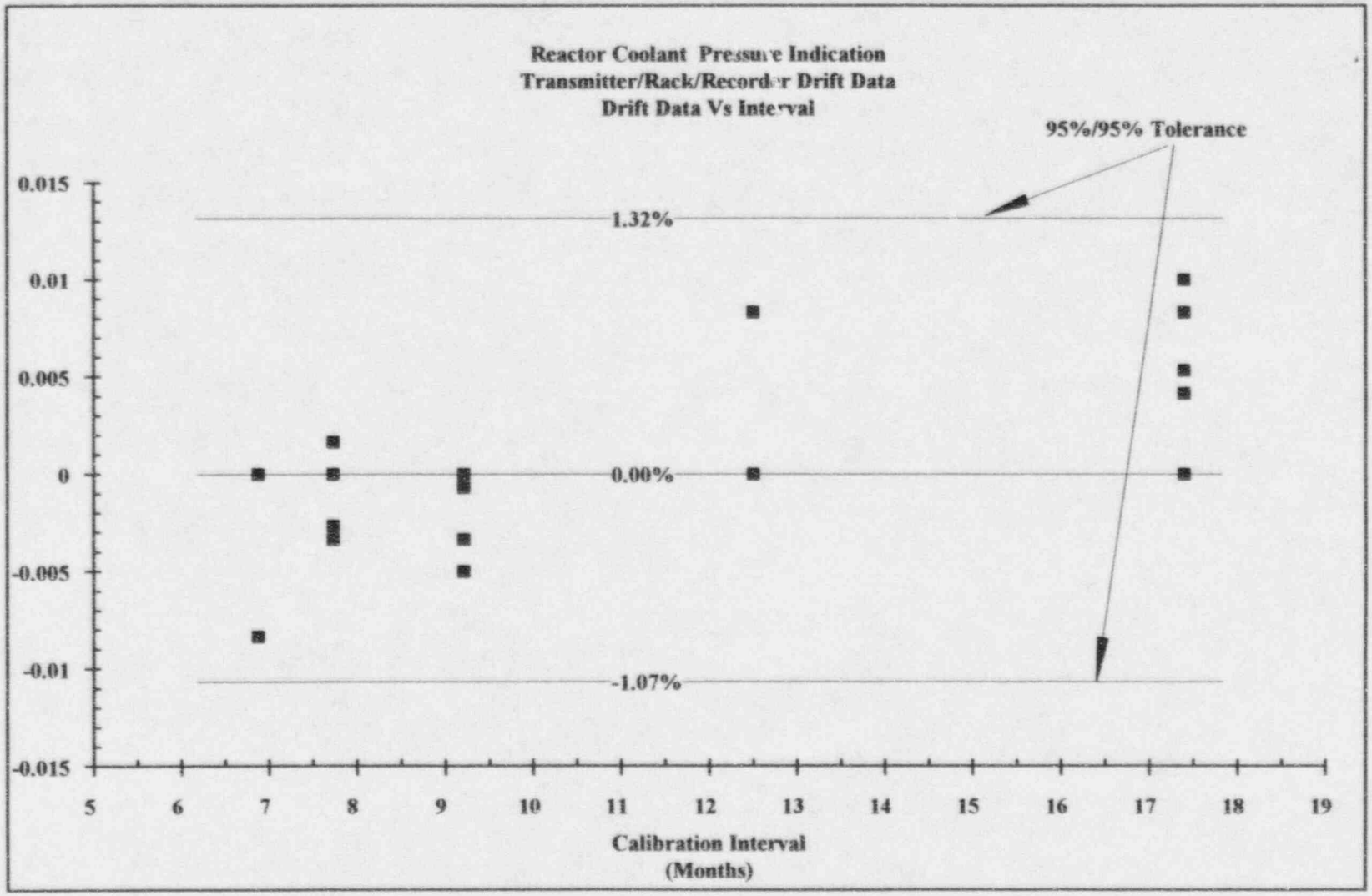
t Statistic	P-value	Lower 95%	Upper 95%
-0.808485988	0.426752901	-0.00550641	0.002411771
2.586264404	0.016199175	8.68703E-05	0.000781234

8	0.19%												
9	0.24%												
10	0.28%												
11	0.32%												
12	0.37%												
13	0.41%												
14	0.45%												
15	0.50%												
16	0.54%												
17	0.58%												
18	0.63%												
19	0.67%												
20	0.71%												
21	0.76%												
22	0.80%												
23	0.84%												
24	0.89%												
25	0.93%												
26	0.97%												
27	1.02%												
28	1.06%												
29	1.10%												
30	1.15%												

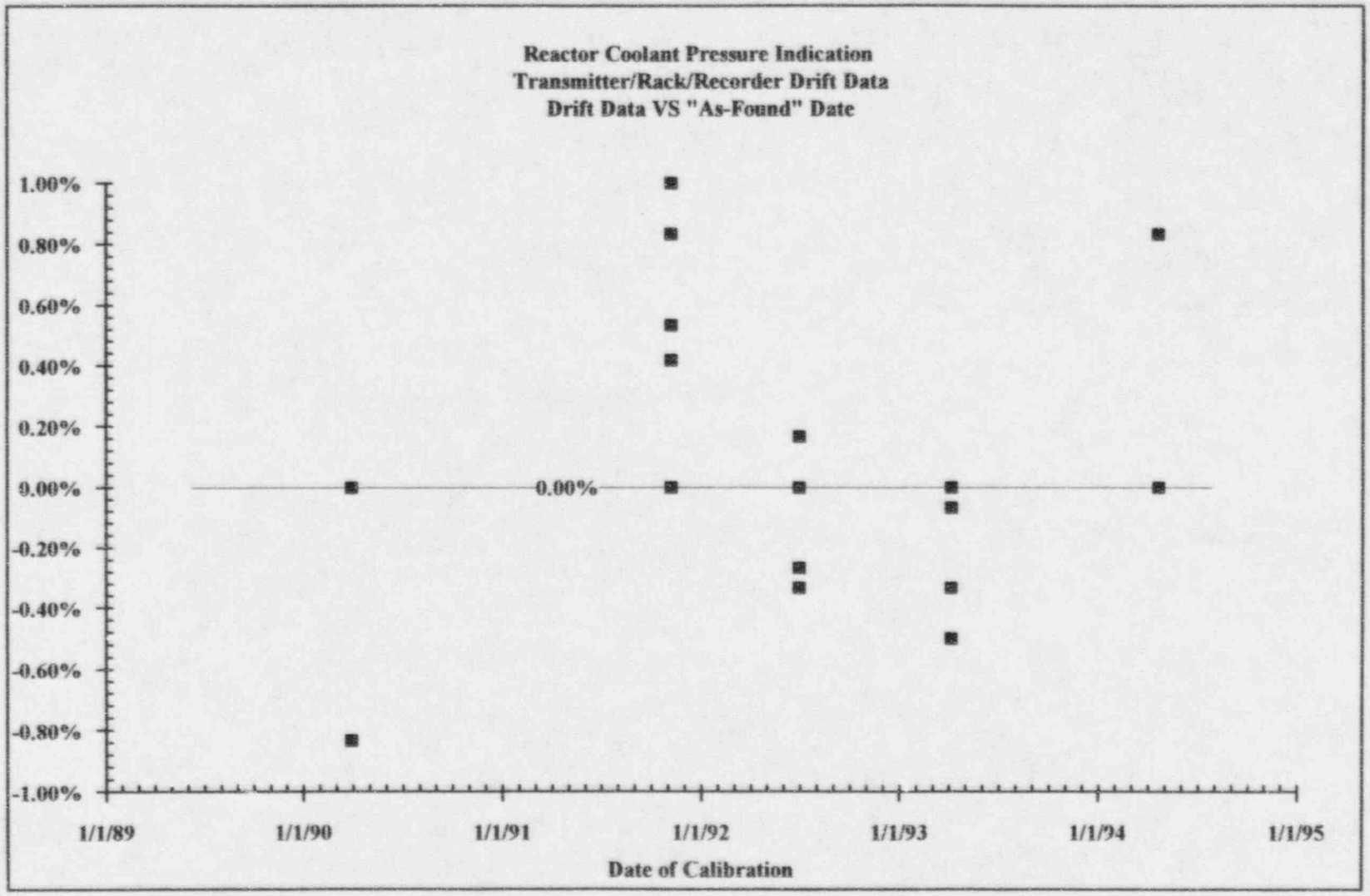
SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158-PIR



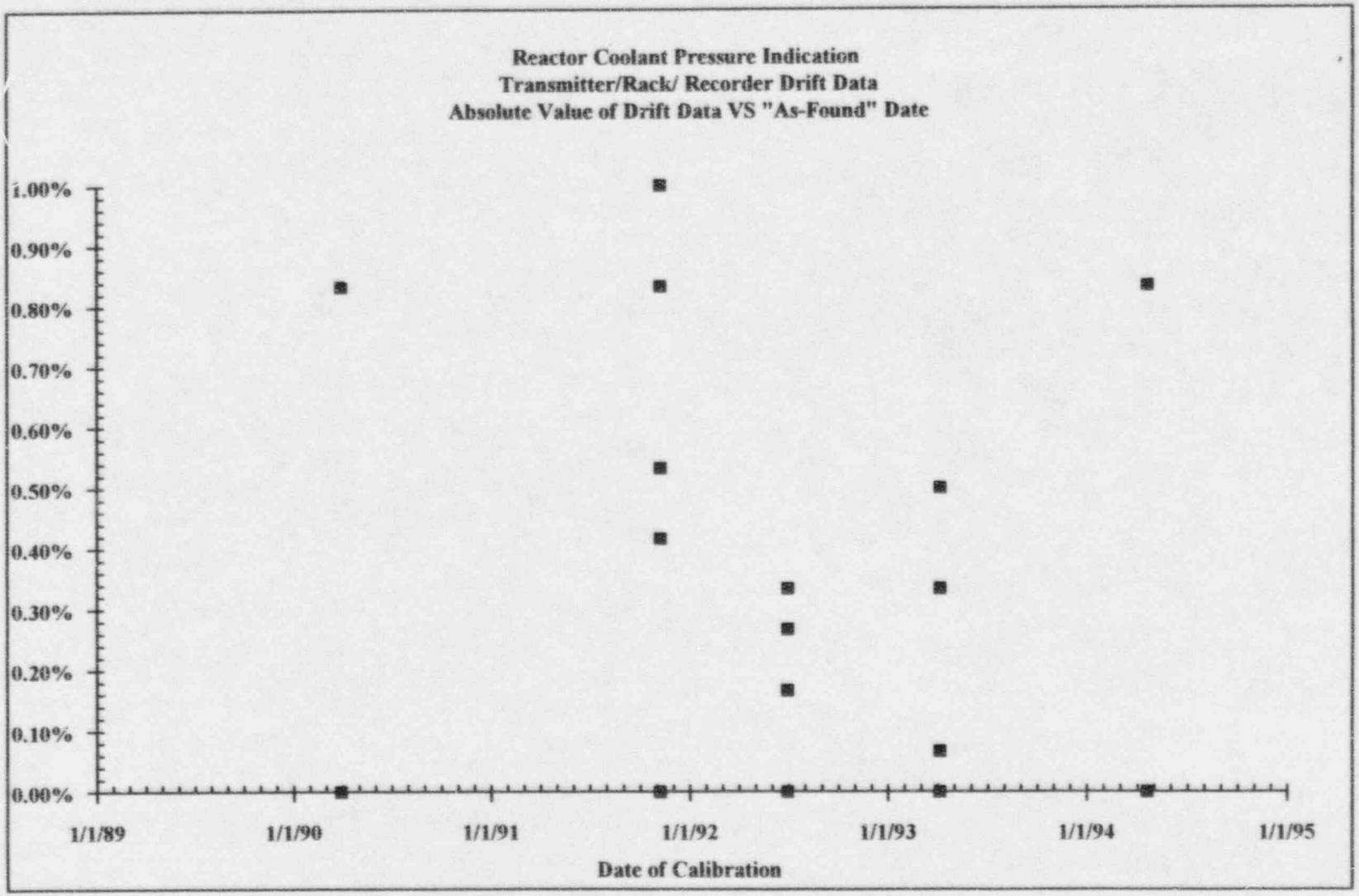
SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158-PIR



SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158-PIR



SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158-PIR



SP-161C

SR 3.3.17.2 (3)

RC-158/159-PI-2

RC PRESSURE INDICATION – WIDE RANGE

SP-161C		Calibration	Interval	Five Point Data					Drift Data & Outlier Evaluation.				
TAG NUMBER		Date	(Months)	0%	25%	50%	75%	100%	0%	25%	50%	75%	100%
RC-158-PI-2	As Left	9/2/89		0	750	1500	2275	3000					
RC-158-PT Replaced 9-89	As Found	3/30/90	6.9	0	750	1500	2250	3000	0.00%	0.00%	0.00%	-0.83%	0.00%
	As Left	5/27/90		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	OUTLIER	DATA IS OK
4-20-94 As-Found & As-Left	As Found	11/7/91	17.4	0	760	1520	2275	3000	0.00%	0.33%	0.67%	0.83%	0.00%
Data Taken at 96.7% Vs	As Left	11/7/91		0	750	1500	2260	3000	DATA IS OK	DATA IS OK	DATA IS OK	OUTLIER	DATA IS OK
100%. Data Extrapolated To	As Found	6/29/92	7.7	0	745	1505	2255	3000	0.00%	-0.17%	0.17%	-0.17%	0.00%
100% To Be Consistent	As Left	6/29/92		5	745	1505	2255	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
With Previous Data.	As Found	4/5/93	9.2	0	750	1500	2250	3000	-0.17%	0.17%	-0.17%	-0.17%	0.00%
	As Left	4/5/93		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	4/20/94	12.5	0	750	1500	2250	3000	0.00%	0.00%	0.00%	0.00%	0.00%
	As Left	4/20/94		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
RC-159-PI-2	As Left	5/27/90		0	725	1490	2250	3000					
RC-159-PT Replaced 5-90	As Found	11/7/91	17.4	0	750	1500	2250	3000	0.00%	0.83%	0.33%	0.00%	0.00%
4-20-94 As-Found & As-Left	As Left	11/7/91		0	750	1500	2250	3000	DATA IS OK	OUTLIER	DATA IS OK	DATA IS OK	DATA IS OK
Data Taken at 96.7% Vs	As Found	4/5/93	16.9	0	750	1500	2250	3000	0.00%	0.00%	0.00%	0.00%	0.00%
100%. Data Extrapolated To	As Left	4/5/93		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
100% To Be Consistent	As Found	4/20/94	12.5	0	750	1500	2250	3000	0.00%	0.00%	0.00%	0.00%	0.00%
With Previous Data.	As Left	4/20/94		0	750	1500	2250	3000	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
RC-158/159-PI-2 Range:	0 to 3000	psig						Mean:	0.04%			Percent	psig
Span:	3000	psig						Standard Deviation:	0.27%		+95%/95%:	0.70%	20.9
SP-161C As Found Tol.:	75	psig	2.50%					Number of Points:	40		-95%/95%:	-0.61%	-18.4
SP-161C As Left Tol.:	50	psig	1.67%					Outliers Excluded:	0	Projected 30-Mo. Drift Value:		1.2%	35.78
Loop Accuracy Calculation:	I88-0020, Rev. 7							Outlier Criteria:	2.866			-1.1%	-31.50
								95%/95% k:	2.445				
								Average Interval:	12.6				

RC PRESSURE INDICATION -- WIDE RANGE

W-TEST DATA		Coefficients	Sorted Test Data		B terms	# of Pts.	Data	Sorted	# of Pts.	Data	Sorted		
Number of Points:	40	0.3964	-0.83%	0.83%	0.66%	1	0.00%	-0.83%	21	0.00%	0.83%		
Variance (s^2):	7.19E-06	0.2737	-0.17%	0.83%	0.27%	2	0.00%	-0.17%	22	0.33%	0.83%		
S^2:	2.80E-04	0.2368	-0.17%	0.67%	0.20%	3	0.00%	-0.17%	23	0.00%	0.67%		
B:	1.41%	0.2098	-0.17%	0.33%	0.10%	4	-0.17%	-0.17%	24	0.00%	0.33%		
B^2:	1.99E-04	0.1878	-0.17%	0.33%	0.09%	5	0.00%	-0.17%	25	-0.83%	0.33%		
W = (B^2 / S^2):	0.712	0.1691	-0.17%	0.17%	0.06%	6	0.00%	-0.17%	26	0.83%	0.17%		
Critical W @ 95%:	0.940	0.1526	0.00%	0.17%	0.03%	7	0.00%	0.00%	27	-0.17%	0.17%		
W Test:	FAIL	0.1376	0.00%	0.00%	0.00%	8	0.00%	0.00%	28	-0.17%	0.00%		
		0.1237	0.00%	0.00%	0.00%	9	0.00%	0.00%	29	0.00%	0.00%		
		0.1108	0.00%	0.00%	0.00%	10	0.33%	0.00%	30	0.00%	0.00%		
		0.0986	0.00%	0.00%	0.00%	11	-0.17%	0.00%	31	0.00%	0.00%		
		0.0870	0.00%	0.00%	0.00%	12	0.17%	0.00%	32	0.00%	0.00%		
		0.0759	0.00%	0.00%	0.00%	13	0.00%	0.00%	33	0.00%	0.00%		
		0.0651	0.00%	0.00%	0.00%	14	0.83%	0.00%	34	0.00%	0.00%		
		0.0546	0.00%	0.00%	0.00%	15	0.00%	0.00%	35	0.00%	0.00%		
		0.0444	0.00%	0.00%	0.00%	16	0.00%	0.00%	36	0.00%	0.00%		
		0.0343	0.00%	0.00%	0.00%	17	0.00%	0.00%	37	0.00%	0.00%		
		0.0244	0.00%	0.00%	0.00%	18	0.67%	0.00%	38	0.00%	0.00%		
		0.0146	0.00%	0.00%	0.00%	19	0.17%	0.00%	39	0.00%	0.00%		
		0.0049	0.00%	0.00%	0.00%	20	-0.17%	0.00%	40	0.00%	0.00%		

Chart Data													
Calibration	Five Point Drift Data					95%/95% Limits		Zero %					
Interval	0%	25%	50%	75%	100%								
6						0.70%	-0.61%	0.00%					
7	0.00%	0.00%	0.00%	-0.83%	0.00%	0.70%	-0.61%	0.00%					
17	0.00%	0.33%	0.67%	0.83%	0.00%	0.70%	-0.61%	0.00%					
8	0.00%	-0.17%	0.17%	-0.17%	0.00%	0.70%	-0.61%	0.00%					
9	-0.17%	0.17%	-0.17%	-0.17%	0.00%	0.70%	-0.61%	0.00%					
12	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	-0.61%	0.00%					
17	0.00%	0.83%	0.33%	0.00%	0.00%	0.70%	-0.61%	0.00%					
17	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	-0.61%	0.00%					
12	0.00%	0.00%	0.00%	0.00%	0.00%	0.70%	-0.61%	0.00%					
18						0.70%	-0.61%	0.00%					

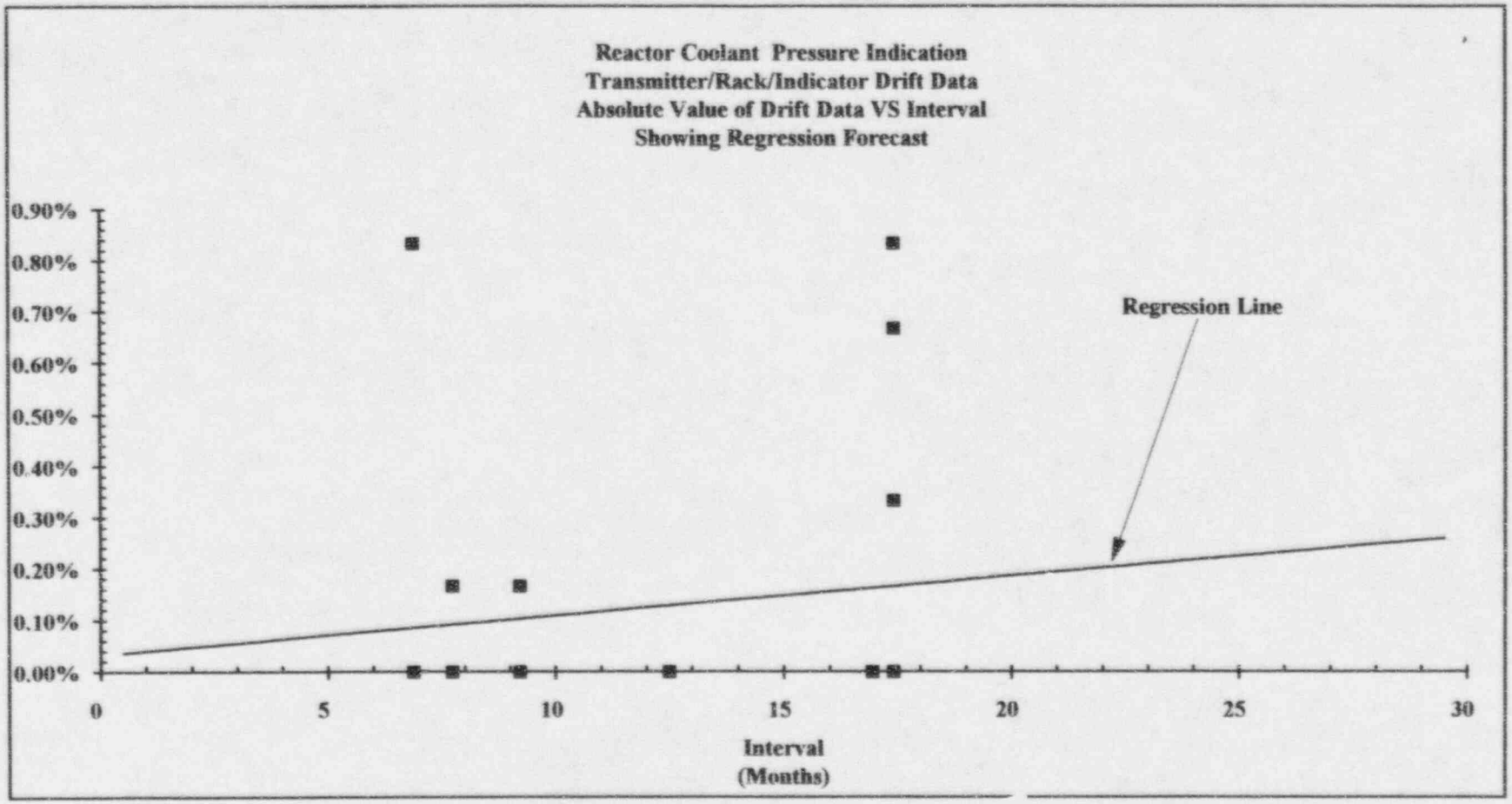
Histogram Data													
						Bin	Frequency		t	Probability for t-sigma	Observed Proportion		
-4.00	-1.03%	0.0%	0.05	0.00%		-1.03%	0		0.000	0%	0.00%		
-3.75	-0.96%	0.0%	0.13	0.01%		-0.96%	0		0.250	19.74%	72.50%		
-3.50	-0.90%	2.5%	0.33	0.02%		-0.90%	1		0.500	38.29%	72.50%		
-3.25	-0.83%	0.0%	0.76	0.05%		-0.83%	0		0.750	54.67%	72.50%		
-3.00	-0.76%	0.0%	1.65	0.11%		-0.76%	0		1.000	68.27%	90.00%		
-2.75	-0.70%	0.0%	3.39	0.23%		-0.70%	0		1.500	86.64%	90.00%		
-2.50	-0.63%	0.0%	6.54	0.44%		-0.63%	0		**2.000**	**95.45%**	**90.00%**		
-2.25	-0.56%	0.0%	11.84	0.79%		-0.56%	0		2.500	98.76%	92.50%		
-2.00	-0.49%	0.0%	20.14	1.35%		-0.49%	0		3.000	99.73%	97.50%		
-1.75	-0.43%	0.0%	32.18	2.16%		-0.43%	0		3.500	99.95%	100.00%		
-1.50	-0.36%	0.0%	48.31	3.24%		-0.36%	0		4.000	99.9994%	100.00%		
-1.25	-0.29%	0.0%	68.13	4.57%		-0.29%	0			Expected Value	Actual		
-1.00	-0.23%	12.5%	90.26	6.05%		-0.23%	5						
-0.75	-0.16%	0.0%	112.32	7.53%		-0.16%	0						
-0.50	-0.09%	0.0%	131.32	8.80%		-0.09%	0						
-0.25	-0.03%	67.5%	144.23	9.67%		-0.03%	27						
0.00	0.04%	0.0%	148.81	9.97%		0.04%	0						
0.25	0.11%	5.0%	144.23	9.67%		0.11%	2						
0.50	0.18%	0.0%	131.32	8.80%		0.18%	0						
0.75	0.24%	0.0%	112.32	7.53%		0.24%	0						
1.00	0.31%	5.0%	90.26	6.05%		0.31%	2						
1.25	0.38%	0.0%	68.13	4.57%		0.38%	0						
1.50	0.44%	0.0%	48.31	3.24%		0.44%	0						
1.75	0.51%	0.0%	32.18	2.16%		0.51%	0						
2.00	0.58%	0.0%	20.14	1.35%		0.58%	0						
2.25	0.64%	2.5%	11.84	0.79%		0.64%	1						
2.50	0.71%	0.0%	6.54	0.44%		0.71%	0						
2.75	0.78%	5.0%	3.39	0.23%		0.78%	2						
3.00	0.85%	0.0%	1.65	0.11%		0.85%	0						
3.25	0.91%	0.0%	0.76	0.05%		0.91%	0						
3.50	0.98%	0.0%	0.33	0.02%		0.98%	0						
3.75	1.05%	0.0%	0.13	0.01%		1.05%	0						
4.00	1.11%	0.0%	0.05	0.00%		1.11%	0						
		100.0%	1,491.95	100.00%			40						

7	0.00%	0.00%					Regression Statistics						
7	0.00%	0.00%											
7	0.00%	0.00%					Multiple R	0.1296					
7	-0.83%	0.83%					R Square	0.0168					
7	0.00%	0.00%					Adjusted R Square	-0.0091					
8	0.00%	0.00%					Standard Error	0.0024					
8	-0.17%	0.17%					Observations	40.0000					
8	0.17%	0.17%											
8	-0.17%	0.17%					Analysis of Variance						
8	0.00%	0.00%						df	Sum of Square	Mean Square	F	Significance F	
9	-0.17%	0.17%					Regression	1	3.89635E-06	3.89635E-06	0.649254689	0.425392984	
9	0.17%	0.17%					Residual	38	0.000228048	6.00127E-06			
9	-0.17%	0.17%					Total	39	0.000231944				
9	-0.17%	0.17%											
9	0.00%	0.00%						Coefficients	Standard Error	t Statistic	P-value	Lower 95%	Upper 95%
12	0.00%	0.00%											
12	0.00%	0.00%					Intercept	0.00028761	0.001255616	0.229061288	0.820018274	-0.00225425	0.002829476
12	0.00%	0.00%					x1	7.6605E-05	9.50711E-05	0.80576342	0.425265142	-0.000115857	0.000269066
12	0.00%	0.00%											
12	0.00%	0.00%											
12	0.00%	0.00%											
12	0.00%	0.00%											
12	0.00%	0.00%											
12	0.00%	0.00%											
12	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.33%	0.33%											
17	0.83%	0.83%											
17	0.67%	0.67%											
17	0.33%	0.33%											
17	0.83%	0.83%											
17	0.00%	0.00%											
17	0.00%	0.00%											
17	0.00%	0.00%											
1	0.04%												
2	0.04%												
3	0.05%												

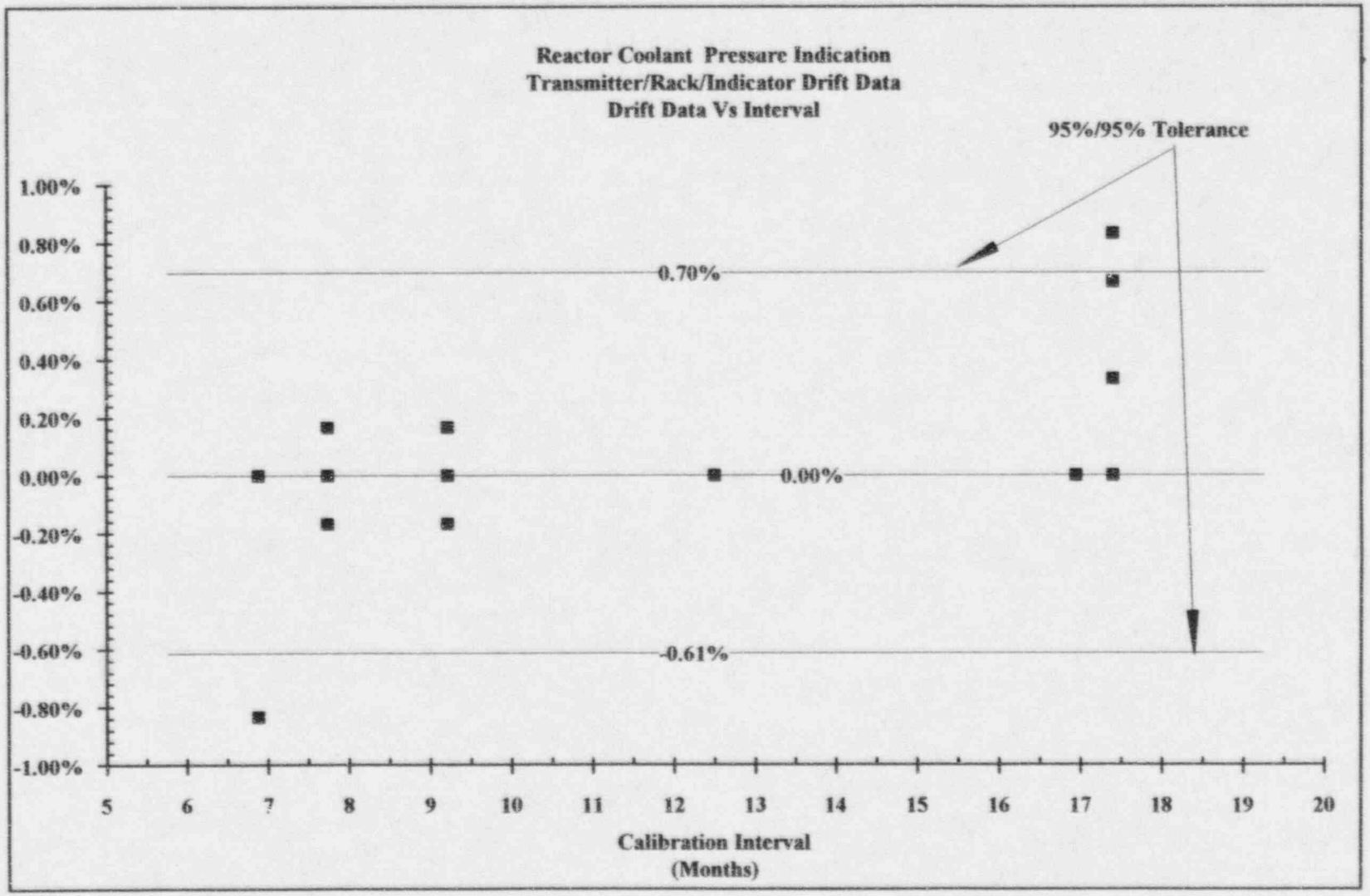
SP-161C
RC-158/159-PI-2
RC PRESSURE INDICATION -- WIDE RANGE

4	0.06%												
5	0.07%												
6	0.07%												
7	0.08%												
8	0.09%												
9	0.10%												
10	0.11%												
11	0.11%												
12	0.12%												
13	0.13%												
14	0.14%												
15	0.14%												
16	0.15%												
17	0.16%												
18	0.17%												
19	0.17%												
20	0.18%												
21	0.19%												
22	0.20%												
23	0.20%												
24	0.21%												
25	0.22%												
26	0.23%												
27	0.24%												
28	0.24%												
29	0.25%												
30	0.26%												

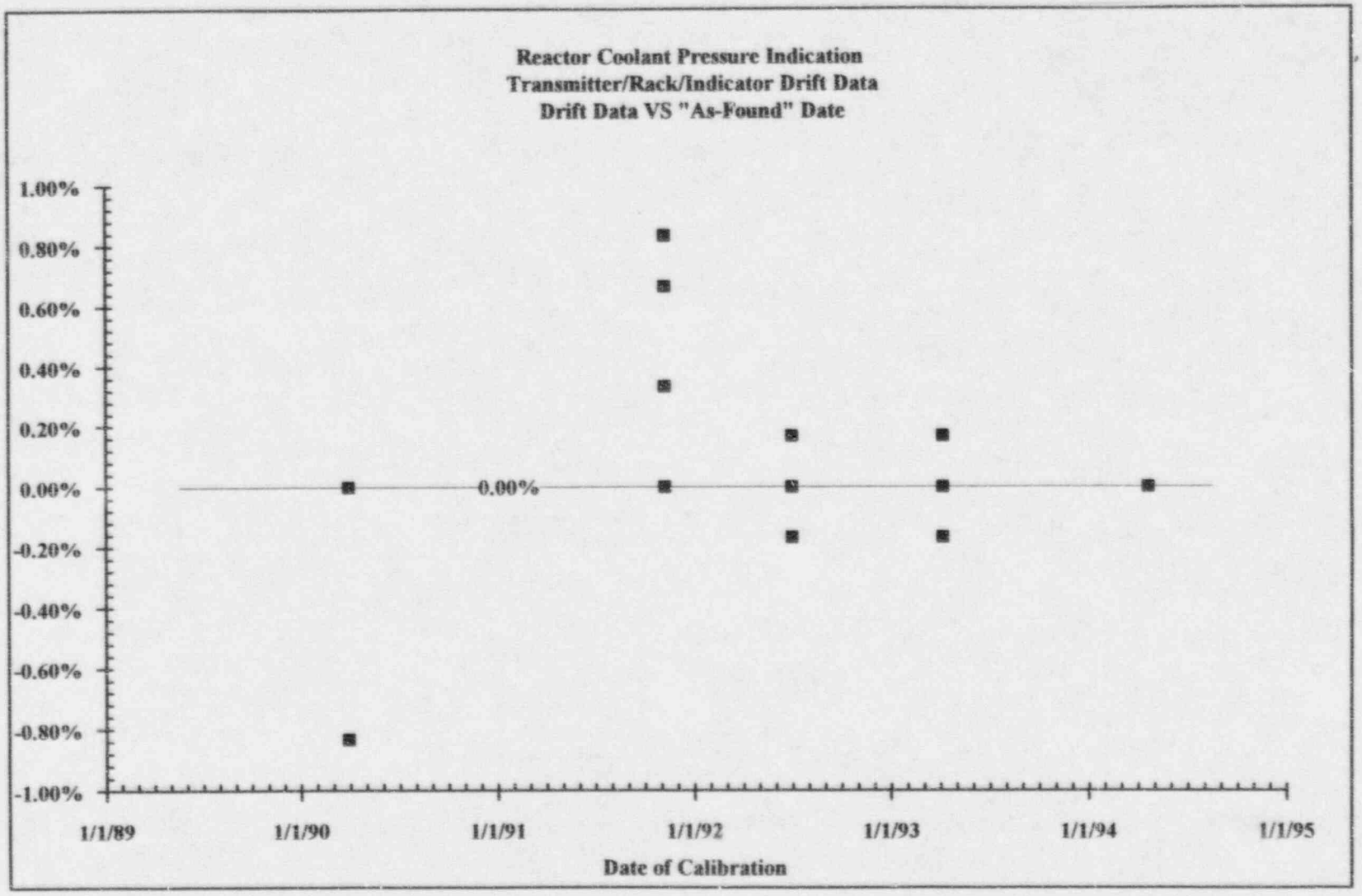
SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158/159-PI-2



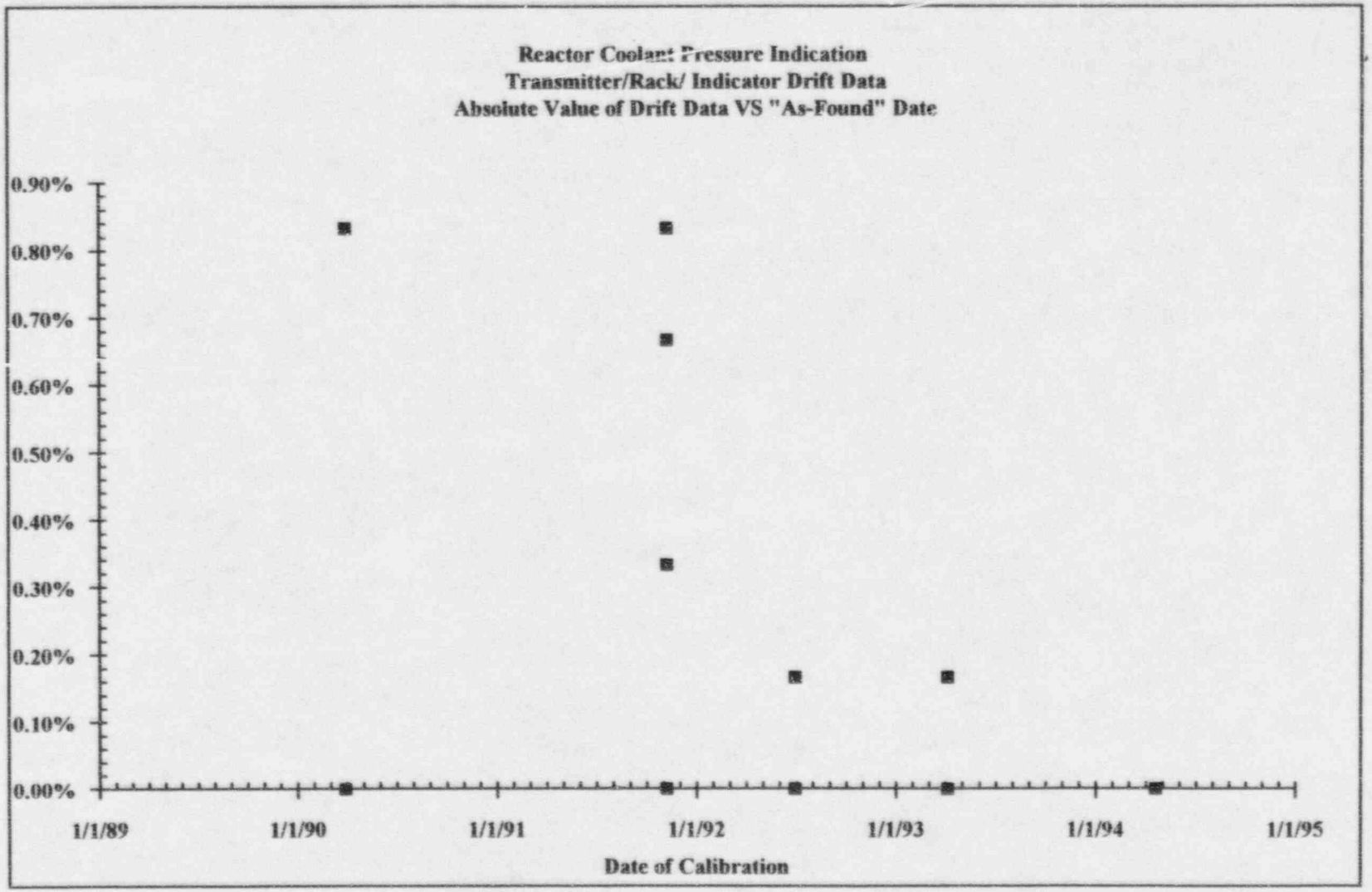
SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158/159-PI-2



SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158/159-PI-2

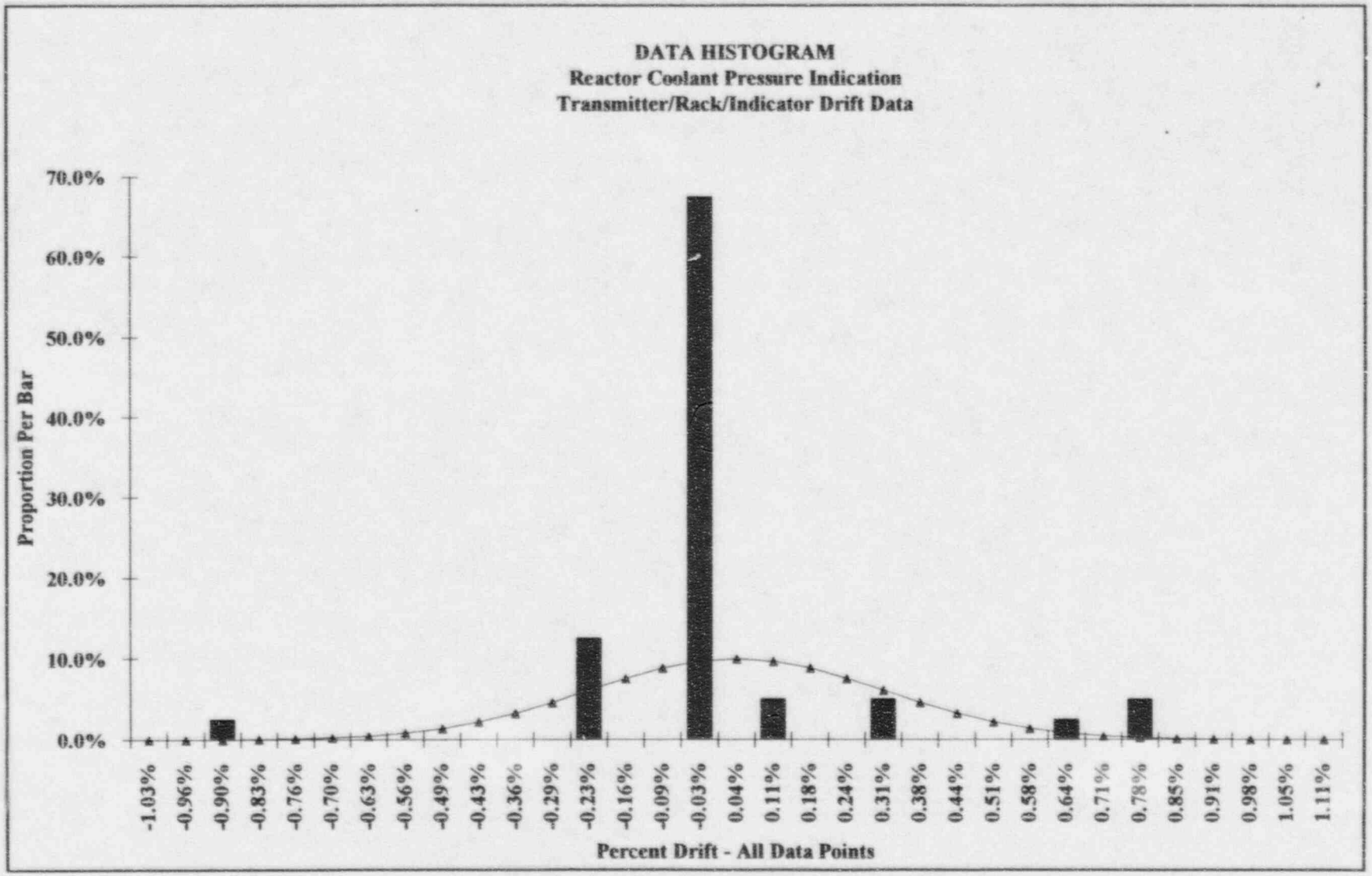


SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158/159-PI-2



FILE:[RCPI&PR.PAM]IND ABS DRIFT DATA VS AF DATE

SP-161C
Surveillance Requirement 3.3.17.2, (3)
RC-158/159-PI-2



File: [RCPI&PIR.PAM]IND DRIFT DATA HISTOGRAM

SURVEILLANCE REQUIREMENT - 3.3.5.3, (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

I. SURVEILLANCE PROCEDURE/DEVICES:

A. Surveillance procedure: SP-132.

B. Calibrated devices included in the instrument loop drift data analysis:

1. **DEVICE:** Pressure Transmitter.
   MANUFACTURER: Rosemount.
   MODEL: 1154GP9RA.
   RANGE: 0 to 3000 psig.
   CALIBRATED SPAN: 0 to 2500 psig.
   TAG NUMBERS: RC-3A-PT3, RC-3A-PT4 & RC-3B-PT3
   DEVICE 30-MONTH DRIFT VALUE: ± 0.2% of URL, (from vendor manual), or (± 0.2% x 3000/2500) = ± 0.24%.

2. **DEVICE:** Buffer Amplifier.
   MANUFACTURER: Bailey Meter Company.
   MODEL: 6621670A1241.
   INPUT SPAN: 1 to 5 volts DC = 0 to 2500 psig
   OUTPUT SPAN: 0 to 10 volts DC = 0 to 2500 psig
   TAG NUMBERS: RC-3A-PY3, RC-3A-PY4-1, RC-3B-PY3
   DEVICE DRIFT VALUE: ± 0.1% Full Scale, (30 days, from B&W Calc. I83-0001, Rev. 4).

SURVEILLANCE REQUIREMENT - 3.3.5.3, (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

II. NRC GENERIC LETTER 91-04 Analysis Criteria and DRIFT STUDY RESULTS:

1. ***"Confirm that instrument drift as determined by "As-Found" and "As-Left" calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval."***

   ESAS Channel Functional Test (SP-130) has been revised to allow bistable calibration to be checked and adjusted as necessary each quarter. Any bistable instrument drift will be detected and corrected during the performance of SP-130 and is therefore omitted from this drift study.

   Per Refueling interval surveillance procedure, SP-132, "Engineered Safeguards Channel Calibration", the components listed on the preceding page, have not exceeded acceptable, "As-Found" surveillance procedure tolerances, for the surveillance intervals investigated, except as indicated below.

   For RC-3A-PT3, the 75% and 100% raw "As-Found" calibration data points for 10/14/88, were found to have exceeded the calibration procedure "As-Found" tolerance. For RC-3A-PT4, the 100% raw "As-Found" calibration data point for 10/15/88, was found to have exceeded the calibration procedure "As-Found" tolerance. Raw calibration data points which have exceeded "As-Found" tolerance: 3 of 75 or 4%. These occurrences are considered to be rare occasions where equipment was performing outside the acceptance criteria of procedure tolerance.

2. ***"Confirm that the values of drift for each instrument type, (make, model and range) and application have been determined with a high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant data."***

   Standard statistical methodologies were utilized in this DRIFT STUDY. The following references were consulted to establish the techniques used in this evaluation.

   1. ISA-S67.04, Part I Standard, Setpoints for Nuclear Safety-Related Instrumentation
   2. ISA-S67.04, Part II Recommended Practice, Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation
   3. EPRI document TR-103335, "Guidelines for Instrument Calibration Extension/Reduction Programs", Project 2409-21, final Report dated March 1994
   4. American Society of Testing and Materials (ASTM) standard E178-1980, (re-approved 1989), "Standard Practice for Dealing With Outlying Observations."
   5. ANSI N15.15-1974, American National Standard Assessment of the Assumption of Normality
   6. Probability and Statistics 4th Edition, Irwin Miller/John E Freund/Richard A. Johnson

SURVEILLANCE REQUIREMENT - 3.3.5.3. (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

The summary of the EPRI project observations, from section 9, "CONCLUSIONS" is as follows:

A. Instrument drift tends to increase with instrument span.

B. Instrument drift tends to be bounded by a normal distribution.

C. Instrument drift rarely showed any significant indication of time dependency.

D. Instrument drift data often showed no bias for the direction of drift.

E. OUTLIER checks are necessary to detect data errors.

The methods utilized in the drift study, can be summarized as follows:

A. Instrument calibration data, ("As-Found" and "As-Left"), was obtained from, (typically), five intervals of the appropriate refueling interval surveillance procedure. The number of intervals may change if instruments have been replaced with a different type, etc.

B. A spread sheet computer program, which can be run on a personal computer was utilized for ease of analysis. Florida Power Corporation utilizes Microsoft Excel, running under a Microsoft Windows environment. See the **"SPREAD SHEET FORMAT"** section below for an explanation of the spread sheet data and calculations.

C. The "RAW" "As Found" and "As Left" data was obtained from the associated Refueling interval surveillance procedure and entered onto the spread sheet.

D. Drift data information for an interval was obtained by subtracting the instruments previous calibration "As-Left" data from the current calibration "As-Found" data. This difference was divided by the calibrated span and the drift data was expressed as a PERCENT OF SPAN.

E. Drift data was analyzed and the MEAN and STANDARD DEVIATION was determined.

F. Outliers were identified by performing a statistical "critical values of T" test. The outlier criteria value was determined based on the number of total drift points. Outliers could result from raw calibration data which has exceeded the surveillance procedure "As-Found" tolerance, procedural or personnel errors, M&TE problems, or other deficiencies or failures. "As-Found" data that exceeded procedural "As-Found" tolerances and was identified as an OUTLIER was evaluated for possible removal from the data set. If the unsatisfactory data was the result of an influence other than drift, the reason was documented and the outlier removed from the data set.

SURVEILLANCE REQUIREMENT - 3.3.5.3. (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

G. The tolerance band for the data was calculated by multiplying each calculated STANDARD DEVIATION by the appropriate 95%/95% tolerance factor. This factor indicates a 95% level of confidence, that 95% of the instrument drift data is contained within the tolerance band.

H. Drift data was tested to verify the assumption that the data is "NORMAL". Either a D'-test or W-test was performed. If the drift data failed these tests, then a "COVERAGE ANALYSIS" was performed. The coverage analysis requires drift data be analyzed to determine if the data is bounded by a normal distribution. A "DATA HISTOGRAM" was plotted, as well as a comparison table of the actual distribution of the drift data versus the expected probability distribution to show drift data is normally bounded.

I. To evaluate time dependency, a regression analysis on the absolute value of drift data was performed. The regression line was plotted with the absolute values of drift versus interval (in months) to show a correlation between drift and calibration interval. The regression trend line was used as trend only and was not used to extrapolate the 30-month drift term. Also charted was drift data versus calibration, ("As-Found"), date. The charts were then evaluated to aid in the determination of the equipments tendency to exhibit time dependent drift.

SPREAD SHEET FORMAT

The surveillance procedure data was arranged in a spread sheet format which displays the following information:

A. Instrument Tag Number/Channel/Descriptor,

B. "As-Found" and "As-Left" calibration dates of the surveillance procedure, which are used to Calculate the calibration "INTERVAL"s,

C. Raw "As-Found" and "As-Left" device data, (voltage, pressure, etc.),

D. "DRIFT DATA", (difference between "As-Found" and "As-Left" data divided by the calibrated SPAN of the instrument, expressed in PERCENT of SPAN),

E. "OUTLIER detection by critical values of T" test,

F. Range, Calibrated Span, "As-Found" and "As-Left" tolerances, Instrument Error/Setpoint calculation number, device setpoint, Technical Specification Limiting Value, etc. is provided for reference.

SURVEILLANCE REQUIREMENT - 3.3.5.3. (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

G. Drift data statistical information: MEAN, STANDARD DEVIATION, OUTLIER CRITERIA, number of drift data points, number of OUTLIERs excluded, 95%/95% "k" value, and the calculated ± 95%/95% tolerance values.

H. The D'-test or W-test for "normal" data assumption is performed. If the data fails the appropriate test, a drift data Histogram and coverage analysis is performed.

I. Regression analysis of the drift data which was used to allow chart the absolute value of drift versus interval with regression trend line.

J. The projected 30-month drift term derived.

K. Drift data, surveillance interval, "As-Found" dates, ±95%/95% tolerance values, and zero % values were provided for charting.

RESULTS

For RC-3A-PT3, the 75% and 100% raw "As-Found" calibration data points for 10/14/88, were found to have exceeded the calibration procedure "As-Found" tolerance. Using the Critical Values of T-Test, the data points were determined to be OUTLIERS, the result of a failure other than drift and removed from the data set. Once the OUTLIERs were emoved from the drift data, the 50% drift data of 10/15/88 was identified as an OUTLIER. Since this data point was not initially identified as an OUTLIER, it was retained in the data set. Also the raw calibration data for this point was within the procedure calibration tolerance. (**NOTE:** Transmitter RC-3A-PT3 caused outliers in all drift data studies for both ESAS functions: RCS LOW PRESSURE 1500 psig bistable and RCS LOW-LOW PRESSURE 900 psig bistable). For RC-3A-PT4, the 100% raw "As-Found" calibration data point for 10/15/88, was found to have exceeded the calibration procedure "As-Found" tolerance. Using the Critical Values of T-Test, the data point was determined to be an OUTLIER, the result of a failure other than drift and removed from the data set. (**NOTE:** Transmitter RC-3A-PT4 caused outliers in all drift data studies for both ESAS functions: RCS LOW PRESSURE: 1500 and 1700 psig bistables and RCS LOW-LOW PRESSURE: 900 & 500 psig bistables).

The calibration on 10-14/15-88 produced a lower than expected span for RC-3A-PT3 and RC-3A-PT4. Excluding the three data points in question, the average drift value for the intervals investigated was 0.17%. The three data points excluded were over 9 times larger than this average. It is unlikely that the instruments would drift this much for only one interval since 1987. Since subsequent calibrations did not produce similar results, it was concluded that an influence other than drift caused the large difference between as-left and as-found data.

Raw calibration data points which have exceeded "As-Found" tolerance: 3 of 75 or 4%. These occurrences are considered to be rare occasions where equipment was performing outside the acceptance criteria of procedure tolerance.

SURVEILLANCE REQUIREMENT - 3.3.5.3, (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

±95%/95% Tolerances:
Transmitter &Buffer/Amp
+ 0.55%, + 13.7 psig
- 0.62%, - 15.4 psig

3. ***"Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type, make, model number and range) and application that performs a safety function. Provide a list of the channels by Technical Specification section that identifies these instrument applications."***

The drift data calculations for each Surveillance Requirement, establishes the "±95%/95%" Tolerance Factor. This calculated value indicates a 95% level of confidence, that 95% of the population, (instrument drift data), will be within the stated interval.

The following methodology was utilized to establish the projected 30-month drift term:

1) If drift data is determined to be time independent by using linear regression analysis, a graph of drift data versus calibration interval and a graph of drift data versus calibration ("As-Found") date, then the 95%/95% Tolerance values will be used as the projected 30-month drift.

2) If drift data is determined to be time dependent from the above method, then the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

3) If drift data does not support the determination of time dependency (all data based on 18-month calibration), the 30-month drift term will be projected as follows:

   95%/95% tolerance value * $[(AI/AI)^2 + ((30-AI)/AI)^2]^{1/2}$

   Where AI = Historical average calibration interval in months

RESULTS

The Loop drift data, (Transmitter/Buffer Amp), did not pass the D'-TEST. However, a "COVERAGE ANALYSIS" was performed on the data, including a "DATA HISTOGRAM" chart and also a "NORMAL DISTRIBUTION" comparison. The "Actual" coverage distribution envelopes the "Expected Value", from 0 to 4 sigma. Therefore, for the purposes of this Drift Study, the drift data is considered "normal". The associated charts indicate that the drift data is neither calibration interval dependent nor time, (age), dependent. Since

SURVEILLANCE REQUIREMENT - 3.3.5.3, (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

the drift data does not appear to be time dependent, the ± 95%/95% Tolerance values are assumed to be the limits of the predicted 30-month drift values.

As indicated on page one, the Surveillance Requirement and instruments covered by this analysis, are as follows:

Surveillance Requirement: 3.3.5.3, (1); ESAS Initiation -- RCS Pressure Low.

Surveillance procedure: SP-132.

Technical Specification Allowable Value: ≥ 1500 psig.

Surveillance Procedure Setpoint: 1540 psig.

Tag Numbers: Channel "1": RC-3A-PT3 & RC-3A-PY3.
Channel "2": RC-3A-PT4 & RC-3A-PY4-1.
Channel "3": RC-3B-PT3 & RC-3B-PY3.

Projected 30-Month Drift Value
Transmitter & Buffer/Amp
+ 0.55%, + 13.7 psig
- 0.62%, - 15.4 psig

4. ***"Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed Technical Specification changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that the safety limits and safety analysis assumptions are not exceeded."***

The projected 30-month drift terms for the low RCS pressure bistables will not be considered, since the Bistable will be checked and adjusted per the Channel Functional Test at quarterly intervals.

The instrument accuracy calculation for this surveillance requirement includes vendor stated 30-month drift terms in the development of setpoints. This method is endorsed by ISA-S67.04 part II, which is FPC's methodology for the development of safety system setpoints. Due to this, the results of this drift study will not be utilized to provide drift values for the determination of setpoints and therefore no changes to the Technical Specifications or safety analysis will be required.

SURVEILLANCE REQUIREMENT - 3.3.5.3. (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

5. ***"Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown. Licensees must confirm that the instrument errors caused by drift will not affect the capability to achieve safe shutdown."***

The instrument accuracy calculation for this surveillance requirement includes vendor stated 30-month drift terms in the development of string accuracies. Based on this, the results of this drift study were not used in the calculation.

Per the instrument error calculation, I89-0014, Rev. 4, the ESAS RC Pressure transmitters are utilized for inputs to:

A. ESAS LOW PRESSURE, (1540 psig), HPI Actuation
B. ESAS LOW-LOW PRESSURE, (540 psig) LPI Actuation
C. ESAS HPI BYPASS PERMIT, (1700 psig).
D. ESAS HPI BYPASS REMOVAL, (1725 psig).
E. ESAS LPI BYPASS PERMIT, (900 psig).
F. ESAS LPI BYPASS REMOVAL, (925 psig).
G. HPI NOT RESET - NOT BYPASSED Alarm, (1640 psig).
H LPI NOT RESET - NOT BYPASSED Alarm, (710 psig).
I. ESAS LPI BYPASS AUTO RESET (1700 psig).
J. LOW RCS PRESSURE Alarm, (1550 psig).
K. CFT ISO VLV NOT CLOSED Alarm, (715 psig).
L. CFT ISO VLV NOT CLOSED Alarm, (700 psig).
M. LTOP EVENT IN PROGRESS Alarm, (500 psig).
N. DHR ACI VLV POSITION Alarm, (200 psig)
O. Pressure recorders & indicators.
P. Reactor Vessel Level, (RCITS).
Q. T-SAT monitors.
R. RCS PRESSURE Outputs to RECALL, Plant Computer, etc.

6. ***"Confirm that all conditions and assumptions of the setpoint and safety analysis have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for CHANNEL CHECKS, CHANNEL FUNCTIONAL TESTS and CHANNEL CALIBRATIONS."***

The setpoint analysis includes vendor stated 30 month drift. This drift study will not affect the conditions and assumptions of setpoint safety analysis. The calculation for these RCS Pressure loop devices provide the required surveillance procedure setpoint, "As-Left" and "As-Found" procedure tolerances. The revised "As-Left" and "As-Found" surveillance procedure tolerances, will be incorporated into the appropriate CHANNEL CHECKS, CHANNEL FUNCTIONAL TEST or CHANNEL CALIBRATION surveillance procedures, as required.

SURVEILLANCE REQUIREMENT - 3.3.5.3, (1)
ENGINEERED SAFEGUARDS ACTUATION SYSTEM
RCS PRESSURE LOW

7. ***"Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and its effect on safety.***

The instrument "DRIFT PROGRAM" is an ongoing program which will monitor future surveillance procedure "As-Found" and "As-Left" data, and will incorporate new data into the Drift Study spread sheets with the existing drift data. The revised drift data MEAN, STANDARD DEVIATION, ± 95%/95% TOLERANCE INTERVALS, etc., will be compared with the existing drift data, to ensure the conclusions reached in this report remain valid.

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

Surveillance Procedure:	SP-132	Calibration	Interval	Five Point Data					Drift Data & Outlier Evaluation.				
TAG NUMBER		Date	(Months)	0%	25%	50%	75%	100%	0%	25%	50%	75%	100%
RC-3A-PT3/RC-3A-PY3	As Left	10/6/87		0.0111	2.5172	5.0242	7.5114	10.0054					
RC-1, TEST CAB. 1	As Found	10/14/88	12.3	-0.0047	2.4573	4.9077	7.3553	9.8051	-0.16%	-0.60%	-1.17%	-1.56%	-2.00%
1500 PSIG BISTABLE LOOP	As Left	10/15/88		0.0101	2.5114	5.0149	7.5044	10.0153	DATA IS OK	DATA IS OK	OUTLIER	OUTLIER	OUTLIER
	As Found	3/20/90	17.1	0.0200	2.5100	5.0200	7.5100	10.0100	0.10%	-0.01%	0.05%	0.06%	-0.05%
	As Left	6/1/90		0.0160	2.5090	5.0070	7.5020	10.0070	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	10/22/91	16.7	0.0060	2.4830	4.9900	7.4990	9.9990	-0.10%	-0.26%	-0.17%	-0.03%	-0.08%
X moved - Flood MAR ------	As Left	6/29/92		-0.0062	2.5053	5.0003	7.4951	10.0004	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
no "As Founds" taken.	As Found	3/16/93	8.5	-0.0180	2.4850	4.9930	7.5030	9.9820	-0.12%	-0.20%	-0.07%	0.08%	-0.18%
	As Left	3/18/93		-0.0180	2.4850	4.9930	7.5030	9.9820	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	9/13/94	17.9	0.0250	2.4780	4.9740	7.4740	9.9820	0.43%	-0.07%	-0.19%	-0.29%	0.00%
	As Left	9/13/94		0.0250	2.4780	4.9740	7.4740	9.9820	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
RC-3A-PT4/RC-3A-PY4-1	As Left	10/1/87		0.0212	2.5147	4.9990	7.4808	9.9816					
RC-2, TEST CAB. 2	As Found	10/15/88	12.5	0.0069	2.4990	4.9864	7.4532	9.8280	-0.14%	-0.16%	-0.13%	-0.28%	-1.54%
1500 PSIG BISTABLE LOOP	As Left	10/15/88		0.0141	2.5135	5.0155	7.4987	9.9930	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	OUTLIER
	As Found	3/20/90	17.1	0.0050	2.4980	4.9850	7.4830	9.9972	-0.09%	-0.15%	-0.31%	-0.16%	0.04%
	As Left	6/1/90		0.0150	2.5080	5.0050	7.5020	9.9900	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	10/23/91	16.7	0.0500	2.5490	5.0550	7.5550	10.0440	0.35%	0.41%	0.50%	0.53%	0.54%
X moved - Flood MAR ------	As Left	6/29/92		0.0050	2.5090	5.0040	7.4970	9.9950	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
no "As Founds" taken.	As Found	3/18/93	8.6	-0.0160	2.4890	4.9920	7.4920	9.9840	-0.21%	-0.20%	-0.12%	-0.05%	-0.11%
	As Left	3/19/93		-0.0160	2.4890	4.9920	7.4920	9.9840	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	4/23/94	13.2	0.0020	2.4900	4.9890	7.4780	9.9740	0.18%	0.01%	-0.03%	-0.14%	-0.10%
	As Left	4/23/94		0.0010	2.5060	5.0000	7.4950	9.9910	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
RC-3B-PT3/RC-3B-PY3	As Left	10/4/87		0.0011	2.5000	5.0055	7.4917	9.9803					
RC-3, TEST CAB. 3	As Found	10/17/88	12.5	-0.0060	2.4975	4.9964	7.4913	9.9936	-0.07%	-0.02%	-0.09%	0.00%	0.13%
1500 PSIG BISTABLE LOOP	As Left	10/17/88		-0.0051	2.5036	5.0042	7.5024	10.0051	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	3/20/90	17.1	-0.0080	2.5020	5.0090	7.5040	10.0020	-0.03%	-0.02%	0.05%	0.02%	-0.03%
	As Left	6/1/90		0.0060	2.5090	5.0240	7.5210	10.0240	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	10/24/91	16.8	0.0060	2.5190	5.0380	7.5380	10.0310	0.00%	0.10%	0.14%	0.17%	0.07%
	As Left	10/24/91		-0.0010	2.4980	5.0070	7.5130	10.0020	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	3/19/93	16.8	-0.0040	2.5250	5.0360	7.5380	9.9300	-0.03%	0.27%	0.29%	0.25%	-0.72%
	As Left	4/1/93		0.0170	2.5320	5.0320	7.5270	10.0150	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK
	As Found	9/14/94	17.5	0.0140	2.5340	5.0300	7.5240	10.0120	-0.03%	0.02%	-0.02%	-0.03%	-0.03%
	As Left	9/14/94		0.0080	2.5110	5.0080	7.5030	9.9930	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK	DATA IS OK

Pressure Range:	0 to 2500	psig	SP-132	Volts DC	Percent	psig		Mean:	-0.03%		Percent	Volts DC	psig
Pressure Span:	2500	psig	/- As Found Tol:	0.13	1.30%	32.5	Standard Deviation:		0.25%	+95%/95%:	0.55%	0.055	13.7
Output Range:	0 to 10	volts DC	+/- As Left Tol:	0.04	0.40%	10.0	Number of Points:		75	-95%/95%:	-0.62%	-0.062	-15.4
Output Span:	10	volts DC					Outliers Excluded:		3			Percent	psig
Setpoint Calculation:	I89-0014, Rev. 4						Outlier Criteria:		3.107	Projected 30 Mo. Drift Value:		0.55%	13.7
							95%/95% k:		2.299			-0.62%	-15.4

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

D'-TEST DATA		i	T terms	i	T terms	# of Pts.	Data	Sorted	# of Pts.	Data	Sorted		
n = Number of Points:	72	1	4.14E-01	37	-1.50E-04	1	-0.16%	-1.17%	37	-0.31%	-0.03%		
(n +1) / 2:	36.5	2	2.48E-01	38	-4.50E-04	2	0.10%	-0.72%	38	0.50%	-0.03%		
Variance (s^2):	6.42E-06	3	2.01E-01	39	-7.50E-04	3	-0.10%	-0.60%	39	-0.12%	-0.03%		
S^2:	4.56E-04	4	9.91E-02	40	-1.05E-03	4	-0.12%	-0.31%	40	-0.03%	-0.03%		
S:	2.13E-02	5	9.13E-02	41	-1.31E-03	5	0.43%	-0.29%	41	-0.09%	-0.03%		
T:	3.25	6	8.42E-02	42	-1.37E-03	6	-0.14%	-0.28%	42	0.05%	-0.02%		
D' = T / S:	152.22	7	7.67E-02	43	-1.30E-03	7	-0.09%	-0.26%	43	0.14%	-0.02%		
D'1:	166.60	8	5.99E-02	44	-1.20E-03	8	0.35%	-0.21%	44	0.29%	-0.02%		
D'2:	174.90	9	5.58E-02	45	-1.19E-03	9	-0.21%	-0.20%	45	-0.02%	-0.01%		
D' Test:	FAIL	10	5.30E-02	46	-3.80E-04	10	0.18%	-0.20%	46	0.06%	0.00%		
		11	4.85E-02	47	0.00E+00	11	-0.07%	-0.19%	47	-0.03%	0.00%		
		12	4.51E-02	48	0.00E+00	12	-0.03%	-0.18%	48	0.08%	0.00%		
		13	3.99E-02	49	1.25E-03	13	0.00%	-0.17%	49	-0.29%	0.01%		
		14	3.56E-02	50	2.16E-03	14	-0.03%	-0.16%	50	-0.28%	0.02%		
		15	3.38E-02	51	2.90E-03	15	-0.03%	-0.16%	51	-0.16%	0.02%		
		16	3.22E-02	52	6.51E-03	16	-0.60%	-0.16%	52	0.53%	0.04%		
		17	3.02E-02	53	7.92E-03	17	-0.01%	-0.15%	53	-0.05%	0.05%		
		18	2.65E-02	54	8.92E-03	18	-0.26%	-0.14%	54	-0.14%	0.05%		
		19	2.45E-02	55	1.04E-02	19	-0.20%	-0.14%	55	0.00%	0.06%		
		20	2.08E-02	56	1.37E-02	20	-0.07%	-0.13%	56	0.02%	0.07%		
		21	1.86E-02	57	1.62E-02	21	-0.16%	-0.12%	57	0.17%	0.08%		
		22	1.71E-02	58	2.13E-02	22	-0.15%	-0.12%	58	0.25%	0.10%		
		23	1.48E-02	59	2.25E-02	23	0.41%	-0.11%	59	-0.03%	0.10%		
		24	1.25E-02	60	3.13E-02	24	-0.20%	-0.10%	60	-0.05%	0.13%		
		25	1.15E-02	61	3.43E-02	25	0.01%	-0.10%	61	-0.08%	0.14%		
		26	9.56E-03	62	4.34E-02	26	-0.02%	-0.09%	62	-0.18%	0.17%		
		27	8.64E-03	63	4.77E-02	27	-0.02%	-0.09%	63	0.00%	0.18%		
		28	6.80E-03	64	6.88E-02	28	0.10%	-0.08%	64	0.04%	0.25%		
		29	5.47E-03	65	7.69E-02	29	0.27%	-0.07%	65	0.54%	0.27%		
		30	4.62E-03	66	8.55E-02	30	0.02%	-0.07%	66	-0.11%	0.29%		
		31	3.85E-03	67	1.07E-01	31	-1.17%	-0.07%	67	-0.10%	0.35%		
		32	2.39E-03	68	1.29E-01	32	0.05%	-0.05%	68	0.13%	0.41%		
		33	1.75E-03	69	1.40E-01	33	-0.17%	-0.05%	69	-0.03%	0.43%		
		34	7.75E-04	70	1.67E-01	34	-0.07%	-0.03%	70	0.07%	0.50%		
		35	4.50E-04	71	1.83E-01	35	-0.19%	-0.03%	71	-0.72%	0.53%		
		36	1.50E-04	72	1.92E-01	36	-0.13%	-0.03%	72	-0.03%	0.54%		

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

CHART DATA													
Calibration	Five Point Drift Data												
Interval	0%	25%	50%	75%	100%	95%/95% Value		Zero					
8						0.55%	-0.62%	0.00%					
12	-0.16%	-0.60%	-1.17%			0.55%	-0.62%	0.00%					
17	0.10%	-0.01%	0.05%	0.06%	-0.05%	0.55%	-0.62%	0.00%					
17	-0.10%	-0.26%	-0.17%	-0.03%	-0.08%	0.55%	-0.62%	0.00%					
9	-0.12%	-0.20%	-0.07%	0.08%	-0.18%	0.55%	-0.62%	0.00%					
18	0.43%	-0.07%	-0.19%	-0.29%	0.00%	0.55%	-0.62%	0.00%					
12	-0.14%	-0.16%	-0.13%	-0.28%		0.55%	-0.62%	0.00%					
17	-0.09%	-0.15%	-0.31%	-0.16%	0.04%	0.55%	-0.62%	0.00%					
17	0.35%	0.41%	0.50%	0.53%	0.54%	0.55%	-0.62%	0.00%					
9	-0.21%	-0.20%	-0.12%	-0.05%	-0.11%	0.55%	-0.62%	0.00%					
13	0.18%	0.01%	-0.03%	-0.14%	-0.10%	0.55%	-0.62%	0.00%					
12	-0.07%	-0.02%	-0.09%	0.00%	0.13%	0.55%	-0.62%	0.00%					
17	-0.03%	-0.02%	0.05%	0.02%	-0.03%	0.55%	-0.62%	0.00%					
17	0.00%	0.10%	0.14%	0.17%	0.07%	0.55%	-0.62%	0.00%					
17	-0.03%	0.27%	0.29%	0.25%	-0.72%	0.55%	-0.62%	0.00%					
17	-0.03%	0.02%	-0.02%	-0.03%	-0.03%	0.55%	-0.62%	0.00%					
19						0.55%	-0.62%	0.00%					

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

HISTOGRAM DATA						Bin	Frequency		Probability	Observed			
-4.000	-1.05%	0%	0.053	0%		-1.05%	0	t	for t-sigma	Proportion			
-3.750	-0.98%	0%	0.139	0%		-0.98%	0	0.000	0%	25.35%			
-3.500	-0.92%	0%	0.345	0%		-0.92%	0	0.250	19.74%	45.07%			
-3.250	-0.86%	0%	0.801	0%		-0.86%	0	0.500	38.29%	67.61%			
-3.000	-0.79%	0%	1.750	0%		-0.79%	0	0.750	54.67%	78.87%			
-2.750	-0.73%	1%	3.590	0%		-0.73%	1	1.000	68.27%	84.51%			
-2.500	-0.67%	0%	6.920	0%		-0.67%	0	1.500	86.64%	90.14%			
-2.250	-0.60%	1%	12.531	1%		-0.60%	1	**2.000**	**95.45%**	**95.77%**			
-2.000	-0.54%	0%	21.316	1%		-0.54%	0	2.500	98.76%	98.59%			
-1.750	-0.48%	0%	34.063	2%		-0.48%	0	3.000	99.73%	100.00%			
-1.500	-0.41%	0%	51.134	3%		-0.41%	0	3.500	99.95%	100.00%			
-1.250	-0.35%	3%	72.111	5%		-0.35%	2	4.000	99.9994%	100.00%			
-1.000	-0.29%	3%	95.531	6%		-0.29%	2		Expected Value	Actual			
-0.750	-0.22%	8%	118.890	8%		-0.22%	6						
-0.500	-0.16%	17%	138.997	9%		-0.16%	12						
-0.250	-0.10%	11%	152.658	10%		-0.10%	8						
0.000	-0.03%	25%	157.504	10%		-0.03%	18						
0.250	0.03%	8%	152.658	10%		0.03%	6						
0.500	0.09%	6%	138.997	9%		0.09%	4						
0.750	0.16%	3%	118.890	8%		0.16%	2						
1.000	0.22%	3%	95.531	6%		0.22%	2						
1.250	0.28%	1%	72.111	5%		0.28%	1						
1.500	0.35%	1%	51.134	3%		0.35%	1						
1.750	0.41%	3%	34.063	2%		0.41%	2						
2.000	0.47%	3%	21.316	1%		0.47%	2						
2.250	0.54%	1%	12.531	1%		0.54%	1						
2.500	0.60%	0%	6.920	0%		0.60%	0						
2.750	0.66%	0%	3.590	0%		0.66%	0						
3.000	0.73%	0%	1.750	0%		0.73%	0						
3.250	0.79%	0%	0.801	0%		0.79%	0						
3.500	0.85%	0%	0.345	0%		0.85%	0						
3.750	0.92%	0%	0.139	0%		0.92%	0						
4.000	0.98%	0%	0.053	0%		0.98%	0						
		100%	1579	100%			71						

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

						Regression Statistics						
8.5	-0.12%	0.12%										
8.5	-0.20%	0.20%				Multiple R	0.02344					
8.5	-0.07%	0.07%				R Square	0.055%					
8.5	0.08%	0.08%				Adjusted R Square	-0.0137					
8.5	-0.18%	0.18%				Standard Error	0.00196					
8.6	-0.21%	0.21%				Observations	72					
8.6	-0.20%	0.20%										
8.6	-0.12%	0.12%				Analysis of Variance						
8.6	-0.05%	0.05%					df	um of Square	Mean Square	F	Significance F	
8.6	-0.11%	0.11%				Regression	1	1.4793E-07	1.47928E-07	0.03849716	0.8450167	
12.3	-0.16%	0.16%				Residual	70	0.00026898	3.84256E-06			
12.3	-0.60%	0.60%				Total	71	0.00026913				
12.3	-1.17%	1.17%										
12.5	-0.07%	0.07%					Coefficient	Standard Erro	t Statistic	P-value	Lower 95%	Upper 95%
12.5	-0.02%	0.02%										
12.5	-0.09%	0.09%				Intercept	0.00189	0.00111875	1.686457719	0.09609739	-0.0003445	0.00411799
12.5	0.00%	0.00%				x1	-0.001%	7.3712E-05	-0.19620694	0.84500871	-0.0001615	0.00013255
12.5	0.13%	0.13%										
12.5	-0.14%	0.14%										
12.5	-0.16%	0.16%										
12.5	-0.13%	0.13%										
12.5	-0.28%	0.28%										
13.2	0.18%	0.18%										
13.2	0.01%	0.01%										
13.2	-0.03%	0.03%										
13.2	-0.14%	0.14%										
13.2	-0.10%	0.10%										
16.7	-0.10%	0.10%										
16.7	-0.26%	0.26%										
16.7	-0.17%	0.17%										
16.7	-0.03%	0.03%										
16.7	-0.08%	0.08%										
16.7	0.35%	0.35%										
16.7	0.41%	0.41%										
16.7	0.50%	0.50%										
16.7	0.53%	0.53%										
16.7	0.54%	0.54%										
16.8	0.00%	0.00%										
16.8	0.10%	0.10%										
16.8	0.14%	0.14%										
16.8	0.17%	0.17%										
16.8	0.07%	0.07%										
16.8	-0.03%	0.03%										
16.8	0.27%	0.27%										
16.8	0.29%	0.29%										
16.8	0.25%	0.25%										
16.8	-0.72%	0.72%										
17.1	-0.03%	0.03%										

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

1500 psig RC Pressure LOW

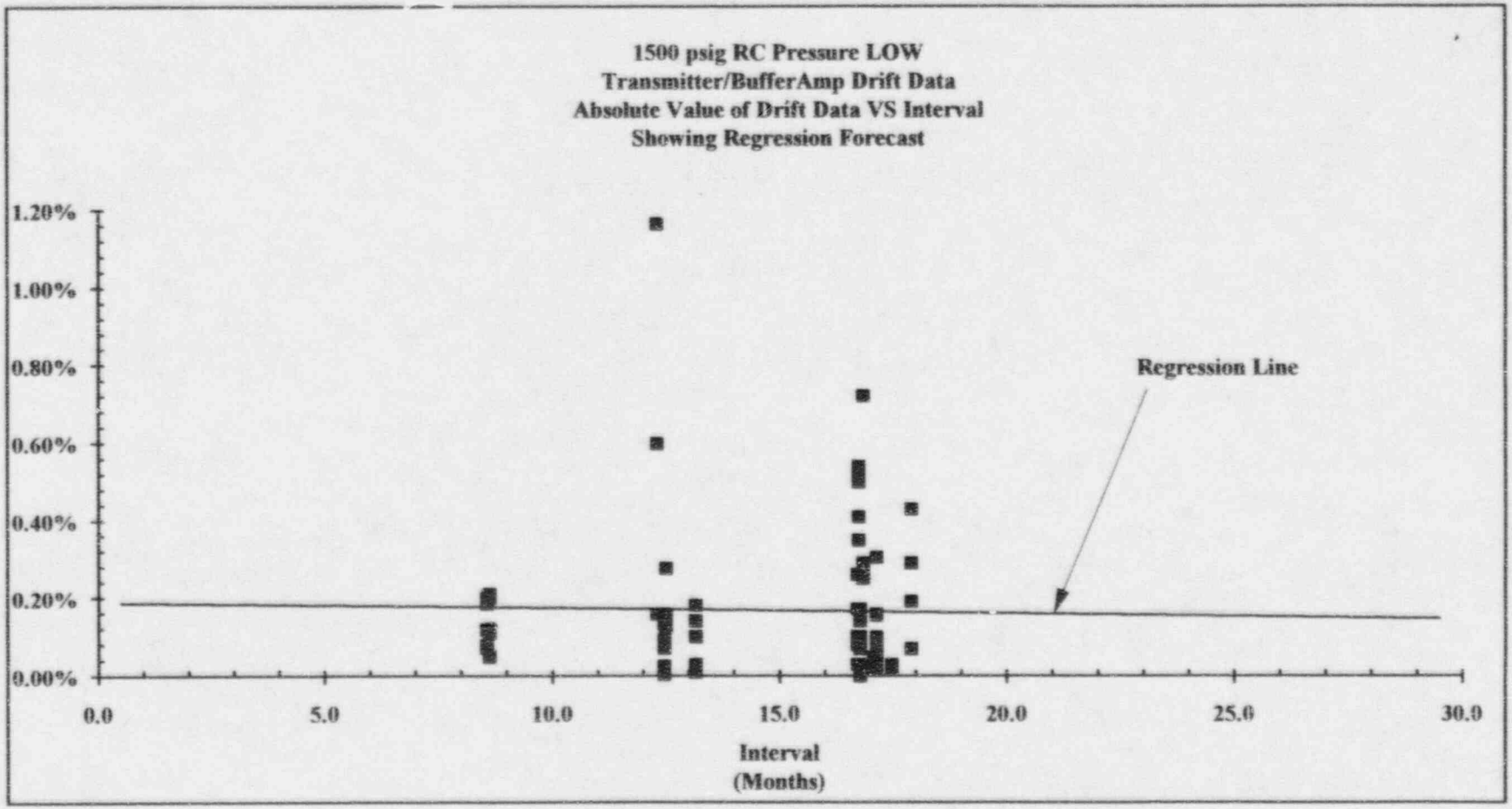
17.1	-0.02%	0.02%											
17.1	0.05%	0.05%											
17.1	0.02%	0.02%											
17.1	-0.03%	0.03%											
17.1	0.10%	0.10%											
17.1	-0.09%	0.09%											
17.1	-0.01%	0.01%											
17.1	-0.15%	0.15%											
17.1	0.05%	0.05%											
17.1	-0.31%	0.31%											
17.1	0.06%	0.06%											
17.1	-0.16%	0.16%											
17.1	-0.05%	0.05%											
17.1	0.04%	0.04%											
17.5	-0.03%	0.03%											
17.5	0.02%	0.02%											
17.5	-0.02%	0.02%											
17.5	-0.03%	0.03%											
17.5	-0.03%	0.03%											
17.9	0.43%	0.43%											
17.9	-0.07%	0.07%											
17.9	-0.19%	0.19%											
17.9	-0.29%	0.29%											
17.9	0.00%	0.00%											
1	0.19%												
2	0.19%												
3	0.18%												
4	0.18%												
5	0.18%												
6	0.18%												
7	0.18%												
8	0.18%												
9	0.18%												
10	0.17%												
11	0.17%												
12	0.17%												
13	0.17%												
14	0.17%												
15	0.17%												
16	0.17%												
17	0.16%												
18	0.16%												
19	0.16%												
20	0.16%												
21	0.16%												
22	0.16%												
23	0.16%												
24	0.15%												
25	0.15%												

RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1

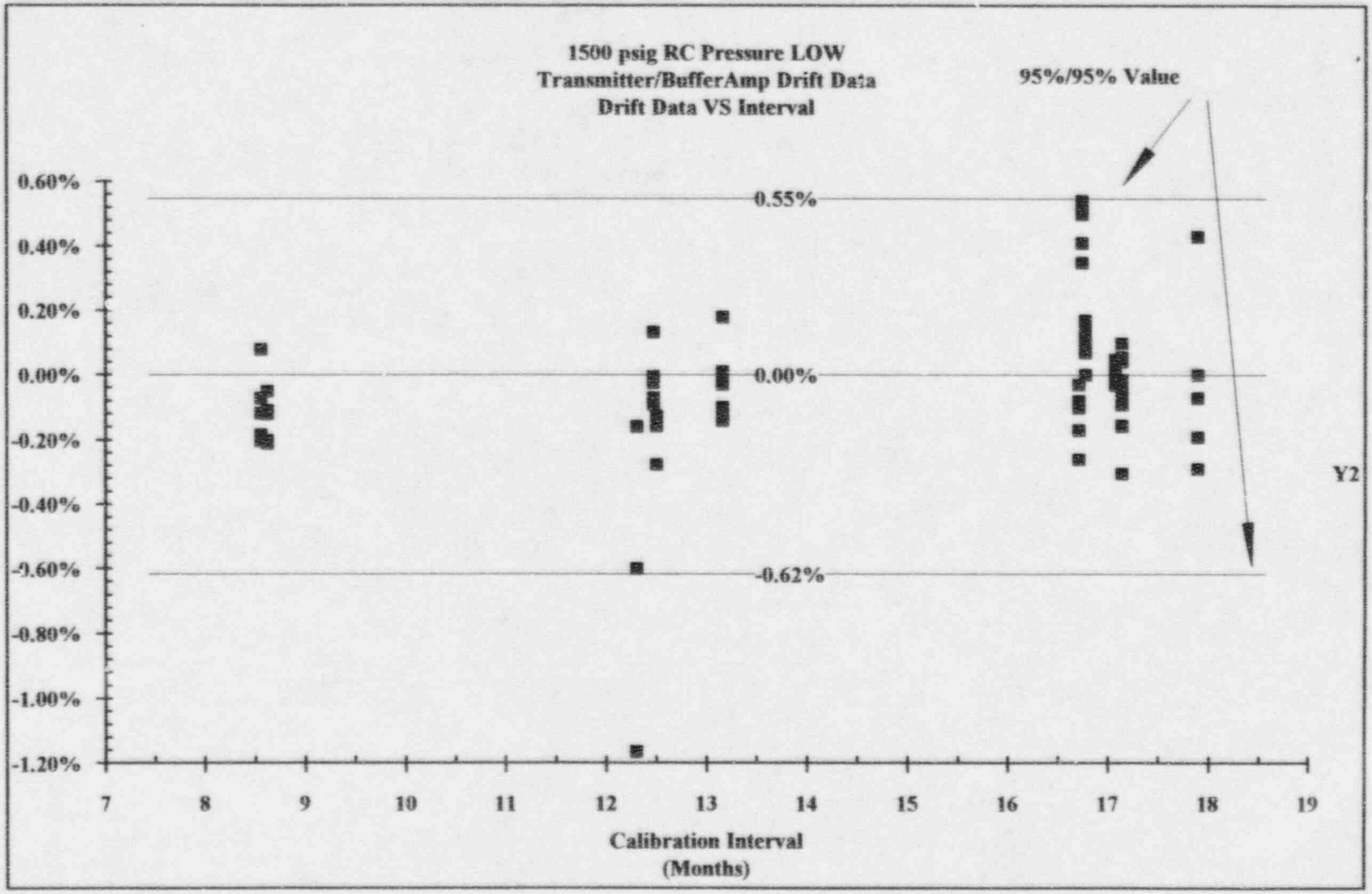
1500 psig RC Pressure LOW

26	0.15%												
27	0.15%												
28	0.15%												
29	0.15%												
30	0.15%												

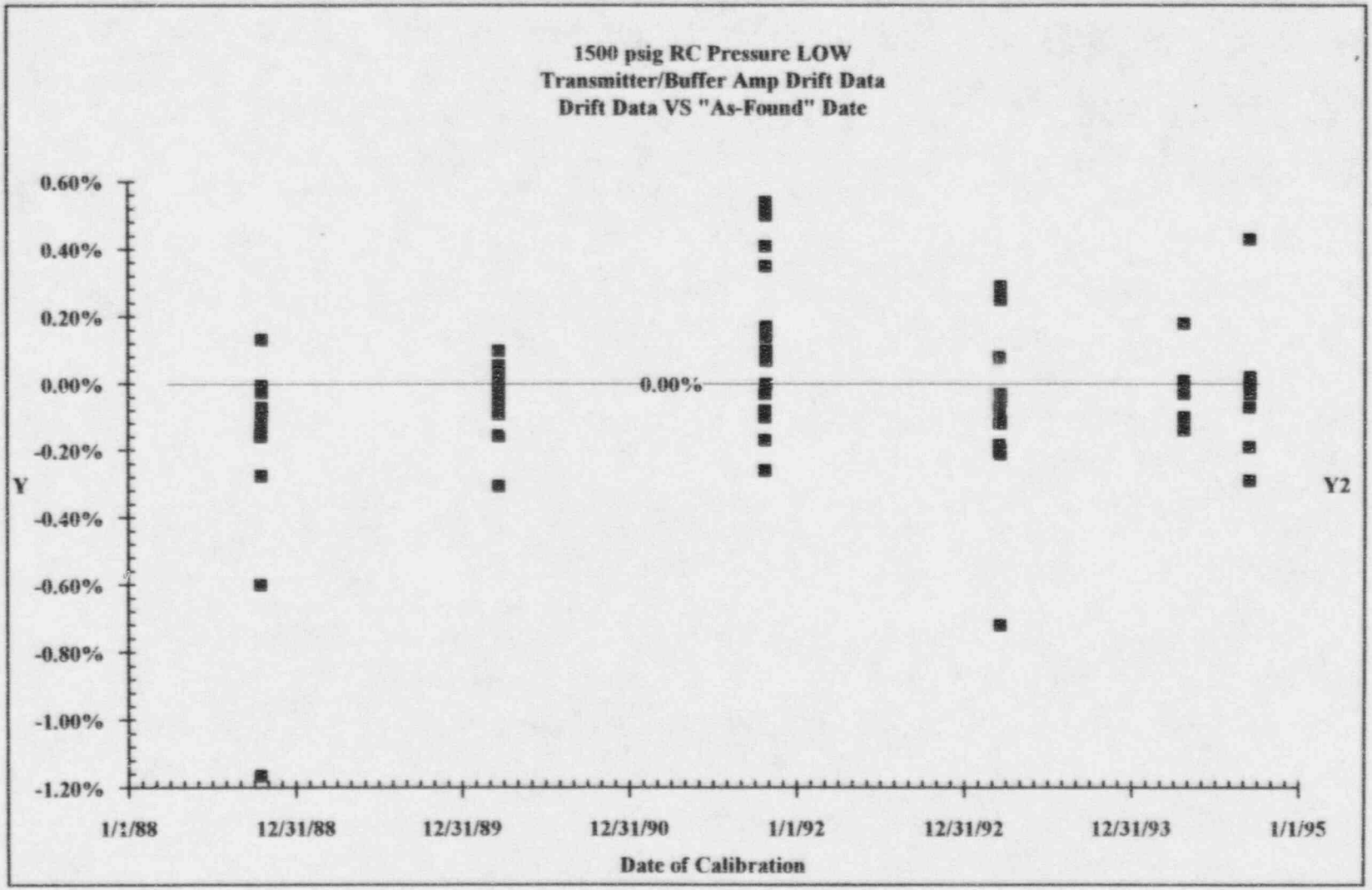
Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1



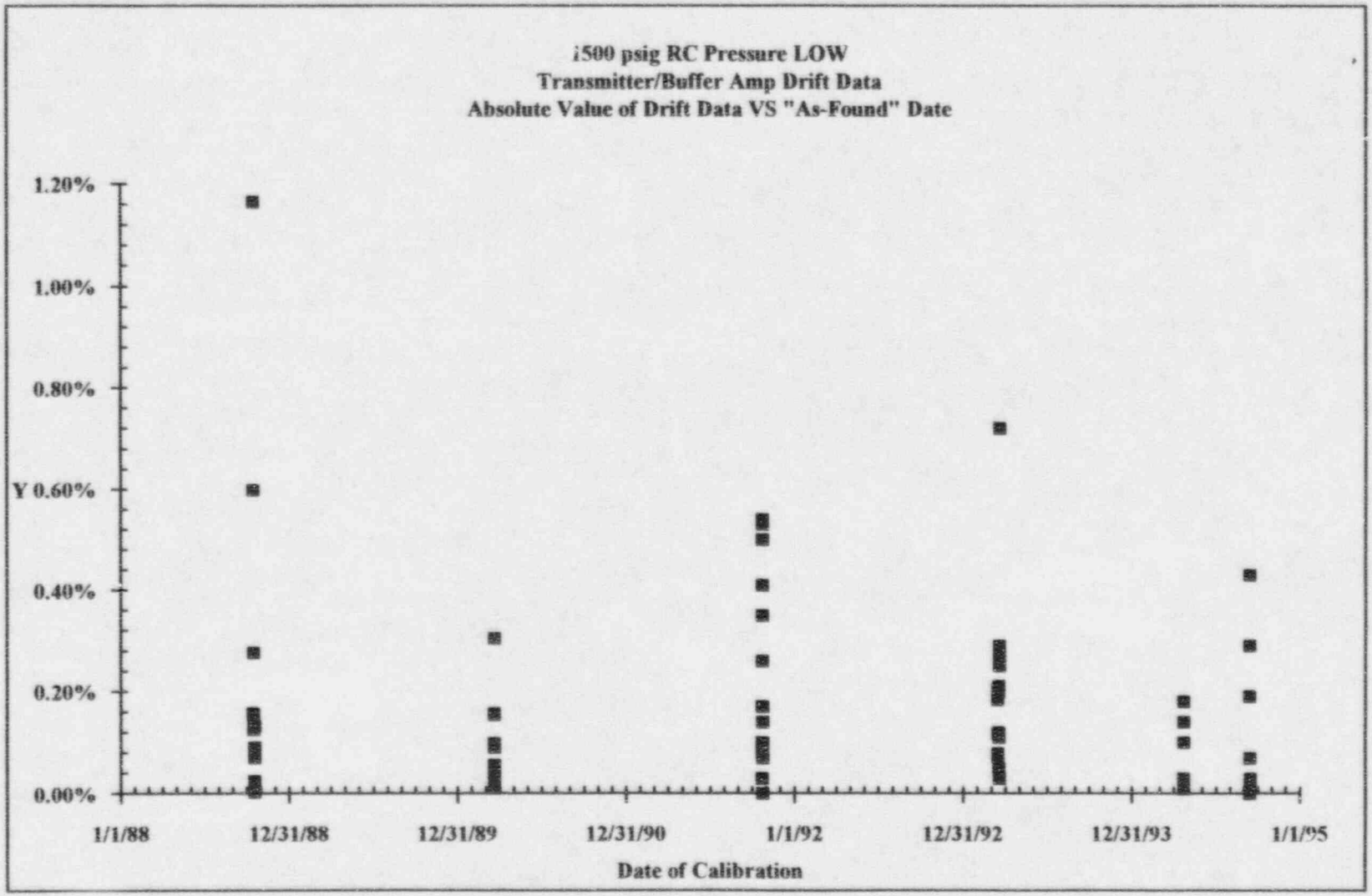
Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1



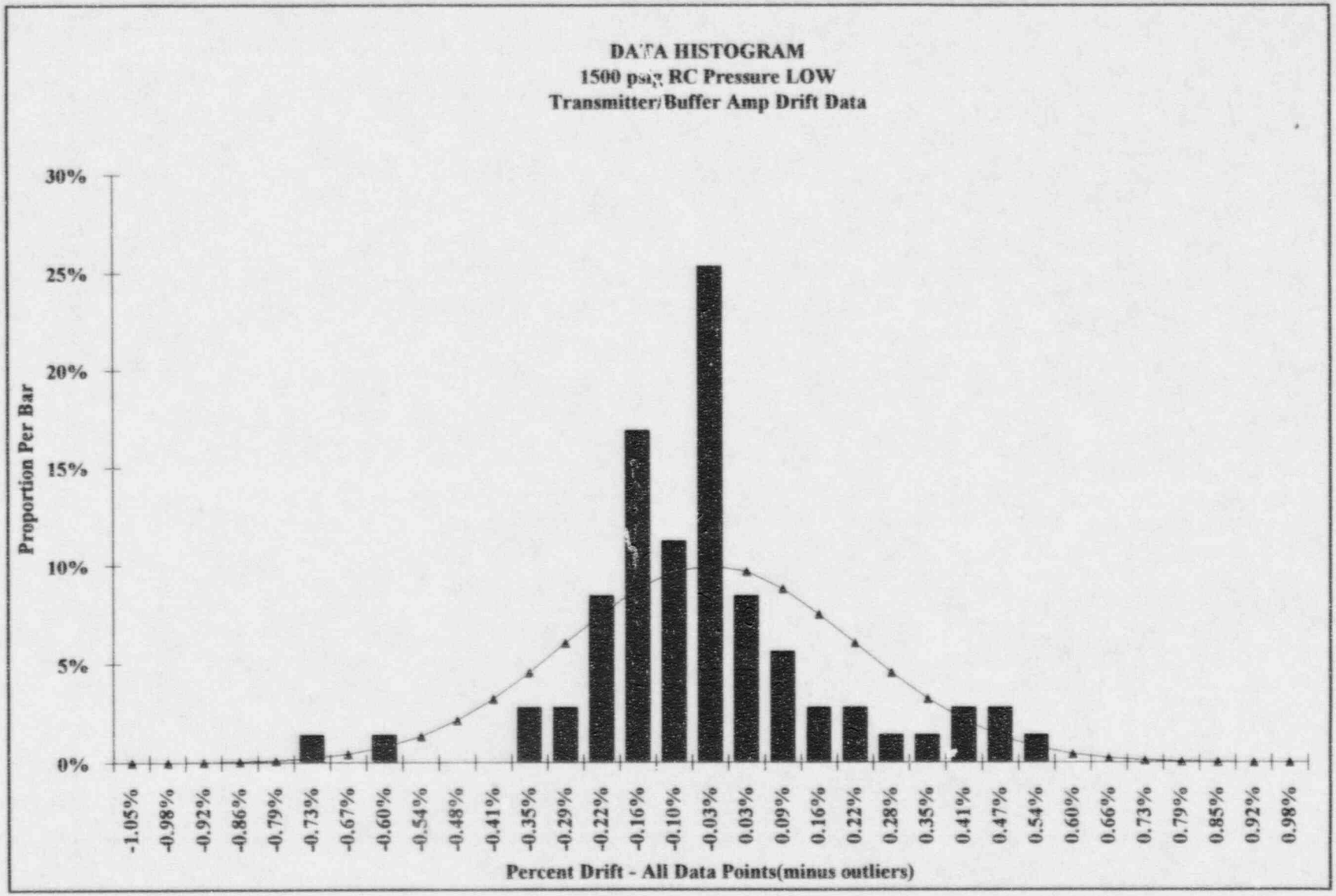
Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1



Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1



Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1



SP-132

S.R. 3.3.5.3, (1)

RC-3-BT1, RC-3-BT2 RC-3-BT3
1500 psig RC Pressure LOW

7	SP-132	Calibration	Interval	Trip	Drift Data					
TAG NUMBER		**Date**	**(Months)**	**Data**	**Outlier Evaluation**					
RC-3-BT1	As Left	10/6/87		6.1594						
RC-3A-PT3	As Found	10/15/88	12.3	6.1602	0.01%					
RC-1, TEST CAB. 1	As Left	10/15/88		6.1602	DATA IS OK					
	As Found	3/20/90	17.1	**6.2520**	0.92%					
	As Left	6/1/90		6.1570	OUTLIER					
	As Found	10/22/91	16.7	6.1560	-0.01%					
X moved - Flood MAR -	As Left	6/29/92		6.1610	DATA IS OK					
no "As Founds" taken.	As Found	3/16/93	8.5	6.1600	-0.01%					
	As Left	3/18/93		6.1600	DATA IS OK					
	As Found	9/13/94	17.9	6.1560	-0.04%					
	As Left	9/13/94		6.1600	DATA IS OK					
RC-3-BT2	As Left	10/1/87		6.1613						
RC-3A-PT4	As Found	10/15/88	12.5	6.1359	-0.25%					
RC-2, TEST CAB.2	As Left	10/15/88		6.1633	DATA IS OK					
	As Found	3/20/90	17.1	**6.2580**	**0.95%**					
	As Left	6/1/90		6.1610	**OUTLIER**					
	As Found	10/23/91	16.7	6.1590	-0.02%					
X moved - Flood MAR -	As Left	6/29/92		6.1660	DATA IS OK					
no "As Founds" taken.	As Found	3/18/93	8.6	6.1670	0.01%					
	As Left	3/19/93		6.1670	DATA IS OK					
	As Found	4/23/94	13.2	6.1850	0.18%					
	As Left	4/23/94		6.1680	DATA IS OK					
RC-3-BT3	As Left	10/4/87		6.1518						
RC-3B-PT3	As Found	10/17/88	12.5	6.1438	-0.08%					
RC-3, TEST CAB. 3	As Left	10/17/88		6.1603	DATA IS OK					
	As Found	3/20/90	17.1	6.1880	0.28%					
	As Left	6/1/90		6.1560	DATA IS OK					
	As Found	10/24/91	16.8	6.1510	-0.05%					
	As Left	10/24/91		6.1590	DATA IS OK					
	As Found	3/19/93	16.8	6.1610	0.02%					
	As Left	4/1/93		6.1580	DATA IS OK					
	As Found	9/14/94	17.5	6.1600	0.02%					
	As Left	9/14/94		6.1600	DATA IS OK					

SP-132
RC-3-BT1, RC-3-BT2 RC-3-BT3
1500 psig RC Pressure LOW

							Percent	Volts DC	psig
Pressure Range:	0 to 2500	psig	Mean:	0.069%		+95%/95%:	0.86%	0.086	21.5
Pressure Span:	2500	psig	Standard Deviation:	0.262%		-95%/95%:	-0.72%	-0.072	-18.0
Output Range:	0 to 10	Volts DC	Number of Points:	15		Projected 30 Month Drift Value:	1.2%	0.123	30.87
Output Span:	10	Volts DC	Outliers Excluded:	1			-1.0%	-0.104	-25.89
SP-132 Setpoint:	1540	psig	Outlier Criteria:	2.409					
SP-132 Setpoint:	6.160	Volts DC	95%/95% k:	3.012					
TS Limiting value:	>=1500	psig	Percent	psig					
SP-132 As Found Tol:	0.06	Volts DC	0.60%	15	Average Interval:	14.75			
SP-132 As Left Tol:	0.01	Volts DC	0.10%	2.5	Setpoint Calculation:	I89-0014, Rev. 4			

W-TEST DATA		Coefficients	Sorted Test Data		B terms	# of Pts.	Data	Sorted
Number of Points:	14	0.5251	-0.25%	0.92%	0.62%	1	0.01%	-0.25%
Variance (s^2):	6.87E-06	0.3318	-0.08%	0.28%	0.12%	2	0.92%	-0.08%
S^2:	8.93E-05	0.246	-0.05%	0.18%	0.06%	3	-0.01%	-0.05%
B:	0.81%	0.1802	-0.04%	0.02%	0.01%	4	-0.01%	-0.04%
B^2:	6.53E-05	0.124	-0.02%	0.02%	0.00%	5	-0.04%	-0.02%
W = (B^2 / S^2):	0.732	0.0727	-0.01%	0.01%	0.00%	6	-0.25%	-0.01%
Critical W @ 95%:	0.874	0.024	-0.01%	0.01%	0.00%	7	-0.02%	-0.01%
W Test:	FAIL					8	0.01%	0.92%
CHART DATA						9	0.18%	0.28%
Calibration	Drift					10	-0.08%	0.18%
Interval	Data	95%/95% Value		Zero %		11	0.28%	0.02%
8		0.86%	-0.72%	0.00%		12	-0.05%	0.02%
12	0.01%	0.86%	-0.72%	0.00%		13	0.02%	0.01%
17	0.92%	0.86%	-0.72%	0.00%		14	0.02%	0.01%
17	-0.01%	0.86%	-0.72%	0.00%		15		
9	-0.01%	0.86%	-0.72%	0.00%				
18	-0.04%	0.86%	-0.72%	0.00%				
12	-0.25%	0.86%	-0.72%	0.00%				
17		0.86%	-0.72%	0.00%				
17	-0.02%	0.86%	-0.72%	0.00%				
9	0.01%	0.86%	-0.72%	0.00%				
13	0.18%	0.86%	-0.72%	0.00%				
12	-0.08%	0.86%	-0.72%	0.00%				
17	0.28%	0.86%	-0.72%	0.00%				
17	-0.05%	0.86%	-0.72%	0.00%				
17	0.02%	0.86%	-0.72%	0.00%				
17	0.02%	0.86%	-0.72%	0.00%				
19		0.86%	-0.72%	0.00%				

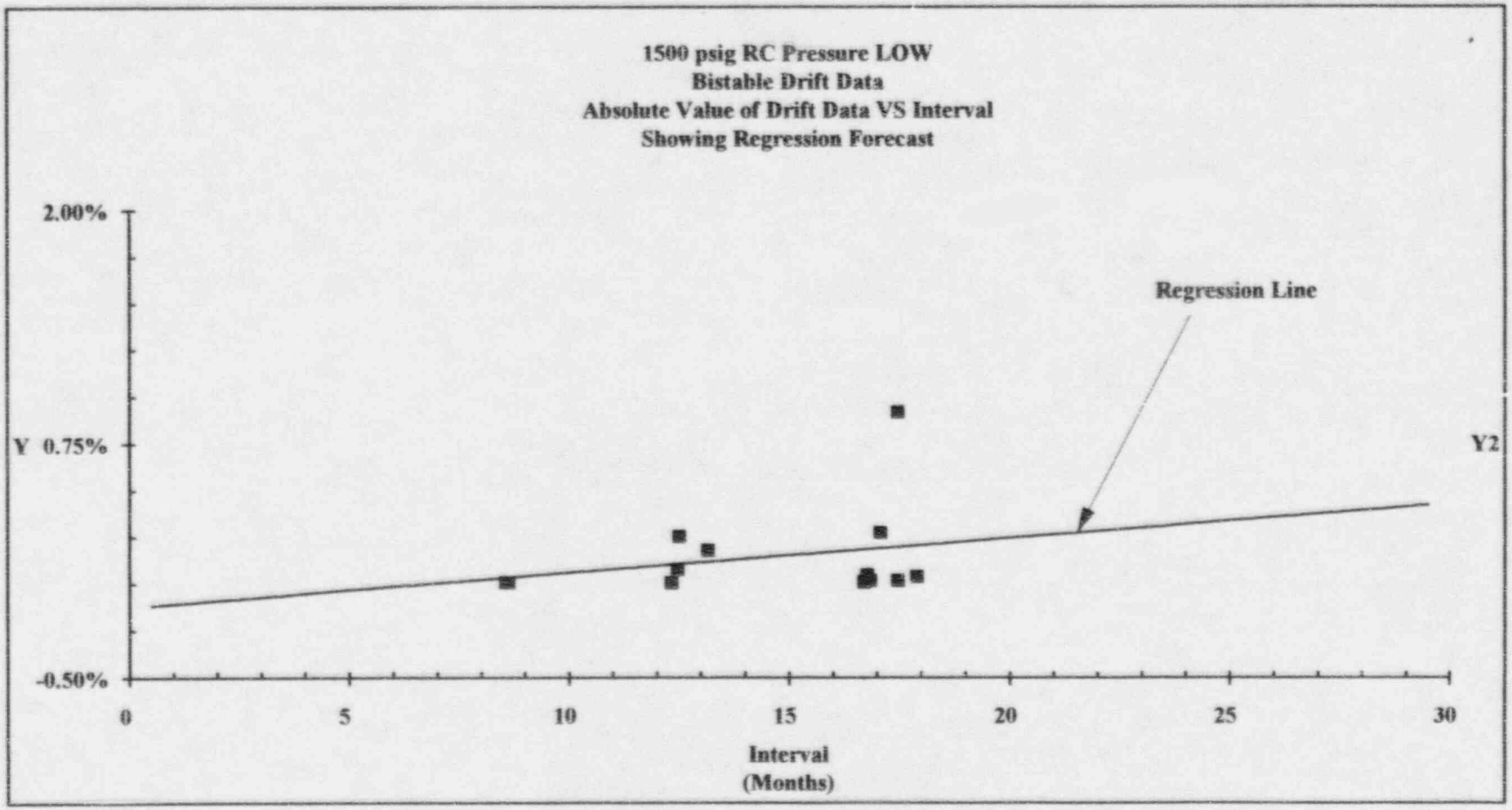
SP-132
RC-3-BT1, RC-3-BT2 RC-3-BT3
1500 psig RC Pressure LOW

Histogram Data								Probability	Observed	
					Bin	Frequency	t	for t-sigma	Proportion	
-4.00	-0.98%	0.0%	0.05	0.0%	-0.98%	0	0.000	0%	0.00%	
-3.75	-0.91%	0.0%	0.13	0.0%	-0.91%	0	0.250	19.74%	35.71%	
-3.50	-0.85%	0.0%	0.33	0.0%	-0.85%	0	0.500	38.29%	71.43%	
-3.25	-0.78%	0.0%	0.77	0.1%	-0.78%	0	0.750	54.67%	85.71%	
-3.00	-0.72%	0.0%	1.69	0.1%	-0.72%	0	1.000	68.27%	85.71%	Additional Pt
-2.75	-0.65%	0.0%	3.47	0.2%	-0.65%	0	1.500	86.64%	92.86%	1
-2.50	-0.59%	0.0%	6.69	0.4%	-0.59%	0	**2.000**	**95.45%**	**92.86%**	**100.00%**
-2.25	-0.52%	0.0%	12.11	0.8%	-0.52%	0	2.500	98.76%	92.86%	
-2.00	-0.45%	0.0%	20.60	1.3%	-0.45%	0	3.000	99.73%	100.00%	
-1.75	-0.39%	0.0%	32.92	2.2%	-0.39%	0	3.500	99.95%	100.00%	
-1.50	-0.32%	0.0%	49.43	3.2%	-0.32%	0	4.000	99.9994%	100.00%	
-1.25	-0.26%	7.1%	69.70	4.6%	-0.26%	1		**Expected Value**	**Actual**	
-1.00	-0.19%	0.0%	92.34	6.0%	-0.19%	0				
-0.75	-0.13%	7.1%	114.92	7.5%	-0.13%	1				
-0.50	-0.06%	35.7%	134.35	8.8%	-0.06%	5				
-0.25	0.00%	28.6%	147.56	9.7%	0.00%	4				
0.00	0.07%	0.0%	152.24	10.0%	0.07%	0				
0.25	0.13%	7.1%	147.56	9.7%	0.13%	1				
0.50	0.20%	0.0%	134.35	8.8%	0.20%	0				
0.75	0.27%	7.1%	114.92	7.5%	0.27%	1				
1.00	0.33%	0.0%	92.34	6.0%	0.33%	0				
1.25	0.40%	0.0%	69.70	4.6%	0.40%	0				
1.50	0.46%	0.0%	49.43	3.2%	0.46%	0				
1.75	0.53%	0.0%	32.92	2.2%	0.53%	0				
2.00	0.59%	0.0%	20.60	1.3%	0.59%	0				
2.25	0.66%	0.0%	12.11	0.8%	0.66%	0				
2.50	0.72%	0.0%	6.69	0.4%	0.72%	0				
2.75	0.79%	0.0%	3.47	0.2%	0.79%	0				
3.00	0.86%	7.1%	1.69	0.1%	0.86%	1				
3.25	0.92%	0.0%	0.77	0.1%	0.92%	0				
3.50	0.99%	0.0%	0.33	0.0%	0.99%	0				
3.75	1.05%	0.0%	0.13	0.0%	1.05%	0				
4.00	1.12%	0.0%	0.05	0.0%	1.12%	0				
		1.00	1526.39	1.00		14.00				

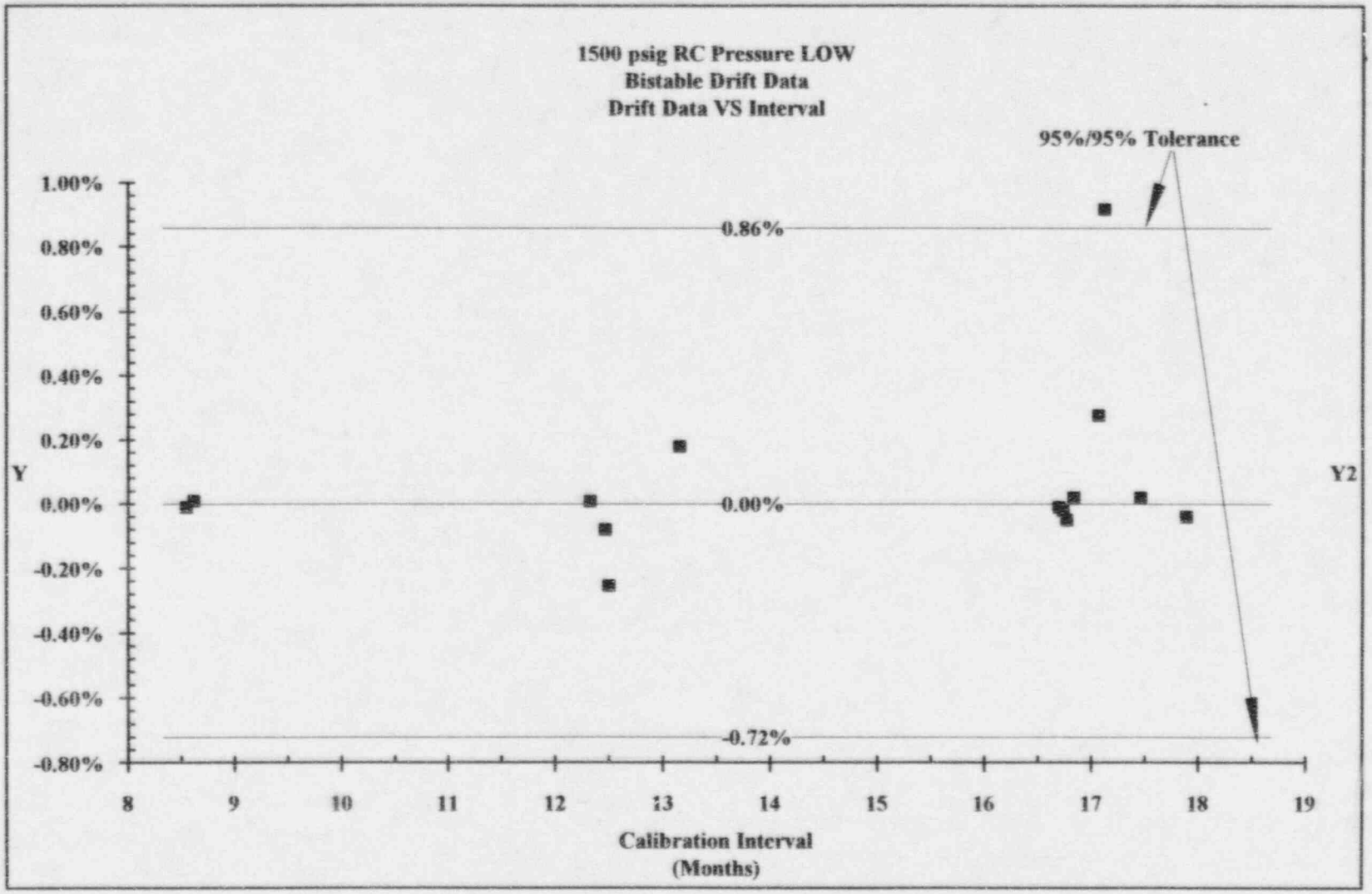
9	-0.01%	0.01%		Regression Statistics						
9	0.01%	0.01%								
12	0.01%	0.01%		Multiple R	0.249					
12	-0.08%	0.08%		R Square	0.062					
12	-0.25%	0.25%		Adjusted R Square	(0.016)					
13	0.18%	0.18%		Standard Error	0.002					
17	-0.01%	0.01%		Observations	14.000					
17	-0.02%	0.02%								
17	-0.05%	0.05%		Analysis of Variance						
17	0.02%	0.02%			df	Sum of Squares	Mean Square	F	Significance F	
17	0.28%	0.28%		Regression	1	4.8111E-06	4.8111E-06	0.79	0.39	
17	0.02%	0.02%		Residual	12	7.26412E-05	6.05343E-06			
17	0.92%	0.92%		Total	13	7.74523E-05				
18	-0.04%	0.04%								
1	-0.12%				Coefficients	Standard Error	t Statistic	P-value	Lower 95%	Upper 95%
2	-0.10%									
3	-0.08%			Intercept	-1.35E-03	3.10E-03	-0.43	67.15%	-8.10E-03	5.41E-03
4	-0.06%			x1	1.85E-04	2.08E-04	0.89	38.89%	-2.67E-04	6.37E-04
5	-0.04%									
6	-0.02%									
7	-0.01%									
8	0.01%									
9	0.03%									
10	0.05%									
11	0.07%									
12	0.09%									
13	0.11%									
14	0.12%									
15	0.14%									
16	0.16%									
17	0.18%									
18	0.20%									
19	0.22%									
20	0.24%									
21	0.25%									
22	0.27%									
23	0.29%									
24	0.31%									
25	0.33%									
26	0.35%									

27	0.36%									
28	0.38%									
29	0.40%									
30	0.42%									

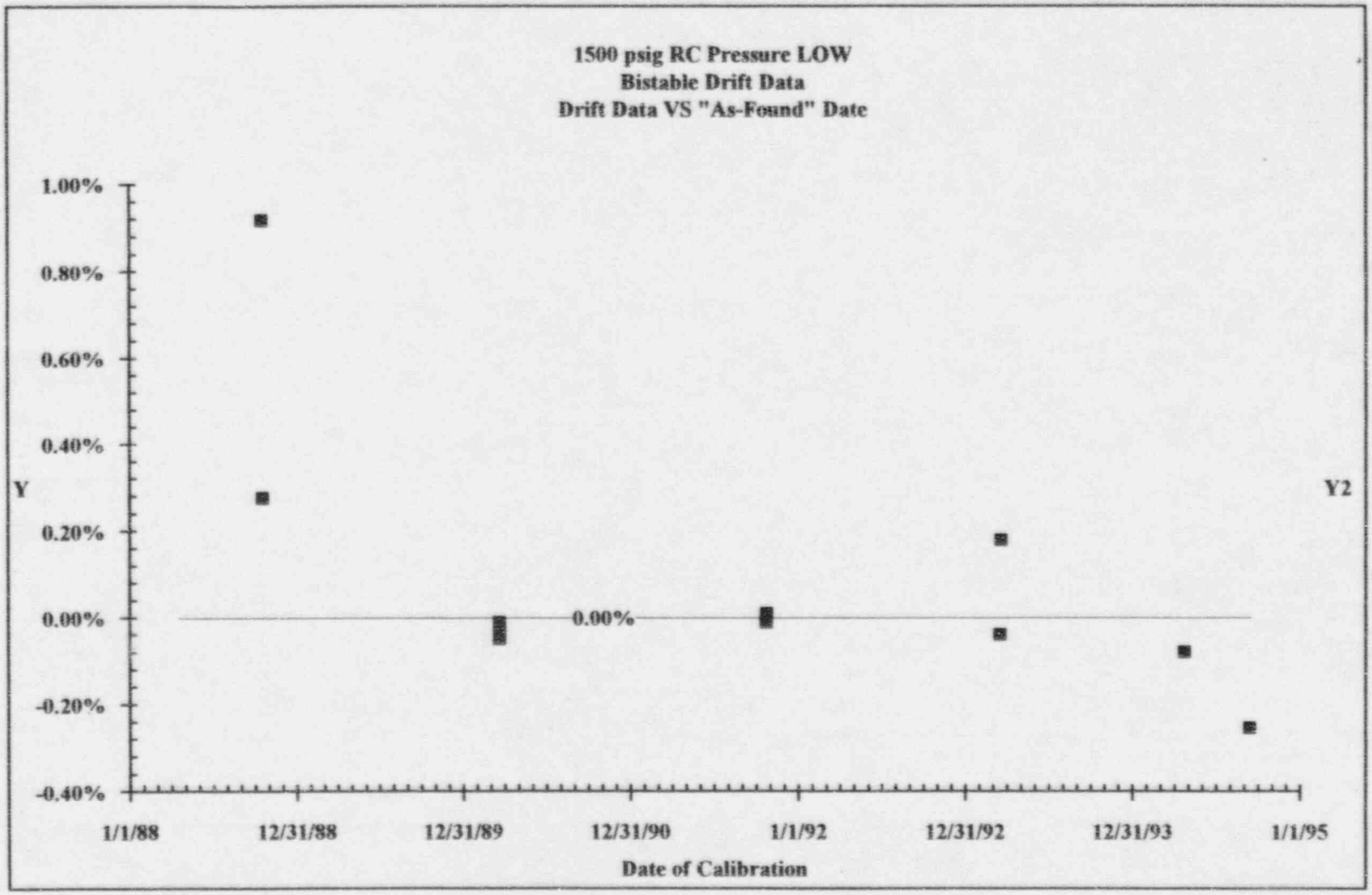
Surveillance Requirement 3.3.5.3, (1)
RC-3-BT1, RC-3-BT2 RC-3-BT3



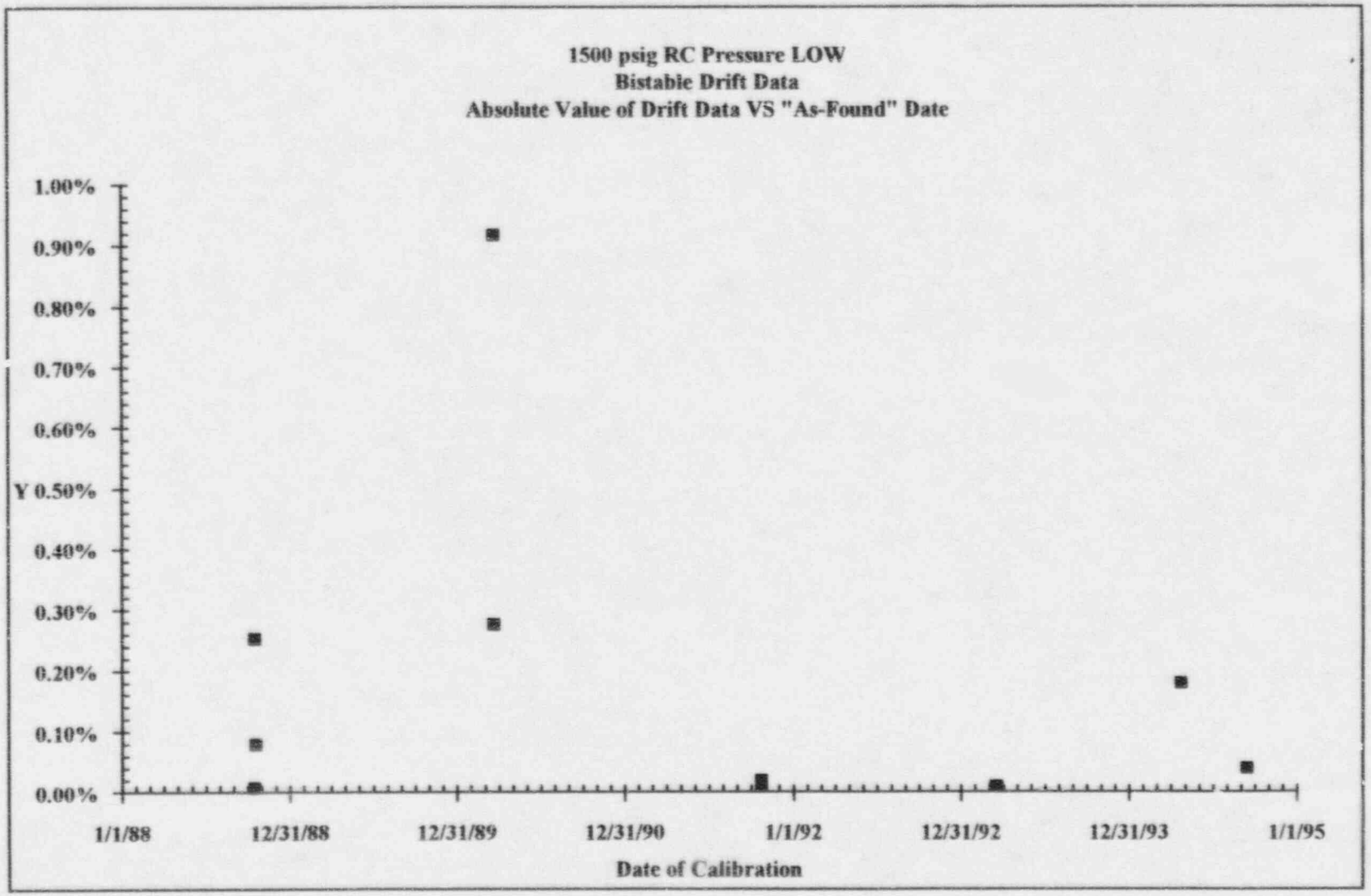
Surveillance Requirement 3.3.5.3, (1)
RC-3-BT1, RC-3-BT2 RC-3-BT3



Surveillance Requirement 3.3.5.3, (1)
RC-3-BT1, RC-3-BT2 RC-3-BT3



Surveillance Requirement 3.3.5.3, (1)
RC-3-BT1, RC-3-BT2 RC-3-BT3



Surveillance Requirement 3.3.5.3, (1)
RC-3A-PT3/RC-3A-PY3, RC-3B-PT3/RC-3B-PY3 & RC-3A-PT4/RC-3A-PY4-1