Attachment 5 to GNRO-2013/00088

EN-IC-S-022-G Rev. 0 "Instrument Performance Monitoring and Drift Trending Analysis"

Entergy

ENGINEERING STANDARD

EN-IC-S-022-G Rev. **000** Effective Date: **2/1/2014**

INSTRUMENT PERFORMANCE MONITORING AND DRIFT TRENDING AND ANALYSIS

Applicable Sites		Effective Date Exception	Applicable Sites		Effective Date Exception
IP-1	☐		ANO-1	☐	
IP-2	☐		ANO-2	☐	
IP-3	☐		GGNS	☒	
JAF	☐		RBS	☐	
PLP	☐		WF3	☐	
PNPS	☐		NP	☐	
VY	☐			☐	

Safety Related: **X** Yes

No

EC No(s). 47304

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Engineering Standard Owner

Process Applicability Exclusion (EN-LI-100 / Programmatic Exclusion)

All Sites: ☐ Specific Sites: ANO ☐ GGNS ☐ IPEC ☐ JAF ☐ PLP ☐ PNPS ☐ RBS ☐ VY ☐ W3 ☐

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1.0 PURPOSE

1.1 The objective of this standard is to identify the process used by Entergy Operations, Inc., to implement an instrument performance monitoring and drift trending and analysis program for Grand Gulf Nuclear Station (GGNS). The objectives of this program are to:

1.1.1 Ensure that poorly performing instruments are identified for replacement or repair in a timely fashion. Identification of these poorly performing instruments should be in a method compliant with TSTF-493 requirements.

1.1.2 Establish the plant methods for establishing As-Found Tolerances (AFT) and As-Left Tolerances (ALT) for instruments in a manner that meets the requirements of TSTF-493.

1.1.3 Ensure that the values derived for Analyzed Drift, which are used in instrument setpoint calculations, and which support Technical Specification and Technical Requirements Manual Allowable Values, are valid for plant operation using extended surveillance intervals.

1.1.4 Meet the requirements of an instrument trending program per Enclosure 2 of NRC Generic Letter 91-04.

1.2 In October of 2012 Entergy Operations submitted a request to amend the GGNS technical specifications to support 24 month fuel cycles (reference GNRO 2012-00096).

This project was performed in accordance with the methodology described in NRC Generic Letter 91-04. Enclosure 2 of Generic Letter 91-04, "Guidance for Addressing the Effect of Increased Surveillance Intervals on Instrument Drift and Safety Analysis Assumptions," lists seven activities to be performed to assess these effects. The 7th item is listed as follows:

"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.

Finally, licensees should have a program to monitor calibration results and the effect on instrument drift that will accompany the increase in calibration intervals. The program should ensure that existing procedures provide data for evaluating the effects of increased calibration intervals. The data should confirm that the estimated errors for instrument drift with increased calibration intervals are within the limits projected."

In support of the 24 Month Cycle Extension Project, detailed drift studies were performed for the required instrumentation, which used historical calibration As-Found and As-Left data to establish the observed drift for the subject instrumentation at the previous calibration intervals. The drift studies then conservatively extrapolated the drift values to obtain projected Analyzed Drift terms for the new surveillance intervals. These terms were then incorporated into the setpoint calculations to ensure that existing settings were adequate or to derive new required settings, given the projected drift.

Because of the conservatisms used to establish the original drift values, and the conservatisms of the extrapolation methodology, it is anticipated that the projected Analyzed Drift values are conservative. However, the instrument trending and analysis program presented herein ensures that the values derived in these drift studies envelop the observed drift values, and improves the plant's ability to detect and correct instrumentation problems in a timely fashion.

The 24 Month Cycle Extension Projects used Microsoft EXCEL spreadsheets to perform the drift studies. However, Instrument Performance Analysis Software System (IPASS) databases will be created for the data groups analyzed, in support of the drift calculation review process. Because of the excellent drift trending capabilities of the IPASS software, it will be used to perform the instrument trending functions for GGN. The initial IPASS databases for these projects are used as the starting point for the Instrument Performance Monitoring and Drift Trending and Analysis Program.

EC 39554 issued revisions to 42 setpoint validation calculations that have associated drift calculations. EC 40337 issued revisions to the three Non-Tech Spec calculations JC-Q1E32-N651-2 (MSIV Leakage Control System Short Term High Pressure Trip), JC-Q1E38-N600-1 (Feedwater Leakage Control System High Pressure Trip) and JC-Q1E61-N600-1 (Drywell Vacuum Relief) that have associated drift calculations. Two calculations revisions prepared earlier (JC-Q1C71-N652-1 and JC-Q1E31-N686-1) also have associated drift calculations. The drift calculations and setpoint calculation revisions were prepared to support the change from 18 month to 24 month calibration intervals. The instruments associated with these 47 setpoint calculations will be included in the drift monitoring program. The setpoints associated with the new PRNM system will also be included in the drift monitoring program. The associated PRNM setpoint calculations and ALT / AFT calculations were prepared by GEH and are available for audit.

Only the instrumentation associated with setpoint calculations listed in attachment 7.4 of this standard will be included in the drift monitoring program. The instrumentation associated with the 4 instrument uncertainty calculations (JC-Q1E30-R600-2, JC-Q1M71-N603-1, JC-Q1M71-N605-1 and JC-Q1M71-N627-1) issued with EC 39554 that have associated drift calculations will not be included in the drift monitoring program. The limit switches associated with setpoint calculation JC-Q1B21-N101-1 (MSIV Closure for Scram) and the level switches associated with setpoint calculation JC-Q1C11-N013-1 (Reactor Scram on Scram Discharge Volume Piping High Level) are devices not considered to be susceptible to time dependent drift. There are no associated drift calculations and these instruments will not be included in the drift monitoring program. Instruments with calibration frequencies that are not being changed to 24 months will not be included in the drift monitoring program.

2.0 REFERENCES

2.1 NRC Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," Dated April 2, 1991

2.2 EPRI TR-103335R1, "Statistical Analysis of Instrument Calibration Data; Guidelines for Instrument Calibration Extension / Reduction Programs," October, 1998

2.3 IPASS User's Manual: Operations Manual for Instrument Performance Analysis Software System (IPASS) AMS Manual IPASS1201R0. August, 2012

2.4 ECH-NE-08-00015, "Instrument Drift Analysis Design Guide," Revision 1

2.5 Procedure EN-LI-102, "Corrective Action Process," Revision 22

2.6 Technical Specification Task Force Improved Standard Technical Specifications Change Traveler TSTF-493-A, Revision 4, "Clarify Application of Setpoint Methodology for Limiting Safety System Setting (LSSS) Functions," transmitted to NRC via TSTF-09-29, Dated January 5, 2010

2.7 GNRO 2012-00096, License Amendment Request to Support 24 Month Fuel Cycles

2.8 JS-09 Rev. 1 (Including EC 39605 Markup), Methodology for the Generation of Instrument Loop Uncertainty and Setpoint Calculations

2.9 EC 39554, issued 24 new drift calculations, issued revisions to 42 setpoint calculations and 4 instrument uncertainty calculations

2.10 EC 40337, issued revisions to 15 setpoint calculations

3.0 DEFINITIONS

3.1 As-Found Tolerance (AFT): The predefined double-sided limits that the setpoint must be verified to be within during or after operation, that are based on the actual expected errors between calibrations. Finding the As-Found trip setpoint outside these limits warrants additional evaluation and potential corrective action, as necessary, to ensure continued performance of the specified safety function.

3.2 As-Found Value: The condition in which a channel, or portion of a channel, is found after a period of operation and before recalibration (if necessary).

3.3 As-Left Tolerance (ALT): The amount by which the As-Left calibration value is permitted to differ from the nominal setpoint or ideal scaling value.

3.4 As-Left Value: The condition in which a channel, or portion of a channel, is left after calibration or final device setpoint verification.

3.5 Allowable Value (AV): The limiting value that the trip setpoint may have when tested periodically, beyond which appropriate action shall be taken. The Allowable Value provides operability criteria for those setpoints or channels that have a limiting operating condition. This limiting condition is typically imposed by the Technical Specifications, or Technical Requirements Manual, but may also result from regulatory requirements, vendor requirements, design basis criteria or other operational limits.

3.6 Drift: A variation in sensor or instrument channel output that may occur between calibrations that cannot be related to changes in the process variable or environmental conditions.

3.7 Measurement & Test Equipment Uncertainty (M&TE): The potential uncertainty imparted to an instrument through the calibration process that is due to the inaccuracy of the measurement and test equipment used for the calibration.

3.8 Out of Tolerance (OOT): The condition that exists when the As-Found values for an instrument calibration exceed some pre-established limit or tolerance value.

3.9 Reference Accuracy (RA): A number or quantity that defines a limit that error will not exceed, when a device is used under specified operating conditions. Reference accuracy includes the combined effects of linearity (or conformity), hysteresis, deadband, and repeatability.

3.10 Trending: The process by which previous performance of an instrument is compared to the current performance to determine if an adverse condition exists or is projected to exist, that requires further evaluation by qualified personnel to determine any corrective actions that may be required.

4.0 RESPONSIBILITIES

This guideline applies to Entergy GGN Engineering personnel.

Control of the Analysis and Measurement Services Corporation (AMS) IPASS software is required as an ongoing activity within the GGN Engineering Department. IPASS is considered to be safety related software.

Screening and entry of As-Found and As-Left data from surveillances is an ongoing activity within the GGN System Engineering Department. The calibration data should be entered in a timely manner after each surveillance test performance is approved. As-Found and As-Left data recorded during a refueling outage should be fully entered and verified within six months following a refueling outage.

IPASS Drift Analysis Reviews are a periodic activity performed by the GGN Design Engineering Department. For instruments that are calibrated on a refueling basis, an IPASS Drift Analysis Review should be started approximately six months following each refueling outage, and should be completed no later than nine months following the end of the refueling outage.

4.1 GGN MAINTENANCE DEPARTMENT – MAINTENANCE MANAGER

4.1.1 The Maintenance Manager is responsible for the performance of Channel Calibration and Channel Functional Test surveillance activities for instrumentation in accordance with Technical Specification and Technical Requirements Manual.

4.1.2 The Maintenance Manager is responsible to ensure that Condition Reports are prepared for instruments which do not pass their acceptance criteria within the surveillance requirements, to ensure that appropriate measures are taken to assess the condition of the instrument which doesn't pass the criteria, and that the instrument is properly returned to service if possible.

4.2 GGN SYSTEM ENGINEERING DEPARTMENT – SYSTEM ENGINEERING MANAGER

4.2.1 The System Engineering Manager is responsible to ensure that the individuals controlling the IPASS software and data, entering the calibration data, and performing screening activities on the calibration data are properly trained in the use of the IPASS software and this program.

4.2.2 The System Engineering Manager is responsible for the entry of As-Left and As-Found instrument calibration data from surveillance tests into the IPASS database, as required by this program. Data entry should be completed in a timely manner and no later than six months following a refueling outage.

4.2.3 The System Engineering Manager is responsible for preliminary screening of As-Left and As-Found data for errors or situations where drift data is not valid.

4.3 GGN DESIGN ENGINEERING DEPARTMENT – DESIGN ENGINEERING MANAGER

4.3.1 The Design Engineering Manager is responsible for initiation of Condition Reports or Corrective Actions resulting from findings from the IPASS Data Entry and Screening Process.

4.3.2 The Design Engineering Manager is responsible for performing the Drift Analysis Review of IPASS data with respect to identifying poorly performing instruments and validating the drift values derived within the drift studies. Drift Analysis Reviews are performed periodically and should be completed no later than nine months following a refueling outage.

4.3.3 The Design Engineering Manager is responsible to ensure that the individuals performing IPASS Drift Analysis Reviews are trained on the use of the IPASS software and this program.

4.3.4 The Design Engineering Manager is responsible for initiation of Condition Reports or Corrective Actions resulting from findings from the periodic IPASS Drift Analysis Reviews.

4.3.5 The Design Engineering Manager is responsible for maintenance of documentation for the IPASS Drift Analysis Review results and generating the Drift Analysis Review Report. Attachment 7.3 provides a Sample Drift Analysis Review Report.

4.3.5.1 The Design Engineering Manager is responsible for production of new drift studies or revision of current drift studies in accordance with Reference 2.4, as necessary to support this trending program.

4.3.5.2 The Design Engineering Manager is responsible for maintenance and revision of this Standard.

5.0 DETAILS

5.1 Requirements

This standard provides the process to address both 24-month fuel cycle change drift verification and TSTF-493 tolerance verification. Each attachment provides either input or guidance for various aspects of the standard.

6.0 RECORDS

The instructions and guidelines are split between the following activities.

- Control of IPASS Software and Data
- Data Entry and Screening Tasks
- IPASS Drift Analysis Reviews

These instructions are not meant to provide sufficient detail to use the IPASS software, but to direct the user in overall tasks that need to be performed, using the IPASS software and database. These instructions are to be carried out in conjunction with the detailed descriptions of the software in Reference 2.3 by a trained user of IPASS.

Also, note that IPASS is not considered QA software. Thus, any Operability determinations should not be based on IPASS information alone, but upon various factors. IPASS provides additional information to inform the responsible party about instrument performance to assist in these determinations.

6.1 ESTABLISHMENT OF CALIBRATION TOLERANCES IN ACCORDANCE WITH TSTF-493

6.1.1 Section 3.0 of TSTF-493 (Reference 2.6) provides the following guidance for the establishment of As-Left Tolerances (ALT), "The Nominal Trip Setpoint must be reset or left within the as-left tolerance at the end of every surveillance that requires setpoint verification. The ability to reset the setpoint represents continued confidence that the channel can perform its intended safety function. The As-Left Tolerance may include the Reference Accuracy, M&TE Accuracy and Readability uncertainties."

Based on this guidance, the recommended ALT for each device covered by the TSTF-493 requirements should be set equal to its Reference Accuracy. This should be easily attainable in the calibration process for a non-degraded instrument, and is tighter than required by TSTF-493; therefore, this is an acceptable practice.

6.1.2 Section 3.0 of TSTF-493 (Reference 2.6) provides the following guidance, "The as-found trip setpoint must be verified to be within predefined double-sided limits that are based on the actual expected errors between calibrations. Finding the as-found trip setpoint outside these limits warrants additional evaluation and potential corrective action, as necessary, to ensure continued performance of the specified safety function. Normally, the as-found tolerance will be equivalent to the errors verified during the surveillance (e.g. Reference Accuracy (RA), Drift, and Measurement and Test Equipment (M&TE) accuracy/errors.)"

The methodology utilized for determining the TSTF 493 As-Found Tolerance (AFT) and As-Left Tolerance (ALT) valves is provided in Reference 2.8.

6.2 TRENDING FOR INSTRUMENTS EXCEEDING AFT AND ALT

6.2.1 Poor performance can occur in four basic ways:

6.2.1.1 An individual instrument could begin to show signs of failure by 1) not meeting the ALT for repeated calibrations, 2) the instrument may repeatedly be found outside the AFT, or 3) the instrument may begin to drift more directionally than the original drift analysis predicted. Either of these is indicative of potential failure of the instrument at some future time.

6.2.1.2 Most or all of the instruments monitoring a specific plant parameter could begin to show signs of failure by not meeting ALT or be found outside the AFT for repeated calibrations. This is indicative of the instrument being assigned an ALT or drift term that is too constrictive for the make/model used. If the ALT cannot be expanded to prevent repetitive failures, then the instrument may not be the correct one for the parameter of concern. If the ALT is acceptable but the AFT is exceeded for all the instruments, a performance problem exists and must be evaluated further by Design Engineering.

6.2.1.3 Most or all of the instruments of a given make/model could begin to show signs of failure by not meeting ALT for repeated calibrations. This is indicative of the instrument being assigned an ALT that is too constrictive for the make/model used. If the ALT cannot be expanded to prevent repetitive failures, then the instrument may not be the correct one for use. If this occurs after calibrations were successful, then the potential for a common mode failure exists.

6.2.1.4 Most or all of the instruments of a given make/model could begin to show signs of failure by not meeting AFT for repeated calibrations. This is indicative of the instrument being assigned a Drift value that is too constrictive for the make/model used. If drift analysis has been used to extend the calibration cycle, this is an indication that the analysis used inadequate data or the instrument is not performing as expected. For this condition, a detailed review of the calibration methods and other field information must be performed to determine if a new or different condition exists for the instrument. If all conditions except calibration frequency are unchanged, evaluate a shorter calibration interval or update the setpoint calculation with a larger drift term if possible. If this occurs after calibrations were successful, then the potential for a common mode failure exists.

6.2.2 Reporting Out of Tolerances in the Calibration Program

6.2.2.1 The calibration program is defined within station specific procedures and shall be incorporated into the station work management process to ensure compliance with Technical Specification, Technical Requirements Manual (TRM), Offsite Dose Calculation Manual (ODCM) and station commitments.

6.2.2.2 This program is required to ensure that any instrument that is out of tolerance is reported as described in this procedure.

6.2.2.3 If an instrument cannot be reset to within ALT during calibration then a Condition Report (CR) will be written, per Reference 2.5, to document the condition, and the instrument will be repaired or replaced. Failure to reset to ALT does not require a drift evaluation.

6.2.3 The As-Found data will be compared to the AFT:

6.2.3.1 If all As-Found data is within the AFT, then document this evaluation on the procedure and complete the calibration without additional required action. Provide a copy of the As-Left and As-Found data to the System Engineering Manager for inclusion in the IPASS drift analysis database for future drift evaluations.

6.2.3.2 If any As-Found data is outside the AFT, determine if any data point exceeds the Allowable Value (AV) for the instrument/ loop using the following process:

6.2.3.2.1 If an AV exists for the instrument loop and a data point is non-conservative to the AV, take the action as required by the Technical Specifications, then submit a CR and provide a copy of the As-Left and As-Found information to the System Engineering Manager for further evaluation.

6.2.3.2.2 If no AV exists for the instrument loop, write a CR indicating that the instrument/loop was outside its AFT. Provide a copy of the As-Left and As-Found information to the System Engineering Manager for further evaluation.

6.2.3.2.3 If the data point exceeds the AFT but is conservative to the AV, then notify the System Engineering Manager for further evaluation of instrument performance.

6.2.4 Trend Reporting

6.2.4.1 To provide for simple trending, the CR will be used as the documentation process. To ensure that the CR will document the necessary information, one of the following three statements that most correctly states the degree of Out of Tolerance should be included:

6.2.4.1.1 "Calibration Data exceeded the AFT but did not exceed an AV. Instrument/loop recalibrated to within ALT." Tracking is required to determine if this behavior repeats.

6.2.4.1.2 "Calibration Data exceeded an AV. Instrument/loop recalibrated to within ALT."

6.2.4.1.3 "Instrument has failed or cannot be recalibrated to within ALT."

6.2.4.2 In addition provide the following information:

6.2.4.2.1 Trend Code later – "At least one As-Found data point exceeded the AV for the instrument or loop and the instrument cannot be reset to within ALT". Notify shift manager that the instrument loop is inoperable. Repair or replace as appropriate. No additional trending required. Device is considered malfunctioning, and as such, the calibration entry should be made for IPASS, but the As-Found data should be excluded. As-Left data for the new or repaired device should be entered. See Section 6.4.6.

6.2.4.2.2 Trend Code later – "At least one As-Found data point exceeded the AV for the instrument or loop and the instrument can be reset to within ALT". Notify shift manager that the instrument loop was potentially inoperable. Recalibrate, repair or replace as appropriate. Add As-Found and As-Left data to the IPASS database, evaluate current trend of the instrument, and continue to evaluate after each calibration.

6.2.4.2.3 Trend Code later – "No As-Found data point exceeded the AV for the instrument or loop and the instrument cannot be reset to within ALT". Repair or replace as appropriate. No additional trending required. Device is considered malfunctioning, and as such, the calibration entry should be made for IPASS, but the As-Found data should be excluded. As-Left data for the new or repaired device should be entered. See Section 6.4.6.

6.2.4.2.4 Trend Code later – "No As-Found data exceeded the AV but at least one data point exceeded the AFT for the instrument or loop and the instrument can be reset to within the ALT". Add As-Found and As-Left data to the IPASS database, evaluate current trend of the instrument, and continue to evaluate after each calibration.

6.2.5 Actions Taken for CRs with Instruments Found Out of Tolerance (OOT)

6.2.5.1 Determine if OOT is due to data transcription errors, M&TE miscalibration or errors, poor calibration techniques, scaling or setpoint changes, failed instruments, and design or application deficiencies. If so, document this reasoning, return to service, disposition the CR, and do nothing else. If not due to these errors, then continue.

6.2.5.2 If the device is covered by an existing drift analysis calculation, obtain a list of the instruments analyzed within the calculation, and research the last 5 calibration records for all of the devices to determine if any of the devices have had recent failures of the AFTs. If no drift analysis was performed for the device, obtain a list of the devices used in the same application, and research the last 5 calibration records for these devices for the same issues. Look specifically for failures of other devices in the same specific application (for instance Drywell Pressure) or for failures across the entire population. If multiple devices are failing in a single application, research possible reasons beyond drift, which might cause this type of occurrence. For instance, scaling changes or M&TE usage changes could cause changes in performance for instruments in the same application. If so, perform an evaluation of the problem, and if excessive instrument drift is not the issue, then document the reasoning, and set corrective actions based on the findings. If the evaluation shows that devices are failing AFTs across an instrument set, re-analyze the drift by performing a revision to the current drift calculation, adding the calibration values which have been recorded since the production of the drift calculation, including the most current calibration data. Derive new Analyzed Drift values, incorporate into instrument uncertainty / setpoint calculations, and derive new AFTs. Disposition the CR as appropriate. If no other instruments appear to be experiencing failures of the AFT values, then continue.

6.2.5.3 If the subject device has shown to be OOT with regard to the AFT on 2 or more of the past 5 calibrations, the device is malfunctioning and should be considered for replacement. If this is the first instance of an OOT condition for the AFT, then perform an inspection of the device to look for any obvious required maintenance. If none is required, document this as a single OOT occurrence, probable cause is excessive drift in one instance. Return to service and disposition the CR.

6.3 CONTROL OF IPASS SOFTWARE AND DATA

6.3.1 The IPASS software is licensed only for GGNS applications. It is maintained on a local server at GGNS. Access to the software is restricted via password protection.

6.3.2 The IPASS database file contains all instrumentation required for trending. Once the database is opened, choice of the "mode" within IPASS determines which devices are addressed at any given time. Use of the "AFAL" mode allows the entry and analysis of data for all devices with multiple calibration values. Use of the "Bistable" mode allows the entry and analysis of data for all devices with a single calibration value (bistable devices).

6.3.3 The IPASS database file is divided into analysis groups, based on the original groupings for the drift studies. These groupings are only significant when analysis is performed. The group names are descriptive, but abbreviated since the field is limited to 20 characters. The group names have been set equal to the associated drift calculation number. The group description provides a description of the instrument type (man/model, etc.) that helps define the group.

6.3.4 If other instrumentation is required to be trended by the Technical Specifications, TRM, FSAR or other licensing basis document, then it should be added to the database. If instrumentation needs to be trended for purposes other than requirements from a licensing basis document, then a separate database should be created for that purpose.

6.4 SCREENING AND ENTRY OF CALIBRATION AS-FOUND AND AS-LEFT DATA

Note: The initial instrument information and calibration data entries were taken from the initial issue of the drift analysis calculations. The following steps show how this is completed and provides guidance on entry of new calibration data for any instrumentation.

6.4.1 Time interval (frequency) requirements for Screening and Data Entry are specified in Section 4.0 of this Standard.

6.4.2 Upon approval of each surveillance test, using Attachment 7.4, identify all instruments required for trending that are calibrated in the procedure, and the associated groups. Also, find recent procedure revisions, which could change the calibration parameters for the subject instruments, since those from the last calibration.

6.4.3 Initially, the data should be screened for special situations that will limit or alter the data entry. These situations are detailed in Section 3.6 of Reference 2.4. The instructions for the data entry process in those situations are given below.

6.4.4 For obvious mistakes in transcribing calibration information into the procedure forms, attempt to resolve the issue by contacting the technicians or supervisor. If the correct value cannot be determined, enter "No Data" in place of the data to be entered.

6.4.5 For illegible data, attempt to resolve the issue by contacting the technicians or supervisor. If the correct value cannot be determined, enter "No Data" in place of the data to be entered.

6.4.6 For cases where an instrument was replaced (with the same make and model number) or repaired during the maintenance activity (other than normal calibration adjustments), enter "NEW" for replaced instruments by checking the "New Instrument" box on the Calibration Data Entry screen. Enter "No Data" for repaired instruments for the As-Found data values. Enter "No Data" for the As-Found values also for situations where the As-Found data was taken prior to significant repair to instrument connections, such as sensing lines, etc., when a problem was found to exist.

6.4.7 For cases where a scaling change occurred between the previous calibration activity and this calibration activity, marked by a new procedure revision or new surveillance procedure, enter "No Data" for the As-Found values. If the As-Found data is obtained using the previous calibration data then include the As-Found data in the analysis.

6.4.8 For cases where significant one-directional errors are observed that must be adjusted out for multiple instruments in a calibration procedure, investigate to see if M&TE could be out of calibration or if there were other problems with the calibration process. If problems are found to exist with M&TE or calibration processes, initiate a Condition Report via Reference 2.5. M&TE errors can also show up as increasing or decreasing across the scale of the instrument. To find such situations, look for multiple instruments exhibiting the same characteristic, tested within the same procedure. If M&TE is out of calibration or if problems in the calibration process are detected and confirmed, enter "No Data" for the As-Found and As-Left data for all instruments calibrated on that calibration activity with the specified M&TE or calibration problem.

6.4.9 For cases where an instrument was replaced with a different make and model number (any group), follow the flow chart of Attachment 7.1 to properly enter data for both the previous and new instrument into the database. IPASS only allows one setpoint per device, as entered with the instrument definitions. Thus, if setpoints are changed for a device in these groups without changing tag numbers, the overall calculation of drift statistics will no longer be correct.)

6.4.10 During As-Found and As-Left calibration data entry, the entry error flags are very useful in helping to immediately identify data entry errors. The flags contain As-Found and As-Left tolerances, which are used to flag potentially errant data. Setting the entry error As-Left tolerance value equal to the As-Left procedure tolerance is recommended, since no As-Left values should be outside this tolerance. If it is researched and found that an As-Left value was written in the procedure that is outside of the As-Left procedure tolerance, then this is enough justification to enter "No Data" in the As-Left entry for the data, since it was obviously transcribed to the procedure erroneously.

6.4.11 After identification of all screening activities required, using the copy of the signed off calibration procedure, enter the As-Found and As-Left data for all applicable instruments into the IPASS database. Enter numerical values for each instrument, unless special circumstances exist, as identified by the screening criteria. The date that is entered for the AFAL data shall be the date of approval for the procedure run.

6.4.12 After the initial data entry a few brief steps should be taken to immediately identify instruments that exhibited excessive drift for the calibration performed.

6.4.13 Within the IPASS program, after entry of all data from the calibration for this device type, enter the Analysis toolbar and select Analysis.

6.4.14 After selecting the proper group, set the date range so that only the presently entered calibrations will be analyzed. View the statistics by clicking the "Statistics" box.

6.4.15 Go to the "Data" Tab. Compare each of the drift values computed for the recent calibration to the Analyzed Drift for this type of device from the associated drift calculation (Attachments 7.2). (This should be done for all calibration data points.) If the drift value exceeds the Analyzed Drift value from the drift calculation, then initiate a Condition Report via Reference 2.5. If no values exceed the Analyzed Drift magnitude, then stop.

6.4.16 On the calibration procedure form, note the date that the IPASS data entry was performed.

6.5 IPASS DRIFT ANALYSIS REVIEWS

6.5.1 The IPASS Drift Analysis Reviews are a periodic process used to verify the steps taken in data entry, to verify that the instruments continue to perform as anticipated, and to uncover potential problem instruments. The drift data, statistics and charts are observed to ensure that the instrumentation is not drifting beyond the limits specified within the drift calculations, and that the drift not is displaying a directional shift in excess of the value predicted by the drift calculations.

6.5.2 The frequency of the review process is specified within Section 4.0 of this administrative guide.

6.5.3 The review process should be performed by Design Engineering for all necessary groupings within the IPASS database which are associated with instruments tested at the associated frequency (such as refueling basis or semi-annual basis, if any of those instruments are trended) and should generally flow as follows:

6.5.3.1 Enter the IPASS database, select the proper mode (AFAL or Bistable), and enter the Analysis menu. Select Analysis. Select the proper group, and set the date range so that all entered calibrations will be analyzed. Ensure that the Outlier Significance value is set to 5%. View the statistics by clicking the "Statistics" button.

6.5.3.2 Within the "Statistics and Outliers" tab, review any identified outliers that show up from the current calibrations. If outliers do show up in current calibrations (those performed since the most current Drift Analysis Review), then review the calibration information to see if the data should have been screened out per Section 6.2.5.1 of this administrative guide. If so, screen the data in accordance with Section 6.2.5.1 prior to proceeding. After screening the data, return to this step, and again address the outliers, until either no more outliers are identified, or until the identified outliers cannot be removed via the reasoning of Section 6.2.5.1.

6.5.3.3 For those outliers that cannot be removed via the reasoning of Section 6.2.5.1, determine if a single device or application is showing multiple outliers. If a device is showing multiple outliers since its latest replacement, review the calibration data for this device, and see if replacement of the device is necessary due to excessive drift or poor performance.

6.5.3.4 If a given application is showing multiple outliers, review the recent drift data for the devices in that application, to determine whether this application should be included with the others in this grouping. (See Section 3.5.3 of Reference 2.4.) If it is determined that the given application should be separated from the group, then initiate a new drift calculation to be performed for the application, and a revision of the current drift calculation for the group to remove the previous data for that application.

6.5.3.5 After this outlier screening process, go back to the Analysis menu, and select Analysis again. Select the proper group, and set the date range so that only the calibrations that have been entered since the last Drift Analysis Review will be analyzed. Ensure that the Outlier Significance value is set to 5%. View the statistics by clicking the "Statistics" button.

6.5.3.6 Within the "Data" tab, manually review each drift data value recorded for each data point, and ensure that each of these values is within the Analyzed Drift limits defined in the associated drift calculation (Attachments 7.2). If any value is found outside the Analyzed Drift limits, identify the device, the date of the procedure performance, and the pertinent information about the drift value. Ensure that a Condition Report has been generated on this entry. If not, generate a Condition Report regarding this value.

6.5.3.7 Finally, go back to the Analysis menu, and select Analysis again. Select the proper group, and set the date range so that all calibrations will be analyzed. Ensure that the Outlier Significance value is set to 5%. View the statistics by clicking the "Statistics" button.

6.5.3.8 Perform the following steps to confirm the drift is not shifting, and that the random portion of the drift is still showing normal patterns. From Attachment 7.2, determine whether or not the analyzed drift for the instrument has been determined to have a significant bias component (per the "30 Month Drift Value" column). Within the Statistics and Outliers tab, observe the mean of the data. If this group is shown by Attachment 7.2 to have a bias component, compare the average of the data to the Bias in Attachment 7.2. If the average significantly exceeds the Attachment 7.2 value, an evaluation should be performed, including a revised drift calculation for the subject group, to ensure that the drift is properly characterized. If Attachment 7.2 does not show a bias component, by engineering judgment, determine whether the average value within the Statistics and Outliers tab seems significant in comparison to the Standard Deviation. If so, an evaluation should be performed, including a drift calc revision. Within the "Graphs" tab, view the Drift Interval plot. For the data with the longest calibration intervals, observe whether the drift values appear to have shifted in a given direction, at a significant magnitude, compared to the remainder of the drift data. If so, an evaluation should be performed, including a drift calculation revision for the subject group. Within the "Graphs" tab, view the coverage plot. If the data appears to be normally distributed, via a standard bell curve, or appears to be more concentrated in the center of the distribution than a normal distribution would predict, then this confirms that the data is still considered to be conservatively represented as normal. Otherwise, an evaluation should be performed, including a revised drift calculation for the group, to ensure that the data is properly characterized.

6.5.3.9 Generate an IPASS Drift Analysis Review Report to document the review of the instrument grouping. The report should include the Drift Data, Statistics Summary, the Drift-Interval Graph, the Drift-Calibration Graph, and the Coverage Graph. (See the Sample Drift Analysis Review Report, Attachment 7.3.)

6.5.4 Prepare a report to the GGN Design Engineering Manager, detailing the overall IPASS Drift Analysis Review. This report will contain a brief summary of the activities performed, including a listing of the individual group reports printed in Section 6.5.3.9. The summary will list the devices which need replacement, any changes in component groupings, any Condition Reports generated or noted regarding instruments which exceeded the Analyzed Drift values, and corrective actions taken. A brief example of such a report is shown in Attachment 7.3.

6.6 GENERAL GUIDELINES FOR SUGGESTED CORRECTIVE ACTION FOR DEVICES FOUND TO EXCEED ANALYZED DRIFT VALUES

6.6.1 For devices found to have exceeded Analyzed Drift values, the drift performance of the device should be reviewed in the IPASS database to indicate whether the device appears to be defective or degrading in its performance. If so, in either case, the device should be scheduled for replacement or repair as soon as possible.

6.6.2 Devices in the same application should be reviewed for drift performance to determine if the application is improperly grouped with other similar devices for drift trending and analysis. (See Section 3.5.3 of Reference 2.4.) If so, corrective action should include splitting the application out from the present grouping, creating the necessary drift calculation for the application, and revising the previous drift calculation to remove the subject application.

6.6.3 Overall drift performance for devices within the subject grouping should be reviewed to determine if the Analyzed Drift value computed in the associated drift calculation should be revised. Comparing the Drift Tolerance Interval defined in the IPASS Analysis Statistics and Outliers Summary and the value of the Analyzed Drift from the drift calculation (Attachments 7.2) is recommended in this instance. If the Drift Tolerance Interval within IPASS, for any of the Calibration Points, significantly exceeds the Analyzed Drift value computed in the drift calculation, then the corrective action should be shown to revise the drift calculation to compute a new Analyzed Drift value for the current calibration frequency. After revision of the drift calculation, the associated setpoint calculations should be reviewed to incorporate the changes and determine if changes to Allowable Values or setpoints are necessary.

7.0 ATTACHMENTS

7.1 DATA ENTRY FOLLOWING INSTRUMENT REPLACEMENT FLOW CHART (1 page)

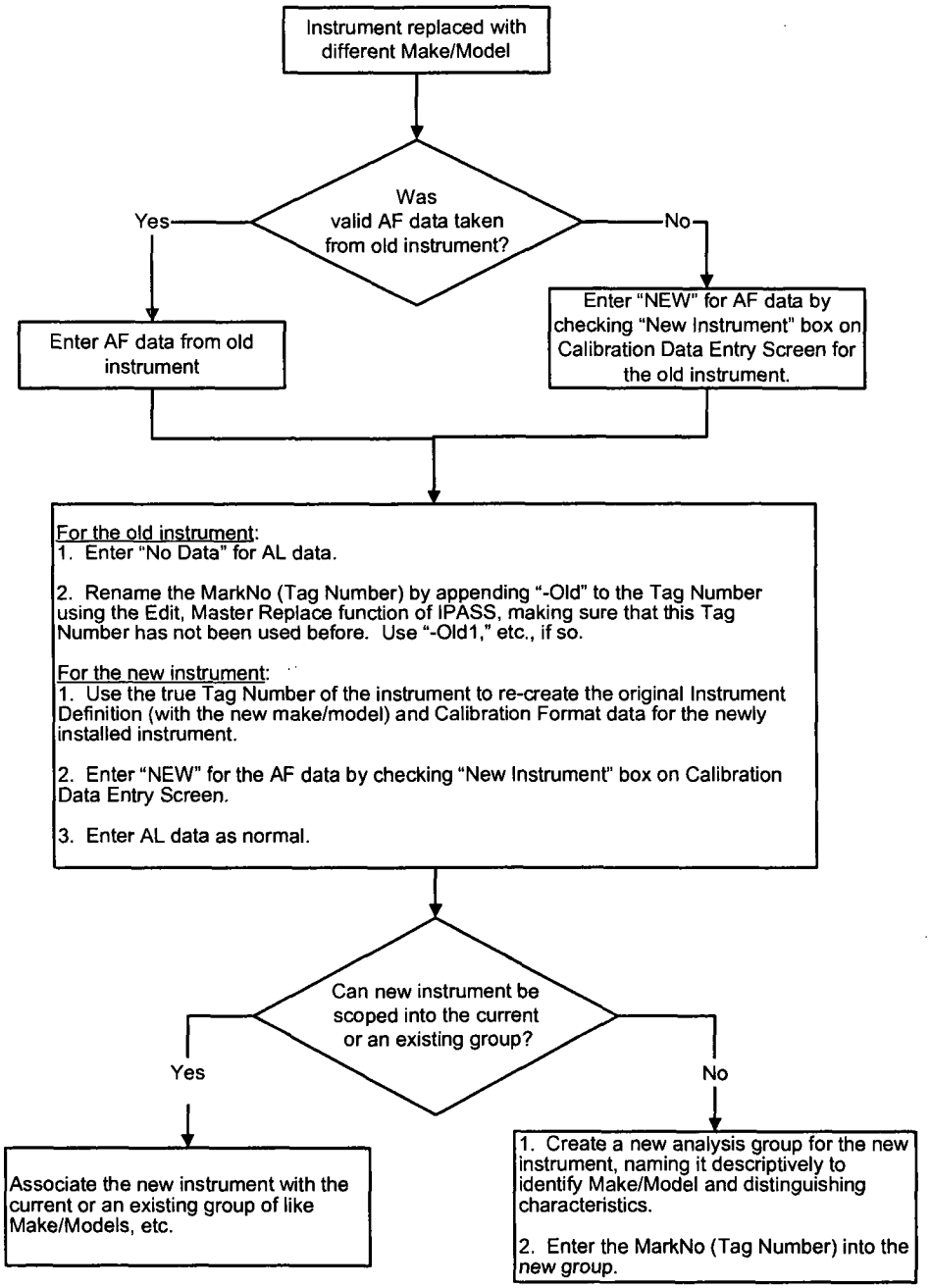
7.2 LIST OF DRIFT CALCULATIONS (8 pages)

7.3 SAMPLE DRIFT ANALYSIS REVIEW REPORT (11 pages)

7.4 LIST OF AFFECTED SETPOINT CALCULATIONS, ASSOCIATED SURVIELANCES PROCEDURES AND DRIFT CALCULATIONS (4 pages)

ATTACHMENT 7.1 **DATA ENTRY FOLLOWING INSTRUMENT REPLACEMENT FLOW CHART**

Sheet 1 of 1



ATTACHMENT 7.2 — LIST OF DRIFT CALCULATIONS

Sheet 1 of 8

Entergy Calc. No.	Title	Tags	30 Month Drift Value
JC-Q1111-09001	Drift Calculation for General Electric 368X102BBG5 Intermediate Rang Monitors (IRM)	1C51K601A 1C51K601B 1C51K601C 1C51K601D 1C51K601E 1C51K601F 1C51K601G 1C51K601H	± 0.070 VDC NO BIAS
JC-Q1111-09002	Drift Calculation for Basier Electric BE1-27-A3E-E1J-A1N6F Undervoltage Time Delay Relays (Undervoltage Function)	1A701-127-S3 1A701-127-S4 1A708-127-S1 1A708-127-S2	± 1.289 VAC + 0.1974 VAC (BIAS)
JC-Q1111-09003	Drift Calculation for Basier Electric BE1-27-A3E-E1J-A1N6F Undervoltage Time Delay Relays (Time Delay Function)	1A701-127-S3 1A701-127-S4 1A708-127-S1 1A708-127-S2	± 0.045 seconds No Bias
JC-Q1111-09004	Drift Calculation for ITE 211T4175 Undervoltage Time Delay Relays (Undervoltage Function)	1A701-127-2A 1A701-127-2B 1A708-127-1A 1A708-127-1B	± 1.460 VAC No Bias
JC-Q1111-09005	Drift Calculation for ITE 211T4175 Undervoltage Time Delay Relays (Time Delay Function)	1A701-127-2A 1A701-127-2B 1A708-127-1A 1A708-127-1B	± 0.327 seconds No Bias
JC-Q1111-09006	Drift Calculation for ABB 411T4375-L-HF Undervoltage Relays	1C71S003A-27A 1C71S003B-27B 1C71S003C-27C 1C71S003D-27D 1C71S003E-27E 1C71S003F-27F 1C71S003G-27G 1C71S003H-27H	± 0.912 VAC No Bias
JC-Q1111-09007	Drift Calculations for ABB 411U4175-L-HF Overvoltage Relays	1C71S003A-59A 1C71S003B-59B 1C71S003C-59C 1C71S003D-59D 1C71S003E-59E 1C71S003F-59F 1C71S003G-59G 1C71S003H-59H	± 0.899 VAC No Bias

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

JC-Q1111-09008	Drift Calculation for ABB 422B1275-L Underfrequency Relays	1C71S003A-81A 1C71S003B-81B 1C71S003C-81C 1C71S003D-81D 1C71S003E-81E 1C71S003F-81F 1C71S003G-81G 1C71S003H-81H	± 0.071 Hz No Bias
JC-Q1111-09009	Drift Calculation For Allen Bradley 700-RTC00100U24 Time Delay Relays	1C71S003A-62A 1C71S003B-62B 1C71S003C-62C 1C71S003D-62D 1C71S003E-62E 1C71S003F-62F 1C71S003G-62G 1C71S003H-62H	± 0.146 seconds No Bias
JC-Q1111-09011	Drift Calculation for Schaevitz Engineering PT-882-0005-200 Pressure Transmitters	1C71N006A 1C71N006B 1C71N006C 1C71N006D 1C71N006E 1C71N006F 1C71N006G 1C71N006H	± 1.422% Span No Bias
JC-Q1111-09012	Drift Calculation for Bailey 740 Series Temperature Transmitters	1E61N604A* 1E61N604B* 1M71N605A 1M71N605B 1M71N605C 1M71N605D 1M71N607A 1M71N607B 1M71N607C 1M71N607D 1M71N627A 1M71N627B 1M71N627C 1M71N627D	± 0.743% Span No Bias
JC-Q1111-09014	Drift Calculations for Gulton/Statham Gage and DP Transmitters	1C11N012A 1C11N012B 1C11N012C 1C11N012D 1C11N017A 1C11N017B 1C71N005A 1C71N005B 1C71N005C 1C71N005D 1E22N055C 1E22N055G 1E51N036A 1E51N036E	± 2.875% Span No Bias

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

JC-Q1111-09015	Drift Calculation for Rochester Instruments SC-3326W-SS1 Temperature Transmitters	1M71N606A** 1M71N606B** 1M71N606C* 1M71N606D* 1M71N612A** 1M71N612B** 1M71N612C* 1M71N612D* 1M71N613A** 1M71N613B** 1M71N613C* 1M71N613D* 1M71N614A** 1M71N614B** 1M71N614C* 1M71N614D* 1M71N615A** 1M71N615B** 1M71N615C* 1M71N615D* 1M71N616A** 1M71N616B** 1M71N616C* 1M71N616D*	± 1.058% Span - 0.067% Span (Bias)
JC-Q1111-09016	Drift Calculation for Rosemount Range Code 3 DP Transmitters	1C61N001A** 1C61N001B** 1E12N052A 1E12N052B 1E12N052C 1E21N051 1E30N004A** 1E30N004B** 1P45N451A** 1P45N451B**	± 1.250% Span No Bias
JC-Q1111-09017	Drift Calculation for Rosemount Range Codes 4-7 DP Transmitters	1B21N044C** 1B21N044D** 1B21N073C 1B21N073G 1B21N073L 1B21N073R 1B21N075A 1B21N075B 1B21N075C 1B21N075D 1B21N080A 1B21N080B 1B21N080C 1B21N080D 1B21N081A 1B21N081B 1B21N081C	

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

Sheet 4 of 8

JC-Q1111-09017 (Continued)	Drift Calculations for Rosemount Range Codes 4-7 DP Transmitters (Continued)	1B21N081D 1B21N091A 1B21N091B 1B21N091E 1B21N091F 1B21N095A 1B21N095B 1B21N099A** 1B21N099B** 1B21N099E** 1B21N099F** 1B33N014A** 1B33N014B** 1B33N014C** 1B33N014D** 1B33N024A** 1B33N024B** 1B33N024C** 1B33N024D** 1C34N004A 1C34N004B 1C34N004C 1C61N200A** 1C61M200B** 1C61N400A** 1C61N400B** 1C61N402A** 1C61N402B** 1E21N003** 1E22N005** 1E22N056 1E30N003A 1E30N003B 1E30N003C 1E30N003D 1E31N075A 1E31N075B 1E31N076A 1E31N076B 1E31N077A 1E31N077B 1E31N083A 1E31N083B 1E31N084A 1E31N084B 1E31N086A 1E31N086B 1E31N086C 1E31N086D 1E31N087A 1E31N087B	± 1.218% Span - 0.0443% Span (Bias)

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

Sheet 5 of 8

JC-Q1111-09017 (Continued)	Drift Calculations for Rosemount Range Codes 4-7 DP Transmitters (Continued)	1E31N087D 1E31N088A 1E31N088B 1E31N088C 1E31N088D 1E31N089A 1E31N089B 1E31N089C 1E31N089D 1E61N014A** 1E61N014B** 1M71N001A** 1M71N001B** 1M71N002A** 1M71N002B** 1M71N027A** 1M71N027B** 1N71N031**	± 1.218% Span - 0.0443% Span (Bias)
JC-Q1111-09018	Drift Calculations for Rosemount Range Codes 5 and 6 Absolute Pressure Transmitters	1B21N067C 1B21N067G 1B21N067L 1B21N067R 1B21N094A 1B21N094B 1B21N094E 1B21N094F 1C71N050A 1C71N050B 1C71N050C 1C71N050D 1E12N062A 1E12N062B 1E12N062C 1E12N062D 1E32N051A 1E32N051E 1E32N051J 1E32N051N 1E32N056**	± 1.798% Span No Bias
JC-Q1111-09019	Drift Calculations for Rosemount Range Codes 5-8 Gage Pressure Transmitters	1B21N201A** 1B21N201B** 1C61N102** 1E12N053A** 1E12N053B** 1E12N053C** 1E12N055A 1E12N055B 1E12N055C 1E12N056A 1E12N056B 1E12N056C	± 1.346% Span No Bias

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

Sheet 6 of 8

JC-Q1111-09019 (Continued)	Drift Calculations for Rosemount Range Codes 5-8 Gage Pressure Transmitters (Continued)	1E12N058A 1E12N058B 1E12N058C 1E21N050 1E21N052 1E21N053 1E21N054** 1E22N050** 1E22N054C 1E22N054G 1E31N085A 1E31N085B 1E32N050** 1E32N055** 1E32N058** 1E32N061A** 1E32N061E** 1E32N061J** 1E32N061N** 1E51N035A 1E51N035E 1E51N055A 1E51N055B 1E51N055E 1E51N055F	± 1.346% Span No Bias
JC-Q1111-09020	Drift Calculations for Rosemount Range Code 9 Gage Pressure Transmitters	1B21N058A 1B21N058B 1B21N058E 1B21N058F 1B21N062A** 1B21N062B** 1B21N068A 1B21N068B 1B21N068E 1B21N068F 1B21N076A 1B21N076B 1B21N076C 1B21N076D 1B21N078A 1B21N078B 1B21N078C 1B21N078D 1C61N401A** 1C61N401B** 1C71N052A 1C71N052B 1C71N052C 1C71N052D 1E22N051	± 0.403% Span No Bias

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty

ATTACHMENT 7.2 **LIST OF DRIFT CALCULATIONS**

Sheet 7 of 8

JC-Q1111-09021	Drift Calculations for Rosemount 510DU/710DU Trip Units	1B21N701A** 1B21N701B** 1C34K624A 1C34K624B 1C34K624C 1C71N652A 1C71N652B 1C71N652C 1C71N652D 1E12N653A** 1E12N653B** 1E12N653C** 1E12N654A** 1E12N654B** 1E12N654C** 1E12N657** 1E12N658A 1E12N658B 1E12N658C 1E21N650 1E21N654** 1E21N655** 1E22N650** 1E30N601A* 1E30N601B* 1E30N602A** 1E30N602B** 1M71N603A** 1M71N603B** 1M71N603C* 1M71N603D* 1M71N622A** 1M71N622B** 1M71N622C* 1M71N622D* 1M71N623A** 1M71N623B** 1M71N623C* 1M71N623D* 1M71N624A** 1M71N624B** 1M71N624C* 1M71N624D* 1M71N625A** 1M71N625B** 1M71N625C* 1M71N625D* 1M71N626A** 1M71N626B** 1M71N626C* 1M71N626D*	± 0.169% Span No Bias

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

ATTACHMENT 7.2 **LIST OF DRIFT CALCULATIONS**

Sheet 8 of 8

JC-Q1111-09022	Drift Calculation for Agastat Time Delay Relays	1A707-162-1 1A708-162-2	± 26.725 Seconds No Bias
JC-Q1111-09023	Drift Calculations for Bailey 750 Series Square Root Extractors	1E31K602A 1E31K602B 1E31K603A 1E31K603B 1E31K605A 1E31K605B 1M41K600**	± 0.621% Span No Bias
JC-Q1111-09024	Drift Assessment for Bailey 752 Series Summers	1E31K604A 1E31K604B	± 2.853% Span No Bias
JC-Q1111-09027	Drift Calculation for Barksdale D2T-A80 Pressure Switches	1M23N018** 1M23N019** 1M23N020** 1M23N021** 1M23N010A 1M23N010B 1M23N010C 1M23N010D	± 3.449 psi No Bias
JC-Q1111-09028	Drift Calculation for Pressure Controls A17-1P Pressure Switches	1B21N150A** 1B21N150B** 1B21N150C** 1B21N150D** 1B21N150E** 1B21N150F** 1B21N150G** 1B21N150H** 1B21N150J** 1B21N150K** 1B21N150L** 1B21N150M** 1B21N150N** 1B21N150P** 1B21N150R** 1B21N150S** 1B21N150T** 1B21N150U** 1B21N150V** 1B21N150W**	± 1.838 psi No Bias
N/A	Drift assumed for GE PRNM setpoints in AFT determination	1C51K612 1C51K613 1C51K622 1C51K623 1C51K632 1C51K633 1C51K642 1C51K643	Later

* Instrument Loop Uncertainty Calculation Only, No Setpoint Calculation
** No Setpoint Calculation or Loop Uncertainty Calculation

GRAND GULF NUCLEAR STATION

SAMPLE DRIFT ANALYSIS REVIEW REPORT FOR

INSTRUMENTATION WITH 24-MONTH CALIBRATION INTERVAL REQUIREMENTS

GGNS SYSTEM ENGINEERING

February xx, 20yy

Prepared By:_____ Date:_____

Reviewed By:_____ Date:_____

Approved By:_____ Date:_____

PURPOSE:

The purpose of this sample Drift Analysis Review Report is to provide an example of the content that should be provided within the periodic Drift Analysis Review Reports to be prepared by the GGNS System Engineering Manager. This report provides evidence that the periodic review was performed for the required instrumentation, provides a summary of the activities performed, and provides a summary of the results of the review process. This report is a sample for the required 24 Month Cycle instrumentation.

DATABASES REVIEWED:

This Drift Analysis Review Report addressed the following IPASS instrument group (identified by drift calculation number or future drift calculation number) at GGN, as of [Date].

G13.18.6.3-002 Gould PD-3018/31219 Differential Pressure Transmitters

[All others as reviewed, but this sample only includes printouts from the above group.]

SUMMARY OF REVIEW ACTIVITIES:

Data from the above IPASS instrument groups have been entered and reviewed in accordance with the requirements of Section 7.5 of [This Document]. This review was completed to address all calibrations prior to and during refueling outage Rzz.

Outliers for each instrument group were reviewed to ensure that proper screening had taken place when data entry was performed. Proper screening had been performed on all instrumentation. The data for each group appears to be properly pooled for analysis, and all observed outliers have been shown to be properly dispositioned for inclusions within each group. Therefore no changes to instrument groupings are recommended by this Drift Analysis Review.

No changes to calibration data were necessary. *[List changes, if necessary.]*

For Drift Group G13.18.6.3-002, one outlier was confirmed for each of Calibration Data Points 1 and 2, which were identified and removed in the original calculation. No other outliers were identified. After this, the statistical summaries were compared for the calibration points, and it was determined that Calibration Data Point 3 yields the largest drift values; thus it was used for this analysis. The Statistics and Outliers, the Coverage Plot, and the Drift Interval Plot were examined to determine if the overall data characterists are within the parameters assumed in the original drift calculation. Drift bias is within the values originally predicted, as shown by Attachment 1 to [This Document], and no significant bias terms appear to be present in the groups at the longest calibration intervals in the Drift Interval Plot. Thus, there is no evidence of directional drift that would invalidate calculation conclusions. The Coverage Plot reveals that the random portion of drift can still be conservatively modeled as a normal distribution. None of the drift data values has exceeded the 30 Month Drift values denoted in Attachment 1. Thus, it is concluded that the observed drift data characteristics for Drift Group G13.18.6.3-002 are within the parameters assumed in the original drift calculation.

For each instrument group, the drift data generated for calibrations since the last review period (January zz, 20zz) was reviewed to determine if any instrumentation had drifted beyond the Analyzed Drift Values of Attachments 1 and 2 of [This Document]. No drift values for the subject calibrations exceed the Analyzed Drift values, so specific corrective actions were not required, and no Condition Reports were generated.

Coverage Plots were reviewed for the instrument drift in each group to ensure that the data still tends to approximate a normal distribution. In each case, the data either approximates a normal distribution, or is more concentrated in the center of the distribution than a normal curve, and therefore is conservatively represented as a normal distribution. Therefore, no changes to the assumptions and conclusions of the Drift Studies are recommended.

DATABASE REPORTS:

IPASS Database Reports are attached for each of the instrument groups reviewed. These reports include the Drift Data, Statistics Summary, Excluded Data, Drift Interval Graph, Drift Calibration Graph, and Coverage Graph for each instrument group. In this sample report, only one group summary is included to provide a sample of the content of the reports.

For the drift reports:

1. When producing the Coverage Plot, the number of bins should be set to 14.

CONCLUSIONS:

1. The instruments and data within the 24 Month instrument groups (as defined by drift calculations) remains properly pooled for drift analysis.

2. No corrections to procedure data were required. (If so, denote what was changed.)

3. No drift data since the last 24 Month Drift Analysis Review Report has exceeded the Analyzed Drift values computed within the Drift Studies, and the calibration data still appears to be conservatively treated as normally distributed per the Coverage Graphs. Therefore, no changes to the Drift Studies are required, and no Condition Reports are generated as a result of this report.

This report provides the required Drift Analysis Review for the instrumentation which have 24 Month calibration requirements, following refueling outage Rzz.

IPASS Database Report for

Group Name: G13.18.6.3-002

Group Description: Gould PD-3018/31219 Diff Press Trans

Analysis Report

IPASS V2.3
5/6/2012 9:03:13 PM
For: admin

Group Name: **G13.18.6.3-002**
Group Description: **Gould PD-3018/3218 Diff Press Trans**

Date Range: 1/1/80 thru 5/6/12
Tolerance Interval Level: 95/95
Outlier Significance Level: 5

Drift Data

Date	Instrument Id	Type	Model	0.000%	25.000%	50.000%	75.000%	100.000%	75.000%	50.000%	25.000%	0.000%
12/18/07	C11-LTN012A	Level Transm	PD-3218	0.812%	0.875%	0.875%	0.812%	0.875%	0.438%	0.438%	0.500%	0.312%
8/5/06	C11-LTN012A	Level Transm	PD-3218	0.625%	0.563%	0.500%	0.438%	0.313%	0.500%	0.625%	0.563%	0.688%
5/16/05	C11-LTN012A	Level Transm	PD-3218	0.312%	0.125%	-0.062%	-0.062%	-0.063%	-0.188%	-0.062%	0.125%	0.250%
11/24/03	C11-LTN012A	Level Transm	PD-3218	0.062%	0.125%	0.250%	0.125%	0.313%	0.250%	0.187%	0.125%	0.062%
6/14/02	C11-LTN012A	Level Transm	PD-3218	0.437%	0.625%	0.813%	0.313%	0.063%	0.250%	0.750%	0.625%	0.375%
1/24/01	C11-LTN012A	Level Transm	PD-3218	-0.500%	-0.687%	-0.938%	-0.313%	-0.313%	-0.250%	-0.813%	-0.687%	-0.437%
9/10/99	C11-LTN012A	Level Transm	PD-3218	0.312%	0.250%	0.313%	0.250%	0.250%	0.062%	0.062%	0.187%	0.312%
5/9/98	C11-LTN012A	Level Transm	PD-3218									
2/9/07	C11-LTN012B	Level Transm	PD-3218									
8/18/05	C11-LTN012B	Level Transm	PD-3218									
2/14/04	C11-LTN012B	Level Transm	PD-3218	-0.562%	-0.562%	-0.500%	-0.687%	-0.812%	-0.563%	-0.312%	-0.312%	-0.375%
8/26/02	C11-LTN012B	Level Transm	PD-3218	1.750%	1.500%	1.000%	0.812%	0.812%	0.750%	1.250%	1.625%	1.688%
4/12/01	C11-LTN012B	Level Transm	PD-3218	0.063%	0.500%	0.875%	0.812%	0.687%	0.812%	0.750%	0.375%	-0.063%
11/24/99	C11-LTN012B	Level Transm	PD-3218	-0.125%	-0.687%	-0.750%	-0.750%	-0.812%	-0.625%	-0.625%	-0.625%	-0.062%
7/5/98	C11-LTN012B	Level Transm	PD-3218	0.875%	0.250%	0.188%	0.562%	1.000%	0.625%	0.250%	0.250%	0.875%
4/12/97	C11-LTN012B	Level Transm	PD-3218									
12/19/07	C11-LTN012C	Level Transm	PD-3218	-0.625%	-0.875%	-0.938%	-1.000%	-0.938%	-1.000%	-0.938%	-0.812%	-0.563%
8/3/06	C11-LTN012C	Level Transm	PD-3218	0.563%	0.812%	0.875%	0.938%	0.938%	0.875%	0.875%	0.812%	0.625%
3/18/05	C11-LTN012C	Level Transm	PD-3218	-0.188%	-0.312%	-0.313%	-0.313%	-0.500%	-0.250%	-0.313%	-0.312%	-0.250%
11/1/03	C11-LTN012C	Level Transm	PD-3218	-0.312%	-0.312%	-0.187%	-0.187%	-0.125%	-0.187%	-0.187%	-0.312%	-0.312%
6/10/02	C11-LTN012C	Level Transm	PD-3218	0.312%	0.437%	0.375%	0.437%	0.438%	0.312%	0.312%	0.437%	0.250%
1/24/01	C11-LTN012C	Level Transm	PD-3218	-0.187%	-0.250%	-0.312%	-0.312%	-0.313%	-0.187%	-0.187%	-0.250%	-0.188%
9/10/99	C11-LTN012C	Level Transm	PD-3218	0.000%	0.063%	0.062%	-0.062%	-0.062%	-0.188%	-0.188%	-0.062%	0.063%
5/9/98	C11-LTN012C	Level Transm	PD-3218									
12/13/07	C11-LTN012D	Level Transm	PD-3218	0.000%	-0.187%	-0.250%	-0.375%	-0.188%	-0.375%	-0.250%	-0.187%	0.000%
7/29/06	C11-LTN012D	Level Transm	PD-3218	0.250%	-0.125%	0.250%	0.375%	0.063%	0.375%	0.250%	0.062%	0.188%
3/11/05	C11-LTN012D	Level Transm	PD-3218	-0.250%	0.187%	-0.125%	-0.125%	0.062%	-0.125%	-0.125%	0.000%	-0.188%
10/22/03	C11-LTN012D	Level Transm	PD-3218	0.000%	-0.250%	-0.438%	-0.125%	-0.250%	-0.125%	-0.438%	-0.250%	0.000%
6/3/02	C11-LTN012D	Level Transm	PD-3218	0.313%	0.625%	0.375%	0.313%	0.313%	0.438%	0.562%	0.812%	0.500%
1/19/01	C11-LTN012D	Level Transm	PD-3218	-0.437%	-0.500%	-0.125%	-0.375%	0.000%	-0.500%	-0.312%	-0.687%	-0.625%
8/30/99	C11-LTN012D	Level Transm	PD-3218	0.188%	0.187%	0.375%	0.187%	-0.125%	0.187%	0.375%	0.187%	0.188%
4/12/98	C11-LTN012D	Level Transm	PD-3218									
12/23/06	C11-LTN017A	Level Transm	PD-3018	-0.062%	-0.125%	-0.125%	-0.125%	-0.125%	-0.125%	-0.125%	-0.125%	-0.062%
8/4/05	C11-LTN017A	Level Transm	PD-3018	0.125%	0.187%	0.187%	0.188%	0.125%	0.188%	0.187%	0.187%	0.125%
3/17/04	C11-LTN017A	Level Transm	PD-3018	-0.375%	-0.250%	-0.250%	-0.188%	-0.188%	-0.188%	-0.250%	-0.250%	-0.375%
10/29/02	C11-LTN017A	Level Transm	PD-3018	-0.125%	-0.250%	-0.250%	-0.313%	-0.250%	-0.250%	-0.250%	-0.250%	-0.187%
6/17/01	C11-LTN017A	Level Transm	PD-3018	0.625%	0.625%	0.625%	0.625%	0.625%	0.625%	0.625%	0.625%	0.625%
11/6/99	C11-LTN017A	Level Transm	PD-3018	-0.250%	-0.188%	-0.125%	-0.062%	-0.063%	0.000%	-0.062%	-0.125%	-0.188%
6/20/98	C11-LTN017A	Level Transm	PD-3018	0.781%	0.125%	0.125%	0.125%	0.250%	0.063%	0.062%	0.062%	0.750%
1/28/97	C11-LTN017A	Level Transm	PD-3018									
2/1/07	C11-LTN017B	Level Transm	PD-3018									
8/25/05	C11-LTN017B	Level Transm	PD-3018									

Analysis Report

IPASS V2.3
5/6/2012 8:03:14 PM
For: admin

Group Name: G13.18.6.3-002
Group Description: Gould PD-3018/3218 Diff Press Trans

Date Range: 1/1/80 thru 5/6/12
Tolerance Interval Level: 95/95
Outlier Significance Level: 5

Drift Data

Date	Instrument Id	Type	Model	0.000%	25.000%	50.000%	75.000%	100.000%	75.000%	50.000%	25.000%	0.000%
4/8/04	C11-LTN017B	Level Transm	PD-3018	0.062%	0.062%	0.062%	0.125%	0.063%	0.125%	0.062%	0.062%	0.062%
11/22/02	C11-LTN017B	Level Transm	PD-3018	0.125%	0.125%	0.125%	0.000%	-0.125%	0.000%	0.125%	0.125%	0.125%
6/23/01	C11-LTN017B	Level Transm	PD-3018	0.625%	-0.063%	-0.625%	-0.562%	-0.187%	-0.562%	-0.562%	-0.063%	0.625%
9/19/99	C11-LTN017B	Level Transm	PD-3018	-0.937%	-0.438%	0.062%	0.000%	-0.063%	0.250%	0.313%	-0.375%	-1.000%
2/13/98	C11-LTN017B	Level Transm	PD-3018									

Analysis Report

IPASS V2.3
5/6/2012 9:04:13 PM
For: admin

Group Name: G13.18.6.3-002
Group Description: Gould PD-3018/3218 Diff Press Trans

Date Range: 1/1/80 thru 5/6/12
Tolerance Interval Level: 95/95
Outlier Significance Level: 5

Statistics Summary

	0.000%	25.000%	50.000%	75.000%	100.000%	75.000%	50.000%	25.000%	0.000%
Tolerance Interval:	1.078%	1.086%	1.237%	1.141%	1.150%	1.073%	1.192%	1.210%	1.227%
Mean:	0.070%	0.019%	0.054%	0.041%	0.046%	0.039%	0.056%	0.056%	0.103%
Upper Tolerance Bound:	1.149%	1.105%	1.291%	1.181%	1.196%	1.112%	1.248%	1.266%	1.330%
Lower Tolerance Bound:	-1.008%	-1.067%	-1.183%	-1.100%	-1.105%	-1.035%	-1.136%	-1.155%	-1.124%
Standard Deviation:	0.433%	0.436%	0.497%	0.458%	0.462%	0.431%	0.479%	0.486%	0.493%
Median:	0.062%	0.063%	0.062%	0.000%	-0.062%	0.000%	0.062%	0.062%	0.062%
Number of Points:	36	36	37	37	37	37	37	37	37

Analysis Report

IPASS V2.3
5/6/2012 9:04:13 PM
For: admin

Group Name: G13.18.6.3-002
Group Description: Gould PD-3018/3218 Diff Press Trans

Date Range: 1/1/80 thru 5/6/12
Tolerance Interval Level: 95/95
Outlier Significance Level: 5

Excluded Calibrations

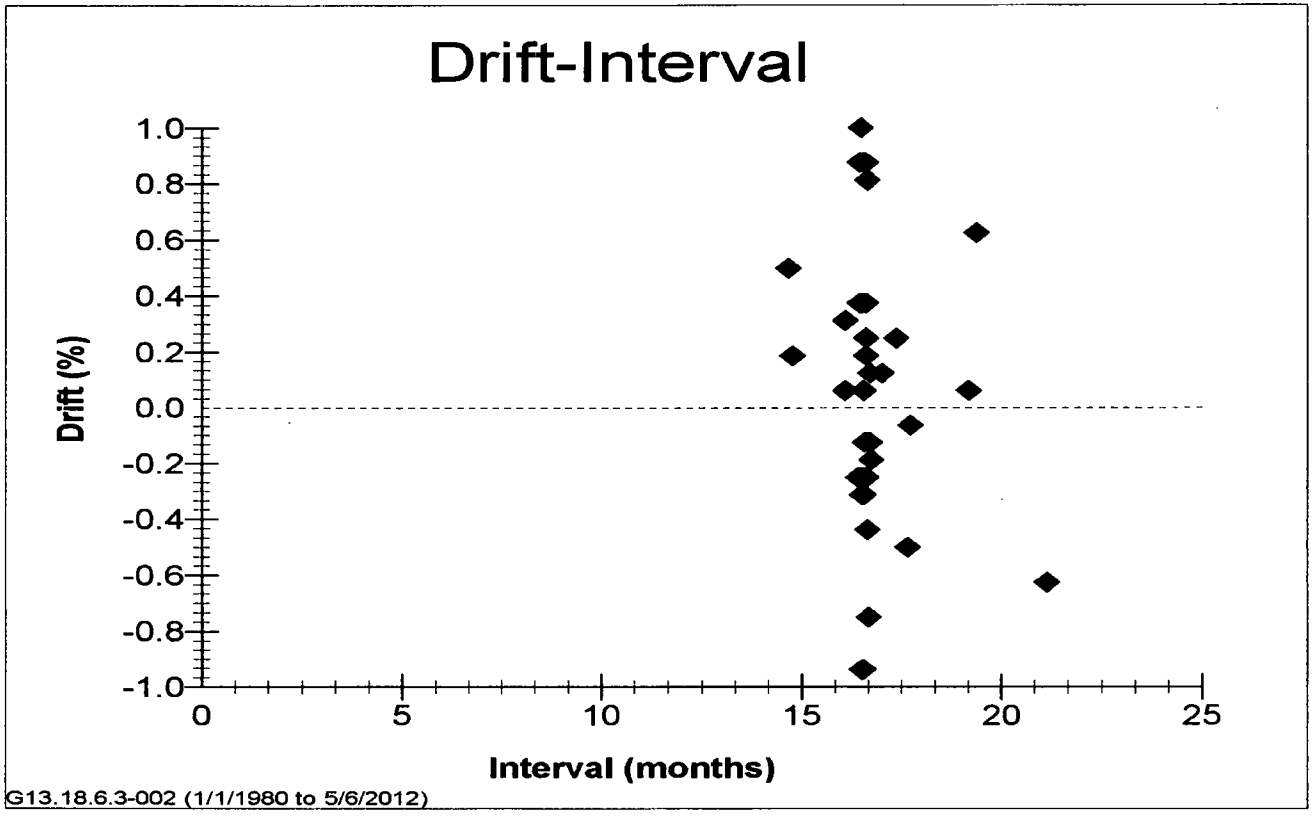
Calibration Date	Instrument Id

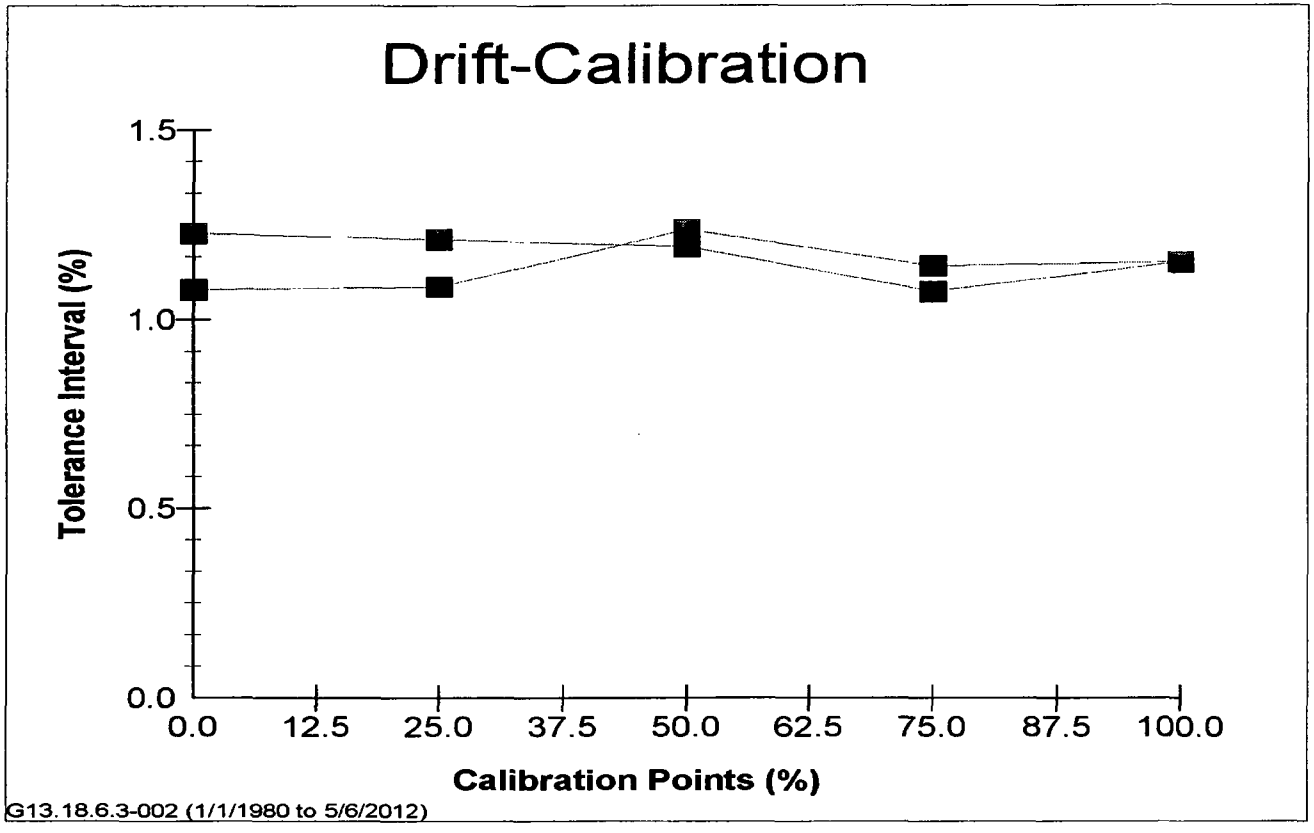
Excluded Points

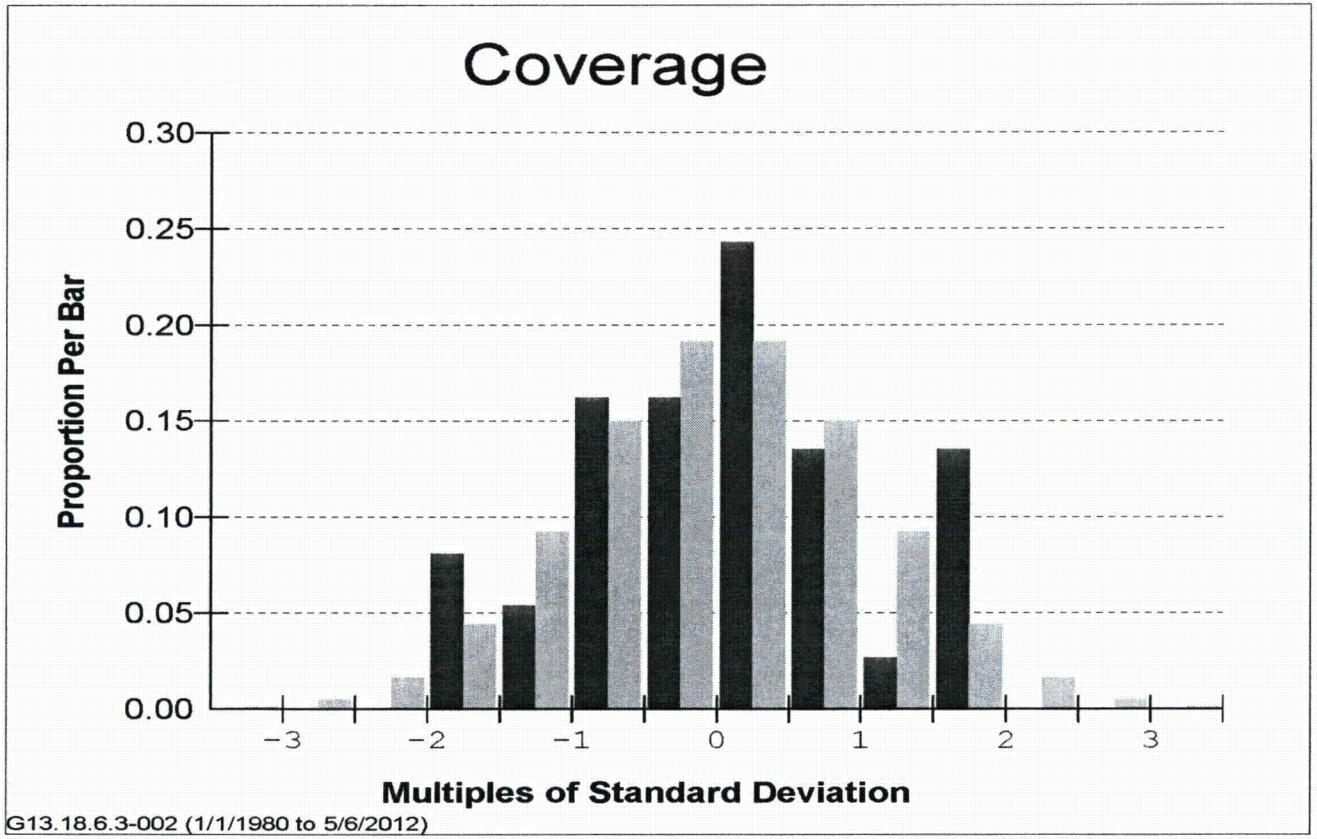
Calibration Date	Instrument Id	Calibration Point

Excluded Outliers

Calibration Date	Instrument Id	Calibration Point
08/26/02	C11-LTN012B	0.000%
08/26/02	C11-LTN012B	25.000%


Drift-Interval
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
Drift (%)
0
5
10
15
20
25
Interval (months)
G13.18.6.3-002 (1/1/1980 to 5/6/2012)


Drift-Calibration
1.5
1.0
0.5
0.0
Tolerance Interval (%)
0.0
12.5
25.0
37.5
50.0
62.5
75.0
87.5
100.0
Calibration Points (%)
G13.18.6.3-002 (1/1/1980 to 5/6/2012)


Coverage
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Proportion Per Bar
-3
-2
-1
0
1
2
3
Multiples of Standard Deviation
G13.18.6.3-002 (1/1/1980 to 5/6/2012)

ATTACHMENT 7.4 LIST OF AFFECTED SETPOINT CALCULATIONS, ASSOCIATED SURVEILANCE PROCEDURES AND DRIFT CALCULATIONS

Sheet 1 of 4

Setpoint Calculation	Title	Surveillance Procedure	Drift Calculation
JC-N1B21-N658-1	REACTOR DOME PRESSURE ATWS RECIRC PUMP TRIP	06-IC-1B21-Q-1012 06-IC-1B21-R-0016	JC-Q1111-09020
JC-N1C34-K624-1	FEEDWATER AND MAIN TURBINE TRIP	06-IC-IC34-R-0001	JC-Q1111-09017 JC-Q1111-09021
JC-Q1B21-N616-1	SAFETY RELIEF LOW/LOW SET POINT	06-IC-1B21-Q-1001 06-IC-1B21-R-0003	JC-Q1111-09020
JC-Q1B21-N668-1	SET POINTS FOR SRV TRIP	06-IC-1B21-Q-1001 06-IC-1B21-R-0003	JC-Q1111-09020
JC-Q1B21-N674-1	LEVEL 8 WIDE RANGE HPCS INJECTION VALVE CLOSURE	06-IC-1B21-Q-2010 06-IC-1B21-R-2012	JC-Q1111-09017
JC-Q1B21-N675-1	MSL ISOLATION ON LOW CONDENSOR VACUUM	06-IC-1B21-Q-2006 06-IC-1B21-R-2007	JC-Q1111-09017
JC-Q1B21-N676-1	MSIV CLOSURE ON LOW STEAM LINE PRESSURE	06-IC-1B21-Q-2005 06-IC-1B21-R-2006	JC-Q1111-09020
JC-Q1B21-N678-1	REACTOR DOME PRESSURE SCRAM	06-IC-1B21-Q-1002 06-IC-1B21-R-0001	JC-Q1111-09020
JC-Q1B21-N679-1	RHR SHUTDOWN COOLING REACTOR PRESSURE HIGH PERMISSIVE	06-IC-1B21-Q-1002 06-IC-1B21-R-0001	JC-Q1111-09020
JC-Q1B21-N680-1	LEVEL THREE SET POINT CALCULATION	06-IC-1B21-Q-1003 06-IC-1B21-Q-1009 06-IC-1B21-R-0011 06-IC-1B21-R-0002	JC-Q1111-09017
JC-Q1B21-N681-1	LEVEL ONE SET POINT CALCULATION	06-IC-1B21-Q-2004 06-IC-1B21-Q-1007 06-IC-1B21-R-0008 06-IC-1B21-R-2005	JC-Q1111-09017
JC-Q1B21-N682-1	LEVEL TWO SET POINT CALCULATION	06-IC-1B21-Q-1007 06-IC-1B21-Q-2004 06-IC-1B21-Q-2010 06-IC-1B21-R-0008 06-IC-1B21-R-2005 06-IC-1B21-R-2012	JC-Q1111-09017
JC-Q1B21-N683-1	LEVEL EIGHT NARROW RANGE	06-IC-1B21-Q-1003 06-IC-1B21-R-0002	JC-Q1111-09017

ATTACHMENT 7.4 LIST OF AFFECTED SETPOINT CALCULATIONS, ASSOCIATED SURVEILANCE PROCEDURES AND DRIFT CALCULATIONS

Sheet 2 of 4

JC-Q1B21-N693-1	LEVEL EIGHT NARROW RANGE RCIC TRIP	06-IC-1B21-Q-1009 06-IC-1B21-R-0011	JC-Q1111-09017
JC-Q1B21-N694-1	DRYWELL PRESSURE HIGH RCIC ISOLATION	06-IC-1B21-Q-2008 06-IC-1B21-Q-2011 06-IC-1B21-R-2009 06-IC-1B21-R-2013	JC-Q1111-09018
JC-Q1B21-N697-1	LOW PRESSURE ECCS PERMISSION	06-IC-1B21-Q-1001 06-IC-1B21-R-0003	JC-Q1111-09020
JC-Q1C11-N601-1	SCRAM REACTOR ON HIGH SDVP WATER LEVEL	06-IC-1C11-Q-2001 06-IC-1C11-R-2001	JC-Q1111-09014
JC-Q1C51-K601-1	IRM NEUTRON FLUX-HIGH	06-IC-1C51-V-0001	JC-Q1111-09001
JC-Q1C71-N605-1	TURBINE CONTROL VALVE FAST CLOSURE SCRAM	06-IC-1C71-Q-2003 06-IC-1C71-R-2003	JC-Q1111-09014
JC-Q1C71-N606-1	REACTOR SCRAM ON TURBINE STOP VALVE CLOSURE	06-IC-1C71-Q-2002 06-IC-1C71-R-2002	JC-Q1111-09011
JC-Q1C71-N650-1	DRYWELL HIGH PRESSURE SCRAM	06-IC-1C71-Q-2001 06-IC-1C71-R-2001	JC-Q1111-09018
JC-Q1C71-N652-1	TSV CLOSURE SCRAM BYPASS	06-IC-1C71-R-0004	JC-Q1111-09020 JC-Q1111-09021
JC-Q1C71-S003	REACTOR PROTECTION SYSTEM ELECTRICAL PROTECTION ASSEMBLY	06-EL-1C71-R-0013	JC-Q1111-09006 JC-Q1111-09007 JC-Q1111-09008 JC-Q1111-09009
JC-Q1E12-N652-1	MINIMUM FLOW BYPASS VALVE LOW FLOW INTERLOCK	06-IC-1E12-Q-0006 06-IC-1E12-R-0006	JC-Q1111-09016
JC-Q1E12-N655-1	RHR PUMP DISCHARGE PRESSURE PERMISSIVE FOR ADS	06-IC-1E12-Q-2002 06-IC-1E12-R-2002	JC-Q1111-09019
JC-Q1E12-N658-1	RHR INJECTION VALVE PRESSURE PERMISSIVE FOR TEST	06-IC-1E12-R-1010	JC-Q1111-09019 JC-Q1111-09021
JC-Q1E12-N662-1	CONTAINMENT HIGH PRESSURE	06-IC-1E12-Q-0005 06-IC-1E12-R-0005	JC-Q1111-09018
JC-Q1E21-N650-1	LPCS VALVE PRESSURE PERMISSIVE FOR TEST	06-IC-1E21-R-0004	JC-Q1111-09019 JC-Q1111-09021
JC-Q1E21-N651-2	LPCS PUMP MINIMUM FLOW BYPASS VALVE LOW FLOW INTERLOCK	06-IC-1E21-Q-0005 06-IC-1E21-R-0005	JC-Q1111-09016
JC-Q1E21-N652-1	LPCS PUMP DISCHARGE PRESSURE HIGH	06-IC-1E21-Q-2002 06-IC-1E21-R-2002	JC-Q1111-09019

ATTACHMENT 7.4 LIST OF AFFECTED SETPOINT CALCULATIONS, ASSOCIATED SURVEILANCE PROCEDURES AND DRIFT CALCULATIONS

Sheet 3 of 4

JC-Q1E22-N651-2	HPCS PUMP MINIMUM FLOW BYPASS VALVE HI PRESSURE INTERLOCK	06-IC-1E22-Q-0005 06-IC-1E22-R-0005	JC-Q1111-09020
JC-Q1E22-N654-1	HPCS PUMP SUCTION TRANSFER ON LOW CST LEVEL	06-IC-1E22-Q-0002 06-IC-1E22-R-0002	JC-Q1111-09019
JC-Q1E22-N655-1	HPCS & RCIC PUMP SUCTION TRANSFER ON HI SUPPRESSION POOL LEVEL	06-IC-1E51-Q-0003 06-IC-1E22-Q-0003 06-IC-1E51-R-0003 06-IC-1E22-R-0003	JC-Q1111-09014
JC-Q1E22-N656-2	HPCS PUMP MIN FLOW BYPASS VALVE LOW FLOW INTERLOCK	06-IC-1E22-Q-0004 06-IC-1E22-R-0004	JC-Q1111-09017
JC-Q1E30-N600A-1	INITIATE SUPRESSION POOL MAKEUP ON LOW LEVEL	06-IC-1E30-Q-0001 06-IC-1E30-R-0001	JC-Q1111-09017
JC-Q1E31-N609-1	RWCU SYSTEM ISOLATION ON HIGH DIFFERENT FLOW	06-IC-IE31-R-1015	JC-Q1111-09017 JC-Q1111-09023 JC-Q1111-09024
JC-Q1E31-N683-1	RCIC STEAM SUPPLY ISOLATION ON HIGH FLOW	06-IC-1E31-Q-0024 06-IC-1E31-R-0023	JC-Q1111-09017
JC-Q1E31-N684-1	RHR & RCIC ISOLATION ON HIGH STEAM FLOW	06-IC-1E31-Q-0024 06-IC-1E31-R-0023	JC-Q1111-09017
JC-Q1E31-N685-1	RCIC TURBINE ISOLATION ON LOW INLET STEAM PRESSURE	06-IC-1E31-Q-1016 06-IC-1E31-R-1016	JC-Q1111-09019
JC-Q1E31-N686-1	ISOLATE MSL ON HIGH FLOW	06-IC-1E31-R-2003 06-IC-1E31-Q-2003	JC-Q1111-09017
JC-Q1E51-N635-1	RCIC PUMP SUCTION TRANSFER ON LOW CST LEVEL	06-IC-1E51-Q-0002 06-IC-1E51-R-0002	JC-Q1111-09019
JC-Q1E51-N655-1	RCIC TURBINE ISOLATION ON EXHAUST DIAPGHRAGM FAILURE	06-IC-1E51-Q-0001 06-IC-1E51-R-0001	JC-Q1111-09019
JC-Q1P81-90024	Division III Degraded Bus Voltage Setpoint Validation	06-EL-1P81-R-0001	JC-Q1111-09004 JC-Q1111-09005 JC-Q1111-09022
JC-Q1P81-90027	Division III Loss of Bus Voltage Setpoint Validation	06-EL-1P81-R-0001	JC-Q1111-09002 JC-Q1111-09003

ATTACHMENT 7.4 LIST OF AFFECTED SETPOINT CALCULATIONS, ASSOCIATED SURVEILANCE PROCEDURES AND DRIFT CALCULATIONS

Sheet 4 of 4

JC-Q1E32-N651-2	MSIV Leakage Control System Short Term High Pressure Trip	06-IC-1E32-R-1001	JC-Q1111-09018 JC-Q1111-09021
JC-Q1E38-N600-1	Feedwater Leakage Control System High Pressure Trip	07-S-53-E38-1	JC-Q1111-09019 JC-Q1111-09021
JC-Q1E61-N600-1	Drywell Vacuum Relief	06-IC-1E61-R-1002	JC-Q1111-09017 JC-Q1111-09021
N/A	APRM NEUTRON FLUX-HIGH SETDOWN	06-IC-1C51-R-0077	N/A
N/A	APRM FIXED NEUTRON FLUX-HIGH	06-IC-1C51-R-0077	N/A
N/A	APRM FLOW BIASED THERMAL POWER HIGH	06-IC-1C51-R-0077 06-IC-1C51-R-0075	N/A