PNPP NO. 6687 REV. 8-85

DATA PACKAGE COVER SHEET

PAP-1105-1 REV. 2

INSTRUCTION NO: SVI-D51-T0289-A

TECHNICAL SPECIFICATION(S) OR COMMITMENT(S)

4.3.7.2.1
4.3.7.2.2
Table 4.3.7.2-1 item 2.a

TEST PERFORMANCE

TEST ASSIGNED TO: Bryan Andrie Mark Helle — 2/19/86 1300 (DATE AND TIME)

AUTHORIZATION TO START PREREQUISITES: [signature] (OPERATIONS UNIT SUPERVISOR) — 2/19/86 1315 (DATE AND TIME)

AUTHORIZATION TO START TEST: [signature] (SUPERVISING OPERATOR) — 2/19/86 1540 (DATE AND TIME)

ACTUAL PLANT CONDITIONS 1 2 3 4 5 (Circle One) Pre Fuel load COMMENTS

INSTRUCTION COMPLETION ☒ FULL ☐ PARTIAL

TECH. SPEC. ACCEPTANCE CRITERIA ☒ ACCEPTABLE ☐ UNACCEPTABLE ☐ N/A

OTHER DATA CRITERIA ☒ ACCEPTABLE ☐ UNACCEPTABLE ☐ N/A

TC(S) IN EFFECT DURING PERFORMANCE: N/A

DEFICIENCIES N/A (N/A if none)

CR # ISSUED N/A LCO ENTERED N/A WR/WO # WRITTEN N/A

PERFORMER'S SIGNATURE Bryan L. Andrie Mark A. Helle — 2/19/86 1540 (DATE AND TIME)

OPERATIONS UNIT SUPERVISOR John Messina — 2/19/86 2/19/86 (DATE AND TIME)

SHIFT SUPERVISOR N A — DATE AND TIME

(Required if Tech. Spec. Acceptance Criteria is not met, otherwise mark N/A)

COMMENTS: Under W.O. 86-2654

TEST RESULTS REVIEW Credit Given Per 2-20-86

SYSTEM ENGINEER/
RESPONSIBLE SECTION REVIEWER ______ DATE AND TIME

COMMENTS:

SURVEILLANCE COORDINATOR ______ DATE AND TIME

8605300554 860321
PDR FOIA
HIATT86-91 PDR

A/6

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

PERRY NUCLEAR POWER PLANT OPERATIONS MANUAL

Surveillance Instruction

TITLE: TRIAXIAL PEAK ACCELEROGRAPHS CHANNEL CALIBRATION FOR D51-R120 (REACTOR RECIRCULATION PUMP)

REVISION: 2 EFFECTIVE DATE: 2-19-86

PNPP
PERRY
PLANT DEPARTMENT
WORKING COPY
[illegible] 2-19-86
SIGNED DATE

		DATE
PREPARER:	Michael J. Broadstone	2-18-86
REVIEWER:	[illegible]	2-19-86
PORC MEETING NO:	—	—
APPROVED:	[illegible] for W.R. Kanda	2-19-86

19 FEB 86 12:57
43

10CFR50.59 Applicability Check

	Yes	No
Is there a change to the plant as described in the FSAR? Reason: No change to plant system or description.	☐	☑
Is there a change to a procedure/instruction as described in the FSAR? Reason: No change to procedure/instruction.	☐	☑
Is there a test or experiment not described in the FSAR? Reason: Test in accordance with Technical Specification.	☐	☑
Is there a change to the Technical Specifications?	☐	☑
Is there an affect on the environment or change on the Environmental Protection Plan? Reason: No affect on environment.	☐	☑

☑ Answers to all questions are "No", no potential for an Unreviewed Safety or Environmental Question exists, no further review required.

☐ Answers to one or more questions is "Yes", further review required.

Applicability Check

Prepared By:	Brent C. Bradford	Date:	2-19-86
Reviewed By:	Carl W. Bidelle	Date:	2-19-86
Approved By:	J. Curran for W. Kanda	Date:	2-19-86

SCOPE OF REVISION:

Rev. 2 - 1. Instruction revised to incorporate adjustments for updated instrument.

Triaxial Peck Accelerograph Channel Calibration for D51-R120 (Reactor Recirculation Pump)

1.0 DESCRIPTION

1.1 Scope: Triaxial Peak Accelerograph D51-R120 is calibrated by verifying the scriber preload dimensions and the recorder damping and sensitivity by simulating a seismic event.

If scriber preload or damping are found to exceed the Allowable Value, then adjustments will be made utilizing steps contained within this instruction. If recorder sensitivity is found to exceed the Allowable Value, then the problem will be referred to Engdahl Enterprises for resolution.

This instruction partially satisfies the calibration requirements of Technical Specification 4.3.7.2.1, 4.3.7.2.2, Table 4.3.7.2-1 Item 2.a.

This instruction will verify the calibration of the following instrument:

1. D51-R120 Accelerograph.

1.2 Frequency: At least once per 18 months (550 days) and within 14 days following a seismic event greater than or equal to 0.05g.

1.3 Technical Specification Applicable Operational Conditions:

At all times.

1.4 Cross-Reference:

N/A

2.0 PRECAUTIONS AND LIMITATIONS

1. Step numbers marked with a dollar sign ($) immediately to the left are required by Technical Specifications. Such items, if found to exceed their Allowable Value may be NRC reportable and shall be brought to the attention of the Unit Supervisor.

2. Those steps of this instruction designated by an "at" sign (@) are to be initialed or signed on the appropriate data sheet or

Data Package Cover Sheet as data is entered or as a step is completed.

3. The Unit Supervisor or designated alternate must be notified immediately whenever an instructional step cannot be completed as stated or if problems develop during the performance of this instruction.

4. All steps are to be performed in sequence and the instruction carried through to completion unless otherwise indicated.

5. This instruction should be read in its entirety before proceeding with the performance of the instructional steps.

6. Actions taken in this instruction decreases the number of operable channels to less than the minimum operable channels required by Technical Specifications. Action Statement 3.3.7.2.a is applicable during the period the channel(s) are inoperable.

3.0 MANPOWER AND EQUIPMENT

3.1 Manpower/Communications

1. Two technicians are recommended to perform this instruction:
   a. One technician must be qualified on Engdahl equipment to perform surveillance and record data.
   b. One technician to assist with instruction and as independent verifier.

3.2 Required Measuring and Test Equipment (M&TE)

1. Scriber Preload Gauge, Engdahl P/N 400804.

2. Magnifier 7 power (eye loupe) Engdahl P/N 120816.

3. Microscope 20 power (.0025 ingrad) Engdahl P/N 120818.

4. Microscope 40 power (.0010 ingrad) Engdahl P/N 120819.

5. Torque Wrench - Snap-On Model TEP6FUE 0-75 IN LBS, or equivalent.

3.3 Additional Tools and Equipment

1. One set of record plates for calibration steps:

   a. Longitudinal (L), Engdahl P/N 400124-1.
   b. Transverse (T), Engdahl P/N 400124-2.
   c. Vertical (V), Engdahl P/N 400124-3.

2. One set of record plates for operation:

   a. Longitudinal (L), Engdahl P/N 400124-1.
   b. Transverse (T), Engdahl P/N 400124-2.
   c. Vertical (V), Engdahl P/M 400124-3.

3. Spanner Wrench, Engdahl P/N 400132.

4. Record Plate Puller, Engdahl P/N 400806.

5. Calculator.

6. Candle.

7. Installation drawings: D-814-663 and D-814-663-906.

4.0 PREREQUISITES

@ 1. Obtain Unit Supervisor's "Authorization to Start Prerequisites" signature on the Data Package Cover Sheet.

2. This instruction may be performed in any Operational Condition.

3. Verify the following are tagged in accordance with PAP-1401. Attachment 1.

@ a. D51-R120 removed for performance of SVI-D51-T0289-A.

@ 4. An RWP is in effect covering this performance of this instruction. Attachment 1.

@ 5. Verify the Calibration Due Date is current on all test instruments. Attachment 1.

@ 6. Record all test instruments, MPL, Cal Date and Cal Due Date. Attachment 2.

5.0 SURVEILLANCE INSTRUCTION

5.1.1 Test Preparation

@ 1. Obtain the Supervising Operator's "Authorization to Start Test" signature on the Data Package Cover Sheet.

@ 2. Inform the Supervising Operator of D51-R120 (DW-583-145) inoperability and Action Statement 3.3.7.2.a is applicable at all times. Record time and date. Attachment 2.

@ 3. Visually inspect the exterior of the recorder for any physical damage, contamination, corrosion. Record any discrepancies found in the comments section and notify the Unit Supervisor. Attachment 2.

4. Using the spanner wrench remove the three side access plugs from the recorder.

@ 5. Remove the record plate from each sensor, verifying that the zero lines coincide. Attachment 2.

NOTE: If the zero lines do not coincide, notify the Unit Supervisor that the problem will have to be referred to Engdahl/Enterprises for resolution.

@ 6. Install the calibration set of record plates for each sensor to prevent damage to the recorder during removal and transportation. Attachment 2.

7. Temporarily re-install the three side access plugs on the recorder.

NOTE: Use extreme care when removing and transporting the recorder to eliminate any abnormal motions or actions that might damage the internal components of the recorder.

@ 8. Carefully remove recorder D51-R120 (DW-583-145) from its mounted location. Attachment 2.

9. Relocate the recorder to a suitable work area to perform the surveillance instructions.

10. Set the recorder on a work table in it's normal operating position, and remove the three side access plugs, and the calibration set of record plates.

@ 11. Remove the cover and inspect the interior of the recorder for corrosion, loose parts, or other damage that would render the recorder inoperable. Record any discrepancies in the comments section and notify the Unit Supervisor. Attachment 2.

12. D51-R120 Triaxial Peak Accelerograph Channel Calibration involves 3 separate calibration checks.

    a. Recorder sensitivity calibration is checked in Section 5.1.2/5.1.6.
    b. Recorder damping calibration is checked in Section 5.1.3/5.1.5.
    c. Recorder scriber preload calibration is checked in Section 5.1.4.

5.1.2 Recorder Sensitivity Calibration Check - As Found

NOTE: Vertical acceleration sensitivity AS FOUND values will be obtained by performing the following steps.

1. Place the recorder on a flat horizontal surface, in the normal operating position.

2. Blacken the calibration record plate surface with the smoke from a candle.

3. Insert the calibration record plate into the support assembly.

4. Gently rotate the recorder 180 degrees (upside down) and remove the calibration record plate with the plate puller.

5. Using a microscope or eye loupe measure the distance from the zero line to the mark made at 180 degrees.

   NOTE: This distance is the vertical displacement which represents a two (2) g's static load.

@ 6. Record the AS FOUND vertical displacement. Attachment 2.

7. Insert the vertical displacement in the equation on Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS FOUND vertical acceleration sensitivity.

@ 8. Independently verify the calculation in Step 5.1.2.7.a. Attachment 2.

NOTE: Longitudinal acceleration sensitivity AS FOUND will be obtained by performing the following steps.

9. Place the recorder on a flat horizontal surface, in the normal operating position.

10. Blacken the calibration record plate surface with the smoke from a candle.

11. Insert the calibration record plate into the support assembly.

12. Perform the following:

   a. Gently rotate the recorder 90 degrees clockwise (on to one end of the recorder).
   b. Move the record plate in and out slightly.
   c. Gently rotate the recorder 180 degrees counterclockwise (on to the opposite end of the recorder).
   d. Remove the calibration record plate with the plate puller.

13. Using a microscope or eye loupe measure the distance from the mark made at 90 degrees to the mark made at 180 degrees.

NOTE: This distance is the longitudinal displacement which represents a peak-to-peak load of two (2) g's.

@ 14. Record the AS FOUND longitudinal displacement on Attachment 2.

15. Insert the longitudinal displacement in the equation. Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS FOUND longitudinal acceleration sensitivity.

@ 16. Independently verify the calculation in Step 5.1.2.15.a. Attachment 2.

NOTE: Transverse acceleration sensitivity AS FOUND values will be obtained by performing the following steps.

17. Place the recorder on a flat horizontal surface, in the normal operation position.

18. Blacken the calibration record plate surface with the smoke from a candle.

19. Insert the calibration record plate into the support assembly.

20. Perform the following:

    a. Gently rotate the recorder 90 degrees clockwise (on to one end of the recorder).
    b. Move the record plate in and out slightly.
    c. Gently rotate the recorder 180 degrees counterclockwise (on to the opposite end of the recorder).
    d. Remove the calibration record plate with the plate puller.

21. Using a microscope or eye loupe measure the distance from the mark made at 90 degrees to the mark made at 180 degrees.

    NOTE: This distance is the transverse displacement, which represents a peak-to-peak load of two (2) g's.

@ 22. Record the AS FOUND transverse displacement. Attachment 2.

23. Insert the transverse displacement in the equation. Attachment 2.

    @ a. Perform the calculation.
    $@ b. Record the AS FOUND transverse acceleration sensitivity.

@ 24. Independently verify the calculation in Step 5.1.2.23.a. Attachment 2.

5.1.3 Recorder Damping Calibration Check - As Found

NOTE: Vertical damping AS FOUND values will be obtained by performing the following steps.

1. Place the recorder on flat horizontal surface.

2. Blacken the calibration record plate surface with the smoke from a candle.

3. Insert the calibration record plate into the support assembly.

4. With a screwdriver or similar tool, push the vertical platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

5. Repeat Step 5.1.3.4. five times to ensure the maximum overshoot is obtained.

@ 6. Pull vertical calibration record plate out 3/64 inches from stop. Attachment 2.

7. With a screwdriver or similar tool, push the vertical platform over to the opposite stop of the one that was used in Step 5.1.3.4. Remove the tool rapidly and cleanly to get repeatable results.

8. Repeat Step 5.1.3.7. five times to ensure the maximum overshoot is obtained.

9. Remove the vertical calibration record plate using the plate puller.

10. Using a microscope or eye loupe measure and record the AS FOUND for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.4.

@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.4.

@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.7.

@ d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.7.

11. Insert the AS FOUND values in the equations. Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS FOUND overshoot percentages.

@ 12. Independently verify the calculation in Step 5.1.3.11.a. Attachment 2.

$@ 13. Average the two (2) overshoot percentages from the results of equation in Step 5.1.3.11.b. to obtain the maximum overshoot percentage Attachment 2.

<u>NOTE</u>: The maximum overshoot percentage is equal to the percentage of damping.

@ 14. Independently verify the calculation in Step 5.1.3.13 Attachment 2.

$@ 15. Record the AS FOUND maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: Longitudinal damping AS FOUND values will be obtained by performing the following steps:

16. Place the recorder on flat horizontal surface.

17. Blacken the calibration record plate surface with the smoke from a candle.

18. Insert the calibration record plate into the support assembly.

19. With a screwdriver or similar tool, push the longitudinal platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

20. Repeat Step 5.1.3.19. five times to ensure the maximum overshoot is obtained.

@ 21. Pull longitudinal calibration record plate out 3/64 inches from stop. Attachment 2.

22. With a screwdriver or similar tool, push the longitudinal platform over to the opposite stop of the one that was used in Step 5.1.3.19. Remove the tool rapidly and cleanly to get repeatable results.

23. Repeat Step 5.1.3.22. five times to ensure the maximum overshoot is obtained.

24. Remove the longitudinal calibration record plate using the plate puller.

25. Using a microscope or eye loupe measure and record the AS FOUND for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.19.
@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.19.
@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.22.
@* d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.22.

26. Insert the AS FOUND values in the equations. Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS FOUND overshoot percentages.

@ 27. Independently verify the calculation in Step 5.1.3.26.a. Attachment 2.

$@ 28. Average the two (2) overshoot percentages from the results of equation in Step 5.1.3.26.b, to obtain the maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: The maximum overshoot percentage is equal to the percentage of damping.

@ 29. Independently verify the calculation in Step 5.1.3.28. Attachment 2.

$@ 30. Record the AS FOUND maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: Transverse damping AS FOUND values will b obtained by performing the following ste,

31. Place the recorder on flat horizontal surface.

32. Blacken the calibration record plate surface with the smoke from a candle.

33. Insert the calibration record plate into the support assembly.

34. With a screwdriver or similar tool, push the transverse platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

35. Repeat Step 5.1.3.34. five times to ensure the maximum overshoot is obtained.

@ 36. Pull transverse calibration record plate out 3/64 inches from stop. Attachment 2.

37. With a screwdriver or similar tool, push the transverse platform over to the opposite stop of the one that was used in Step 5.1.3.34. Remove the tool rapidly and cleanly to get repeatable results.

38. Repeat Step 5.1.3.37. five times to ensure the maximum overshoot is obtained.

39. Remove the transverse calibration record plate using the plate puller.

40. Using a microscope or eye loupe measure and record the AS FOUND for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.34.

@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.34.

@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.3.37.

@ d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.3.37.

41. Insert the AS FOUND values in the equations. Attachment 2.

@ a. Perform the calculation.

$@ b. Record the AS FOUND overshoot percentages.

@ 42. Independently verify the calculation in Step 5.1.3.41.a. Attachment 2.

$@ 43. Average the two (2) overshoot percentages from the results of equation in Step 5.1.3.41.b. to obtain the maximum overshoot percentage Attachment 2.

NOTE: The maximum overshoot percentage is equal to the percentage of damping.

@ 44. Independently verify the calculation in Step 5.1.3.43 Attachment 2.

$@ 45. Record the AS FOUND maximum overshoot percentage. Attachment 2.

5.1.4 Recorder Scriber Preload Calibration Check

NOTE: Scriber preload AS FOUND, AS LEFT values will be obtained, and calibration adjustments made if required by performing the following steps:

1. Place the recorder on a flat horizontal surface.

2. Ensure that the calibration record plates are removed.

3. Using the scriber preload gauge, check the scriber preload for the following sensors:

   a. Vertical (V) sensor.
   b. Longitudinal (L) sensor.
   c. Transverse (T) sensor.

   NOTE: The scriber must not contact the maximum step on the scriber preload gauge and must contact the minimum step on the scriber preload gauge.

   NOTE: The maximum step on scriber preload gauge is equal to .052 inches and the minimum step is equal to .082 inches.

4. Record AS FOUND scriber preload values for the following sensors: Attachment 2.

$@ a. Vertical (V) sensor.
$@ b. Longitudinal (L) sensor.
$@ c. Transverse (T) sensor.

If the AS FOUND values are not within the Allowable Value proceed to Step 5.1.4.5.

****

CAUTION

Do not push on the scriber body (amplifier arm), which holds the scriber shank. The drive wire and flexure are fragile and must be handled with care.

****

5. If all AS FOUND values are within the Allowable Value, transpose AS FOUND values as AS LEFT values and proceed to Section 5.1.6.

6. If any scriber preloads require adjustment, proceed to Step 5.1.4.8 and perform the required adjustments for each scriber that exceeds the Allowable Values.

7. If any recorder damping values require adjustment, proceed to Section 5.1.5.

8. Bend the scriber shank at it's root a small amount and using the scriber preload gauge, check the scriber preload for each sensor that required adjustment.

$@ 9. If the adjusted scriber preload values are within the Allowable Value, record the AS LEFT scriber preload values for each scriber and proceed to Step 5.1.5. Attachment 2.

10. If the adjusted scriber preload values are not within the Allowable Values, repeat Step 5.1.4.8 and 5.1.4.9 as many times as necessary to obtain the proper scriber preload values.

11. If adjustments were made to the vertical scriber preload, or vertical recorder damping requires adjustment, proceed to Step 5.1.5.1.

12. If adjustments were made to the longitudinal scriber preload, or longitudinal recorder damping requires adjustment, proceed to Step 5.1.5.16.

13. If adjustments were made to the transverse scriber preload, or transverse recorder damping requires adjustment, proceed to Step 5.1.5.32.

5.1.5 Recorder Damping Calibration

1. Place the recorder on a flat horizontal surface and perform the following steps if calibration adjustments are necessary. If a calibration check is to be performed prior to calibration, proceed to Step 5.1.5.1.b.

@ a. Adjust the damper so that Damping will fall between 55% and 70% of critical. Attachment 2.

NOTE: For more damping, turn damper adjustment screw in (clockwise). For less damping, turn damper adjustment screw out (counterclockwise). Turn only small amounts (15 to 30 degrees) at a time.

b. Check results by performing Steps 5.1.5.1.c through 5.1.5.1.m and note the results (do not enter results on Data Sheet at this time). Repeat 5.1.5.1.a to 5.1.5.1.m until damping falls within Allowable Values.
c. Blacken the calibration record plate surface with the smoke from a candle.
d. Insert the calibration record plate into the support assembly.
e. With a screwdriver or similar tool, push the vertical platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.
f. Repeat Step 5.1.5.1.e five times to ensure the maximum overshoot is obtained.
g. Pull vertical calibration record plate out 3/64 inches from stop.
h. With a screwdriver or similar tool, push the vertical platform over to the opposite stop of the one that was used in Step 5.1.5.1.e. Remove the tool rapidly and cleanly to get repeatable results.
i. Repeat Step 5.1.5.h five times to ensure the maximum overshoot is obtained.
j. Remove the vertical calibration record plate using the plate puller.
k. Using a microscope or eye loupe measure the values for the following:

1) The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.1.e.

2) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.1.e.

3) The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.1.h.

4) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.1.h.

l. Insert the adjusted values in the equation shown in Step 5.1.5.11 of Attachment 2. Do not write on the Attachment at this time.

1) Perform the calculation.

2) Determine the overshoot percentages.

m. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.1.l above to obtain the maximum overshoot percentage.

<u>NOTE</u>: The maximum overshoot percentages is equal to the percentage of damping.

2. Blacken the calibration record plate surface with the smoke from a candle.

3. Insert the calibration record plate into the support assembly.

4. With a screwdriver or similar tool, push the vertical platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

5. Repeat Step 5.1.5.4 five times to ensure the maximum overshoot is obtained.

@ 6. Pull vertical calibration record plate out 3/64 inches from stop. Attachment 2.

7. With a screwdriver or similar tool, push the vertical platform over to the opposite stop of the one that was used in Step 5.1.5.4. Remove the tool rapidly and cleanly to get repeatable results.

8. Repeat Step 5.1.5.7 five times to ensure the maximum overshoot is obtained.

9. Remove the vertical calibration record plate using the plate puller.

10. Using a microscope or eye loupe measure and record the AS LEFT values for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.4.

@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.4.

@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.7.

@ d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.7.

11. Insert the AS LEFT values in the equation: Attachment 2.

@ a. Perform the calculation.

$@ b. Record the AS LEFT overshoot percentages.

@ 12. Independently verify the calculation in Step 5.1.5.11.a. Attachment 2.

$@ 13. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.11.b to obtain the maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: The maximum overshoot percentages is equal to the percentage of damping.

@ 14. Independently verify the calculation in Step 5.1.5.13. Attachment 2.

$@ 15. Record the AS LEFT maximum overshoot percentage to the date table. Attachment 2.

<u>NOTE</u>: Longitudinal damping AS LEFT values will be obtained by performing the following steps:

16. If adjustments were made to the longitudinal scriber preload, or longitudinal recorder damping requires adjustment, proceed to Step 5.1.5.17. If no adjustments are necessary, proceed to Step 5.1.5.32.

17. Place the recorder on a flat horizontal surface and perform the following steps if calibration adjustments are necessary. If a calibration check is to be performed prior to calibration, proceed to Step 5.1.5.17.b.

@ a. Adjust the damper so that Damping will fall between 55% and 70% of critical. Attachment 2.

NOTE: For more damping, turn damper adjustment screw in (clockwise). For less damping, turn damper adjustment screw out (counterclockwise). Turn only small amounts (15 to 30 degrees) at a time.

b. Check results by performing 5.1.5.17.c through 5.1.5.17.m and note the results (do not enter results on Data Sheet at this time). Repeat this sequence until Damping falls within Allowable Values.
c. Blacken the calibration record plate surface with the smoke from a candle.
d. Insert the calibration record plate into the support assembly.
e. With a screwdriver or similar tool, push the vertical platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.
f. Repeat Step 5.1.5.17.e five times to ensure the maximum overshoot is obtained.
g. Pull vertical calibration record plate out 3/64 inches from stop.
h. With a screwdriver or similar tool, push the vertical platform over to the opposite stop of the one that was used in Step 5.1.5.17.e. Remove the tool rapidly and cleanly to get repeatable results.
i. Repeat Step 5.1.5.17.h five times to ensure the maximum overshoot is obtained.
j. Remove the vertical calibration record plate using the plate puller.
k. Using a microscope or eye loupe measure the values for the following:

1) The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.17.e.

2) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.17.e.

3) The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.17.h.

4) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.17.h.

l. Insert the adjusted values in the equation: shown on Step 5.1.5.27 but do not write on Attachment 2 at this time.

1) Perform the calculation.

2) Determine the overshoot percentages.

m. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.16.1 above to obtain the maximum overshoot percentage.

<u>NOTE</u>: The maximum overshoot percentages is equal to the percentage of damping.

18. Blacken the calibration record plate surface with the smoke from a candle.

19. Insert the calibration record plate into the support assembly.

20. With a screwdriver or similar tool, push the longitudinal platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

21. Repeat Step 5.1.5.20 five times to ensure the maximum overshoot is obtained.

@ 22. Pull longitudinal calibration record plate out 3/64 inches from stop. Attachment 2.

23. With a screwdriver or similar tool, push the longitudinal platform over to the opposite stop of the one that was used in Step 5.1.5.20. Remove the tool rapidly and cleanly to get repeatable results.

24. Repeat Step 5.1.5.23 five times to ensure the maximum overshoot is obtained.

25. Remove the longitudinal calibration record plate using the plate puller.

26. Using a microscope or eye loupe measure and record the AS LEFT values for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.20.

@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.20.

@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.23.

@ d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.23.

27. Insert the AS LEFT values in the equation: Attachment 2.

@ a. Perform the calculation.

$@ b. Record the AS LEFT overshoot percentages.

@ 28. Independently verify the calculation in Step 5.1.5.27.a. Attachment 2.

$@ 29. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.27.b to obtain the maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: The maximum overshoot percentages is equal to the percentage of damping.

@ 30. Independently verify the calculation in Step 5.1.5.29. Attachment 2.

$@ 31. Record the AS LEFT maximum overshoot percentage to the date table. Attachment 2.

<u>NOTE</u>: Transverse damping AS LEFT values will be obtained by performing the following steps:

32. If adjustments were made to the transverse scriber preload, or transverse recorder damping requires adjustment, proceed to Step 5.1.5.33. If no adjustments are necessary, proceed to Section 5.1.6.

33. Place the recorder on a flat horizontal surface and perform the following steps if calibration adjustments are necessary. If a calibration check is to be performed prior to calibration, proceed to Step 5.1.5.33.b.

@ a. Adjust the damper so that Damping will fall between 55% and 70% of critical. Attachment 2.

NOTE: For more damping, turn damper adjustment screw in (clockwise). For less damping, turn damper adjustment screw out (counterclockwise). Turn only small amounts (15 to 30 degrees) at a time.

b. Check results by performing 5.1.5.33.c through 5.1.5.33.m and note the results (do not enter results on Data Sheet at the time). Repeat this sequence until Damping falls within Allowable Values.

c. Blacken the calibration record plate surface with the smoke from a candle.

d. Insert the calibration record plate into the support assembly.

e. With a screwdriver or similar tool, push the transverse platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

f. Repeat Step 5.1.5.33.e five times to ensure the maximum overshoot is obtained.

g. Pull transverse calibration record plate out 3/64 inches from stop.

h. With a screwdriver or similar tool, push the transverse platform over to the opposite stop of the one that was used in Step 5.1.5.33.e. Remove the tool rapidly and cleanly to get repeatable results.

i. Repeat Step 5.1.5.33.h five times to ensure the maximum overshoot is obtained.

j. Remove the transverse calibration record plate using the plate puller.

k. Using a microscope or eye loupe measure the values for the following:

1). The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.33.e.

2) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.33.e.

3) The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.33.h.

4) The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.33.h.

l. Insert the Adjusted values in the equation shown on: Attachment 2 at Step 5.1.5.43 but do not write on Attachment 2.

1) Perform the calculation.

2) Determine the overshoot percentages.

m. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.33.1 above to obtain the maximum overshoot percentage.

34. Blacken the calibration record plate surface with the smoke from a candle.

35. Insert the calibration record plate into the support assembly.

36. With a screwdriver or similar tool, push the transverse platform over to the stop. Remove the tool rapidly and cleanly to get repeatable results.

37. Repeat Step 5.1.5.36 five times to ensure the maximum overshoot is obtained.

@ 38. Pull transverse calibration record plate t 3/64 inches from stop. Attachment 2.

39. With a screwdriver or similar tool, push the transverse platform over to the opposite stop of the one that was used in Step 5.1.5.36. Remove the tool rapidly and cleanly to get repeatable results.

40 Repeat Step 5.1.5.39 five times to ensure the maximum overshoot is obtained.

41. Remove the transverse calibration record plate using the plate puller.

42. Using a microscope or eye loupe measure and record the AS LEFT values for the following: Attachment 2.

@ a. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.36.

@ b. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.36.

@ c. The distance from the zero line to the maximum overshoot displacement for the line scribed in Step 5.1.5.39.

@ d. The distance from the zero line to the maximum displacement for the line scribed in Step 5.1.5.39.

43. Insert the AS LEFT values in the equation: Attachment 2.

@ a. Perform the calculation.

$@ b. Record the AS LEFT overshoot percentages.

@ 44. Independently verify the calculation in Step 5.1.5.43.a. Attachment 2.

$@ 45. Average the two (2) overshoot percentages from the results of equation in Step 5.1.5.43.b to obtain the maximum overshoot percentage. Attachment 2.

<u>NOTE</u>: The maximum overshoot percentages is equal to the percentage of damping.

@ 46. Independently verify the calculation in Step 5.1.5.45. Attachment 2.

$@ 47. Record the AS LEFT maximum overshoot percentage to the data table. Attachment 2.

5.1.6 <u>Recorder Sensitivity Calibration Check - As Left</u>

<u>NOTE</u>: Vertical acceleration sensitivity AS LEFT values will be obtained by performing the following steps.

1. Place the recorder on a flat horizontal surface in the normal operating position.

2. Blacken the calibration record plate surface with the smoke from a candle.

3. Insert the calibration record plate irto the support assembly.

4. Gently rotate the recorder 180 degrees (upside down) and remove the calibration record plate with the plate puller.

5. Using a microscope or eye loupe measure the distance from the zero line to the mark made at 180 degrees.

NOTE: This distance is the vertical displacement which represents a two (2) g's static load.

@ 6. Record the AS LEFT vertical displacement. Attachment 2.

7. Insert the vertical displacement in the equation on Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS LEFT vertical acceleration sensitivity to the data table. Attachment 2.

@ 8. Independently verify the calculation in Step 5.1.6.7.a. Attachment 2.

NOTE: Longitudinal acceleration sensitivity AS LEFT will be obtained by performing the following steps.

9. Place the recorder on a flat horizontal surface, in the normal operating position.

10. Blacken the calibration record plate surface with the smoke from a candle.

11. Insert the calibration record plate into the support assembly

12. Perform the following:

a. Gently rotate the recorder 90 degrees clockwise (on to one end of the recorder).
b. Move the record plate in and out slightly.
c. Gently rotate the recorder 180 degrees counterclockwise on to the opposite end of the recorder.
d. Remove the calibration record plate with the plate puller.

13. Using a microscope or eye loupe measure the distance from the mark made at 90 degrees to the mark made at 180 degrees.

NOTE: This distance is the longitudinal displacement which represents a peak-to-peak load of two (2) g's.

@ 14. Record the AS LEFT longitudinal displacement on Attachment 2.

15. Insert the longitudinal displacement in the equation. Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS LEFT longitudinal acceleration sensitivity to the data table. Attachment 2.

@ 16. Independently verify the calculation in Step 5.1.6.15.a. Attachment 2.

NOTE: Transverse acceleration sensitivity AS LEFT values will be obtained by performing the following steps.

17. Place the recorder on a flat horizontal surface, in the normal operating position.

18. Blacken the calibration record plate surface with the smoke from a candle.

19. Insert the calibration record plate into the support assembly.

20. Perform the following:

a. Gently rotate the recorder 90 degrees clockwise (on to one side of the recorder).
b. Move the record plate in and out slightly.
c. Gently rotate the recorder 180 degrees counterclockwise (on to the opposite end of the recorder).
d. Remove the calibration record plate with the plate puller.

21. Using a microscope or eye loupe measure the distance from the mark made at 90 degrees to the mark made at 180 degrees.

NOTE: This distance is the transverse displacement, which represents a peak-to-peak load of two (2) g's.

@ 22. Record the AS LEFT transverse displacement. Attachment 2.

23. Insert the transverse displacement in the equation. Attachment 2.

@ a. Perform the calculation.
$@ b. Record the AS LEFT transverse acceleration sensitivity to the data table. Attachment 2.

@ 24. Independently verify the calculation in Step 5.1.6.23.a. Attachment 2.

5.1.7 Restoration of Equipment

1. Remove and inspect desiccent.

NOTE: Dry desiccent is blue and moist desiccent is pink.

2. Replace desiccent if necessary.

3. Re-install the desiccent container in the hole, slide the washer over and tighten the screw to secure the desiccent container.

@ 4. Re-install the calibration record plates for each sensor. Attachment 2.

5. Re-install the cover and side access plugs.

@ 6. Using the installation drawings, mount D51-R120. Attachment 2.

@ 7. Independently verify D51-R120 is mounted per installation drawings. Attachment 2.

@ 8. Torque recorder mounting screw to 50 IN LBS. Attachment 2.

@ 9. Independently verify recorder mounting screw is torqued. Attachment 2.

@ 10. Remove the access plugs and replace the calibration set of record plates, with the operational set of record plates. Attachment 2.

NOTE: The operational set of record plates must be free of smudges.

11. Re-install the access plugs.

@ 12. Inform the Supervising Operator of channel operability and record time and date. Attachment 2.

5.2 Plant/System Restoration

@ 1. Complete the System Restoration Checklist on Attachment 3 using the methods of Independent Verification. Upon completion inform Supervising Operator of system restoration.

5.3 Acceptance Criteria

1. Satisfactory completion of the surveillance will be based on Technical Specification items (marked with dollar sign) only.

2. If the AS FOUND/AS LEFT values on the Data Sheet exceed the Allowable Values or if any Technical Specification required items as indicated by dollar signs ($) on the data sheet have not been performed satisfactorily, notify the Unit Supervisor.

3. If any other items checked in this surveillance did not perform satisfactorily, notify the applicable Supervisor.

@ 4. Check the appropriate block on the Data Package Cover Sheet, as to whether the test results were acceptable or unacceptable and obtain Unit Supervisor's signature.

5.4 Records

The following documents are generated by this instruction:

Quality Assurance Records

Data Package Cover Sheet
Prerequisite Sign-Off Sheet
Data Sheets
System Restoration Checklist

Non Quality Records

None

Record identification and disposition are accomplished in accordance with the Records Retention/Disposition Schedule (RR/DS) and handled in accordance with PAP-1701, Plant Records Management.

6.0 REFERENCES

6.1 Perry Plant Technical Specifications.

6.2 Final Safety and Analysis Report - Volume 7, Section 3.7.4.

6.3 Engdahl Peak Acceleration Recorder Model PAR400. Operation and Maintenance Manual Number 400900 Rev. 6.

6.4 Drawing D-806-027
D-814-663
D-814-663-906

6.5 GMI-0021-General Torquing.

7.0 ATTACHMENTS

7.1 Attachment 1 - Prerequisite Sign-Off Sheet.

7.2 Attachment 2 - Data Sheets.

7.3 Attachment 3 - System Restoration Checklist.

Triaxial Peak Accelerograph Channel
Calibration for D51-R120
(Reactor Recirculation Pump)
Prerequisite Sign-Off Sheet

		Initials
4.0.3.a.	Information tag for D51-R120 (DW-583-145) placed on mounting location removed for performance of SVI-D51-T0289-A.	* MAH
4.0.4	An RWP is in effect covering this instruction.	NA
4.0.5	Calibration Due Date is current on all test instruments.	MAH

Performed by:	Signature	Initials	Date
	Mark A. Heller	MAH	2/19/86
	Bryan L. Clark	BLC	2/19/86

* on from previously failed SVI

Triaxial Peak Accelerograph Channel
Calibration for D51-R120
(Reactor Recirculation Pump)
Data Sheet

SECTION 5.1.1

Initials

2. Supervising Operator notified of channel inoperability and Action Statement 3.3.7.2.a.
1340 / 2/19/86
Time Date
MAA

3. Exterior of D51-R120 (DW-583-145) inspected; any discrepancies found are noted in comments section and Supervising Operator notified. *

5. Record plates are removed and zero lines coincide. *

6. Calibration set of record plates installed. *

8. Recorder D51-R120 removed. *

11. Interior of D51-R120 inspected; any discrepancies found are noted in comments section and Unit Supervisor notified. *

SECTION 5.1.2

6. AS FOUND vertical displacement 0.126 IN. MAA

7.a. $\frac{2}{\text{vertical displacement}} = \frac{2}{0.126\ \text{IN}} = 15.9$ g/IN. MAA

Vertical Sensitivity

	STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	
$	5.1.2.7.b.	15.9 g/IN	N/A	14.66 g/IN to 16.54 g/IN	MAA
$	5.1.6.7.b.	N/A	15.9 g/IN		MAA

8. Independently verify the calculation in step 5.1.2.7.a.

Independent Verifier: [signature]

$ Denotes Technical Specification requirement.

*- The recorder was removed from the previously failed SVI. This is now a new recorder
MAA 2/19/86

SECTION 5.1.2 (Cont.)

Initials

14. AS FOUND longitudinal displacement 0.150 IN. MAA

15.a. $\frac{2}{\text{longitudinal displacement}} = \frac{2}{0.150\ \text{IN}} = 13.3$ g/IN. MAA

Longitudinal Sensitivity

STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	
$ 5.1.2.15.b.	13.3 g/IN	N/A	12.69 g/IN to 14.31 g/IN	MAA
$ 5.1.6.15.b.	N/A	13.3 g/IN		MAA

16. Independently verify the calculation in step 5.1.2.15.a.

Independent Verifier: BB

22. AS FOUND transverse displacement 0.128 IN. MAA

23.a. $\frac{2}{\text{transverse displacement}} = \frac{2}{0.128\ \text{IN}} = 15.6$ g/IN. MAA

Transverse Sensitivity

STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	
$ 5.1.2.23.b.	15.6 g/IN	N/A	14.57 g/IN to 16.43 g/IN	MAA
$ 5.1.6.23.b.	N/A	15.6 g/IN		MAA

24. Independently verify the calculation in step 5.1.2.23.a.

Independent Verifier: BB

Section 5.1.3

6. Calibration record plated pulled out 3/64 inches. MAA

10.a. AS FOUND maximum overshoot displacement 0.020 IN. MAA

10.b. AS FOUND maximum displacement 0.155 IN MAA

10.c. AS FOUND maximum overshoot displacement 0.020 IN. MAA

10.d. AS FOUND maximum displacement 0.149 IN. MAA

$ Denotes Technical Specification requirement.

SECTION 5.1.3.(Cont.) Initials

11.a. $\frac{\text{(step 10.a.)}}{\text{(step 10.b.)}} = \frac{\text{maximum overshoot displacement}}{\text{maximum displacement}} =$

$\frac{0.020 \text{ IN}}{0.155 \text{ IN}} = .13 \times 100\% = 13\%$ MAA

$\frac{\text{(step 10.c.)}}{\text{(step 10.d.)}} = \frac{\text{maximum overshoot displacement}}{\text{maximum displacement}} =$

$\frac{0.020 \text{ IN}}{0.149 \text{ IN}} = .13 \times 100\% = 13\%$ MAA

$ 11.b. AS FOUND overshoot percentages 13 % MAA
13 % MAA

12. Independently verify the calculations in step 5.1.3.11.a.
Independent Verifier: BJ

$ 13. $\frac{\text{(Overshoot percentage + Overshoot percentage)}}{2} =$

$\frac{(13\% + 13\%)}{2} = 13\%$ MAA

14. Independently verify the calculation in step 5.1.3.13.
Independent Verifier BJ

Vertical Damping

	STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	
$	5.1.3.15.	.13= 55 %	N/A	.13 Overshoot = 55% Damping to	MAA
$	5.1.5.15.	N/A	.13= 55%	.05 Overshoot = 70% Damping	MAA

21. Calibration record plated pulled out 3/64 inches. MAA

25.a. AS FOUND maximum overshoot displacement 0.020 IN. MAA

25.b. AS FOUND maximum displacement 0.195 IN. MAA

25.c. AS FOUND maximum overshoot displacement 0.025 IN. MAA

25.d. AS FOUND maximum displacement 0.185 IN. MAA

$ Denotes Technical Specification requirement.

SECTION 5.1.3 (Cont.) Initials

26.a. (step 25.a.) / (step 25.b.) = maximum overshoot displacement / maximum displacement =

0.020 IN / 0.195 IN = .10 x 100% = 10 % MAH

(step 25.c.) / (step 25.d.) = maximum overshoot displacement / maximum displacement =

0.025 IN / 0.185 IN = .14 x 100% = 14 % MAH

$ 26.b. AS FOUND overshoot percentages 10 % MAH
14 % MAH

27. Independently verify the calculations in step 5.1.3.26.a.
Independent Verifier BG

$ 28. (Overshoot percentage + Overshoot percentage) / 2 =

(10 % + 14 %) / 2 = 12 % MAH

29. Independently verify the calculations in step 5.1.3.28.
Independent Verifier: BG

Longitudinal Damping

	STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	
$	5.1.3.30.	.12 57 %	N/A	.13 Overshoot = 55% Damping to .05 Overshoot = 70% Damping	MAH
$	5.1.5.31.	N/A	.12 57 %		MAH

36. Calibration record plated pulled out 3/64 inches. MAH

40.a. AS FOUND maximum overshoot displacement 0.024 IN. MAH

40.b. AS FOUND maximum displacement 0.193 IN. MAH

40.c. AS FOUND maximum overshoot displacement 0.023 IN. MAH

40.d. AS FOUND maximum displacement 0.189 IN. MAH

$ Denotes Technical Specification requirement.

SECTION 5.1.3 (Cont.) Initials

41.a. (step 40.a.) / (step 40.b.) = maximum overshoot displacement / maximum displacement =
0.024 IN / 0.193 IN = .12 x 100% = 12 % MAM

(step 40.c.) / (step 40.d.) = maximum overshoot displacement / maximum displacement =
0.023 IN / 0.189 IN = .12 x 100% = 12 % MAA

$ 41.b. AS FOUND overshoot percentages 12 % MAA
12 % MAM

42. Independently verify the calculations in step 5.1.3.41.a.
Independent Verifier: BG

$ 43. (Overshoot percentage + Overshoot percentage) / 2 =
(12 % + 12 %) / 2 = 12 % MAA

44. Independently verify the calculation in step 5.1.3.43.
Independent Verifier: BG

Transverse Damping

STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE
5.1.3.45.	.12= 57 %	N/A	.13 Overshoot = 55% Damping to
5.1.5.47.	N/A	.12= 57 %	.05 Overshoot = 70% Damping

$ (5.1.3.45.) MAA
$ (5.1.5.47.) MAM

$ Denotes Technical Specification requirement.

SECTION 5.1.4

Initials

Scriber Preload

	STEP	AS FOUND	AS LEFT	ALLOWABLE VALUE	Initials
$	4.a.	.052	.052	0.052 IN *	MAB
				to	
$	9.a.	IN	IN	0.082 IN *	N/A
$	4.b.	.062	.062	0.052 IN *	MAA
				to	
$	9.b.	IN	IN	0.082 IN *	N/A
$	4.c.	.062	.062	0.052 IN *	MAA
				to	
$	9.c.	IN	IN	0.082 IN *	N/A

SECTION 5.1.5

1.a. Damping Adjustment made (Vertical). N/A

6. Calibration record plated pulled out 3/64 inches. N/A

10.a. AS LEFT maximum overshoot displacement 0.___ IN. N/A

10.b. AS LEFT maximum displacement 0.___ IN. N/A

10.c. AS LEFT maximum overshoot displacement 0.___ IN. N/A

10.d. AS LEFT maximum displacement 0.___ IN. N/A

11.a. (step 10.a.) / (step 10.b.) = maximum overshoot displacement / maximum displacement =

0.___ IN / 0.___ IN = ______ x 100% = ________ % N/A

(step 10.c.) / (step 10.d.) = maximum overshoot displacement / maximum displacement =

0.___ IN / 0.___ IN = ______ x 100% = ________ % N/A

$ 11.b. AS LEFT overshoot percentages ________ % N/A
________ % N/A

* The maximum step on scriber preload gauge is equal to 0.052 IN and the minimum step is equal to 0.082 IN.

$ Denotes Technical Specification requirement.

SECTION 5.1.5 (Cont.) Initials

12. Independently verify the calculations in step 5.1.5.11.a.

Independent Verifier: N/A

$ 13. $\frac{\text{(Overshoot percentage + Overshoot percentage)}}{2}$ =

$\frac{(\_\_\_\_\_\% + \_\_\_\_\_\%)}{2}$ = ______________% N/A

14. Independently verify the calculation in step 5.1.5.13.

Independent Verifier: N/A

17.a. Damping Adjustment made (Longitudinal). N/A

22. Calibration record plated pulled out 3/64 inches. N/A

26.a. AS LEFT maximum overshoot displacement 0.___ IN. N/A

26.b. AS LEFT maximum displacement 0.___ IN. N/A

26.c. AS LEFT maximum overshoot displacement 0.___ IN. N/A

26.d. AS LEFT maximum displacement 0.___ IN. N/A

27.a. $\frac{\text{(step 26.a.)}}{\text{(step 26.b.)}}$ = $\frac{\text{maximum overshoot displacement}}{\text{maximum displacement}}$ =

$\frac{0.\_\_\_ \text{ IN}}{0.\_\_\_ \text{ IN}}$ = ________ x 100% = __________% N/A

$\frac{\text{(step 26.c.)}}{\text{(step 26.d.)}}$ = $\frac{\text{maximum overshoot displacement}}{\text{maximum displacement}}$ =

$\frac{0.\_\_\_ \text{ IN}}{0.\_\_\_ \text{ IN}}$ = ________ x 100% = __________% N/A

$ 27.b. AS LEFT overshoot percentages __________% N/A
__________% N/A

28. Independently verify the calculations in step 5.1.5.27.a.

Independent Verifier: N/A

$ Denotes Technical Specification requirement.

SECTION 5.1.5 (Cont.) Initials

$ 29. (Overshoot percentage + Overshoot percentage) / 2 =
(% + %) / 2 = ______ % N/A

30. Independently verify the calculations in step 5.1.5.29.
Independent Verifier: N/A

33.a. Damping Adjustment made (Transverse). N/A

38. Calibration record plated pulled out 3/64 inches. N/A

42.a. AS LEFT maximum overshoot displacement 0. IN. N/A

42.b. AS LEFT maximum displacement 0. IN. N/A

42.c. AS LEFT maximum overshoot displacement 0. IN. N/A

42.d. AS LEFT maximum displacement 0. IN. N/A

43.a. (step 42.a.) / (step 42.b.) = maximum overshoot displacement / maximum displacement =
0. IN / 0. IN = ______ x 100% = ______ % N/A

(step 42.c.) / (step 42.d.) = maximum overshoot displacement / maximum displacement =
0. IN / 0. IN = ______ x 100% = ______ % N/A

$ 43.b. AS LEFT overshoot percentages ______ % N/A
______ % N/A

44. Independently verify the calculations in step 5.1.5.43.a.
Independent Verifier: N/A

$ 45. (Overshoot percentage + Overshoot percentage) / 2 =
(% + %) / 2 = ______ % N/A

$ Denotes Technical Specification requirement.

SECTION 5.1.5 (Cont.) Initials

46. Independently verify the calculation in step 5.1.5.45.
Independent Verifier: N/A

$ 47. AS LEFT maximum overshoot percentage transposed to data table on Attachment 2. N/A

SECTION 5.1.6

6. AS LEFT vertical displacement 0.126 IN. MAA

7.a. $\frac{2}{\text{vertical displacement}} = \frac{2}{0.126\ \text{IN}} = 15.9$ g/IN. MAA

8. Independently verify the calculation in step 5.1.6.7.a.
Independent Verifier: BS

14. AS LEFT longitudinal displacement 0.150 IN. MAA

15.a. $\frac{2}{\text{longitudinal displacement}} = \frac{2}{0.150\ \text{IN}} = 13.3$ g/IN. MAA

$ 15.b. AS LEFT longitudinal acceleration sensitivity transposed to data table on Attachment 2. MAA

16. Independently verify the calculation in step 5.1.6.15.a.
Independent Verifier: BS

22. AS LEFT transverse displacement 0.128 IN. MAA

$ 23.a. $\frac{2}{\text{transverse displacement}} = \frac{2}{0.128\ \text{IN}} = 15.6$ g/IN. MAA

23.b. AS LEFT transverse acceleration sensitivity transposed to data table on Attachment 2. MAA

24. Independently verify the calculation in step 5.1.6.23.a.
Independent Verifier: BS

$ Denotes Technical Specification requirement.

SECTION 5.1.7

		Initials
4.	Calibration record plates installed.	MAA
6.	D51-R120 re-installed per installation drawings.	RBS
7.	Independent Verification: D51-R120 re-installed.	MAA
8.	D51-R120 mounting screw torqued to 50 IN LBS.	RBS
9.	Independent Verification: mounting screw torqued.	MAA
10.	The calibration record plates removed and operational record plates are installed.	MAA
12.	Supervising Operator notified of channel operability. 1605 (Time) / 2/19/86 (Date)	MAA

Section 4.0

TEST INSTRUMENTS

	MPL NUMBER	CAL DATE	CAL DUE DATE	INT
Scriber Preload Gauge	L70-V048M	9/24/85	3/24/86	MAA
Magnifier	L70-V048J	N/A	N/A	MAA
Microscope	L70-V048H	N/A	N/A	MAA
Microscope	L70-V048I	N/A	N/A	MAA
Torque Wrench	L70-R870	1/22/86	2/22/86	MAA

$ Denotes Technical Specification requirement.

COMMENTS: Plates installed 1398

Performed By:	Byron L. Andrie	BLA	2/19/86
	~~MAH~~ Mark A. Hille	MAH	2/19/86
Independent Verifier:	Byron L. Andrie	BLA	2/19/86
	Mark A. Hille	MAH	2/19/86
	Signature	Initials	Date

$ Denotes Technical Specification requirement.

System Restoration Checklist

Title: Triaxial Peak Accelerographs Channel Calibration for D51-R120 (Reactor Recirculation Pump)

Verified By: Bryan S. Andrin / BSA 2/19/86
Mark A. Hill / MAH 2/19/86

Signature/Initials Date

LOCATION	COMPONENT MPL OR NAME	REQUIRED POSITION	INITIALS FIRST VERIF	INITIALS SECOND VERIF	REMARKS
DW-583-145	Access plugs and cover on D51-R120	installed	BSA	MAH	N/A
DW-583-145	Longitudinal access set screw on D51-R120	installed	BSA	MAH	N/A

COMMENTS: N/A