STANDARD PROCEDURE	FIRM: Aican Rolled Products Company Fairmont Plant	S.P. NO. 28
SUBJECT: DAMAGE TO ACURAY GAUGES		DATE ISSUED 8-1-87

These procedures are to be followed upon major damage to an AccuRay 7000 gauge frame:

1. The Plant Electrician is called when the gauge is damaged or does not operate properly.

2. If there is major structural damage, call:

   Jack Rush, Jr., Ext. 167 or 367-0150 or

   Gene Legg, Ext. 244 or 363-5162

3. The plant survey meter will be used to determine if any radiation is leaking. Appropriate steps will be taken to eliminate excessive exposure by any personnel.

4. If any excess radiation is present, the gauge will be isolated, and AccuRay will be contacted for repair or disposal.

5. If required, as per Paragraph 20.403 or 10CFR Part 20, notification will be made by one of the following:

   Jack Rush, Jr., Maintenance Engineer

   Gene Legg, Sr. Process Engineer

   Michael Zimniski, Manager - Engineering & Maintenance

   Anthony Carvillano, Personnel Manager

6. U. S. Nuclear Regulatory Commission Regional Office to notify in response to the requirements:

   USNRC
   101 Marietta Street, NW
   Suite 2900
   Atlanta, GA 30323

   (404) 331-4503

ATTACHMENT #3

AUTHORIZED BY	PREPARED BY	DATE PREPARED	PAGE
	Jack R. Rush, Jr.	8-1-87	1 of 1

GAUGE INSTALLATION SURVEY

Gauge Location : _____

Device Model : _____

Device Serial No. : _____

Source Serial No. : _____

Isotope : _____

Quantity : _____

Type of Installation: _____
(Initial, reinstallation,
source change, etc.)

1. The radiation field at 12 inches from the gauge or process bounds at locations which might be occupied by personnel while the gauge is measuring has been determined to be _____mR/hr. The maximum distance at any time to 2mR/hr is _____feet; no continuously occupied station should be established within this distance.

2. The shutter mechanism and indicators have been checked for proper operation. The radioactive source has been leak tested as per the attached procedure.

   Shutter operation is _____ (okey, not okey).

   Wipe test is _____ (negative, positive) _____ mCi.

Signature _____ Date _____

GAUGE INSTALLATION

The placing, or supervising the placement of, the gauge in a position of use is the "installation" in this procedure. Each separate placement or relocation is considered as a new installation.

Procedure:

1. Inspect the gauge frame to determine if damage has been done during transport.

2. Visibly inspect the gauge and conduct a brief radiation survey to ensure the security of the source and shutter.

3. If visible damage is evident, the gauge should be wipe-tested for contamination. Damage or any degree of contamination precludes installation, and AccuRay Corporation will be contacted.

4. The installer shall assure that the gauge shutter is closed and supervise the mounting of the gauge in the location it is to be used.

5. A radiation survey will be made upon installation in accordance with the attached procedure and recorded on a copy of the Gauge Installation Survey.

6. Upon installation, a wipe-test of the seams and windows will be completed according to the attached procedure and recorded on the Gauge Installation Survey.

7. The completed Gauge Installation Survey will be kept with the gauge records.

8. After completing the radiation survey and the wipe-test for each installation, the Gauge Installation Survey is to be dated and signed.

SURVEY PROCEDURE

1. Turn on survey meter; check battery, verify unit calibration using the supplied check source, and open the shield on the G. M. tube.

2. Determine the radiation field at 12 inches from the gauge or process bounds at locations which might be occupied by personnel while the gauge is measuring.

3. Determine the maximum distance at any time to 2mR/hr. This distance should correspond to the distance specified on the gauge radiation label. Ensure that no continuously occupied workstation is within this distance.

4. Record values on the Gauge Installation Survey.

WIPE-TEST PROCEDURE

The gauge should not be dismantled or disassembled in order to wipe-test. Testing of the external seams and windows is adequate. A Texas Nuclear Model 2651 portable survey meter or equivalent that has the necessary sensitivity to detect 0.005 uCi or less should be used.

1. Operate the shutter several times to verify proper operation. Record results on the Gauge Installation Survey. If shutter mechanism appears faulty, AccuRay will be contacted for repair.

2. Open the shield on the G. M. survey meter, Model 2651 or its equivalent; and with the use of a standard source, check calibration of the unit on the proper scale.

3. With the shutter closed, wipe the seam in the detector housing, the seam in the source housing, around the window in the detector housing, and around the window in the source housing with a different cotton-tipped applicator. The applicator should be slightly moistened with water, alcohol, or other solvent. Care should be taken not to touch the tips of the applicators with the fingers following the wiping operation.

4. Carefully place the swab end of the applicator as closely to the window of the G. M. tube on the survey meter as possible and read the results. The degree of removable contamination can be evaluated by the following method:

   a. Turn on the survey meter, check battery, verify unit operation using the supplied check source, and open the shield on the G. M. tube.

   b. Place the certified standard source disk, New England Nuclear NES 9073, 0.006 mCi Sr 90 beta disk or its equivalent, on a clean flat surface and position the center of the open G. M. tube over it as closely as possible. Set the range selector to give an approximate mid-scale reading. Note and record the observed reading, M1 (in either cpm or mR/hr.).

c. Remove the standard source a few feet away. With the G. M. probe in the same position, note and record the background (Bkg.) radiation in the same units as M1.

d. Each of the swab ends of the cotton-tipped applicators used to wipe the gauge is in turn placed in the same geometrical position as the above-noted standard. Note and record the observed meter reading M2. and M2 are taken in the same units.

e. To determine the degree of contamination in microcuries, a simple expression of proportionality is used:

$$\frac{A}{M1} = \frac{C}{M2} \quad \text{where}$$

A = Activity of standard source in microcuries (uCi)

C = Amount of removable contamination in microcuries (uCi)

M1 = Survey meter reading with calibrated source in place in either milliroetgens per hour (mR/hr.) or counts per minute (cpm)

M2 = Survey meter reading with swab in place in either milliroentgens per hour (mR/hr.) or counts per minute (cpm)

Bkg. = Survey meter reading with neither source nor swab near the G. M. probe in either milliroentgens per hour (mR/hr.) or counts per minute (cpm). This should be subtracted from both M1 and M2; however, the result can't be zero. Background will be the lower limit of the measurement.

5. The results of this test will be recorded on the Gauge Installation Survey. The maximum amount of radioactivity detected on any one of the wipes will be the value recorded.

6. If radioactivity is detected greater than 0.005 uCi, AccuRay will be notified, and operation of the gauge will be suspended immediately until it has been repaired by AccuRay.

SURVEY METER CALIBRATION PROCEDURE

1. Set the MR/HR control at Bat. SET and allow the meter needle to reach equilibrium. Adjust the BAT. ADJ. control, if necessary, to bring the meter needle to the center of the green bar region.

2. Open the side window beta shield and place the check source (0.9 MR/H) against the probe at the geometrical center of the window.

3. Set the MR/HR control to a range that permits maximum on-scale meter reading (1 MR/HR), and note the average value about which the meter needle fluctuates.

4. If the average value is not within 5 percent of 0.9 MR/H, adjust the CAL. control until the meter reading agrees.

5. The meter's calibration is to be checked before every use.

6. If the instrument does not operate properly, it will be sent to an authorized repair firm which will be contracted to make all necessary repairs.

Conditions

1. The meter will be calibrated annually and after servicing.

2. Calibration records will be kept for two years after each calibration.

3. A calibration chart will be attached to the survey meter showing the date of the last calibration, the due date for the next calibration, and the results of the calibration.

ATTACHMENT #5