VOLUME 9A
IMPLEMENTING PROCEDURES-5D
BIG ROCK POINT NUCLEAR PLANT
SITE EMERGENCY PLAN

<u>PROCEDURE TO DETERMINE EXTENT OF CORE</u>
<u>DAMAGE (FOR 0% TO 100% CORE MELTDOWN)</u>
Procedure 5D

1.0 PURPOSE

1.1 To provide a method for estimating the degree of core damage during accident conditions. If radiation levels are low enough, sampling of core spray heat exchanger water may be performed (per EPIP 5E) for determining up to 10% core meltdown.

2.0 METHOD

2.1 The degree of core damage will be estimated using the ionization chamber readout (in the air compressor room) and the attached graphs (Attachments 1 and 2) of dose rate versus time.

3.0 TECHNICAL SPECIFICATIONS AND OTHER REQUIREMENTS

3.1 Letter from D P Hoffman to D K Ziemann, dated December 27, 1979; <u>Big Rock Point Plant - Requirements Resulting from Review of Three</u> <u>Mile Island 2 Accident</u>. Actions taken in response to Section 2.1.8.a, Page 21.

3.2 The containment monitor shall be calibrated at least quarterly.

4.0 SPECIAL EQUIPMENT

4.1 A high range ionization chamber (located in the cable penetration room, approximately four feet off the floor and six feet from the containment).

4.2 A local readout with range switch (located in the air compressor room).

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4.3 Graphs of ionization chamber readout for 100% fuel failure in R/h versus time (Attachments 1 and 2).

5.0 PRECAUTIONS AND LIMITATIONS

5.1 Radiological surveys shall be conducted as necessary to ensure the radiation limits of 10 CFR 20 are not exceeded during the performance of this procedure.

6.0 PROCEDURE

6.1 In the air compressor room, record the following ionization chamber information on the Extent of Core Damage Data Sheet (Attachment 3):

6.1.1. Date (Location 1).

6.1.2. Time (Location 2).

6.1.3. Initials of person obtaining information (Location 3).

6.1.4. Reading of ionization chamber (Location 4).

NOTE: This instrument reads in KR/h. Multiply KR/h by 1,000 to obtain R/h.

6.1.5. Time elapsed from t=0 (time elapsed since reactor trip) (Location 5).

6.2 Using the appropriate graph of R/h with 100% fuel failure versus time - post accident (Attachment 1 or 2), record on Attachment 3 (Location 6) the R/h value at the time elapsed since reactor trip (t=0 at reactor trip).

6.3 Divide Step 6.1.4 by Step 6.2 and multiply by 100 to determine the percent of core damage. Record this on Attachment 3 (Location 7).

6.4 Example:

An accident has occurred that requires an estimation of the percentage of core damage.

a. The ionization chamber readout is 1×10^4 R/h at one hour after t=0 (Step 6.14).

b. The attached graphs give a value of 1.7×10^4 R/h at one hour from t=0 (Step 6.2).

c. $\frac{1.0 \times 10^4 \text{ R/h}}{1.7 \times 10^4 \text{ R/h}} = 0.59$

   $(0.59)(100) = 59\%$ (Step 6.3)

   The extent of core damage is 59%.

EMERGENCY PLAN IMPLEMENTING PROCEDURE 5D,
ATTACHMENT 5D-1

Dose Rate (R/hr)
vs
Time after Shutdown (Hrs)
for
100% Fuel Failure

Dose Rate (R/hr)

Time Post-Accident (Hours)

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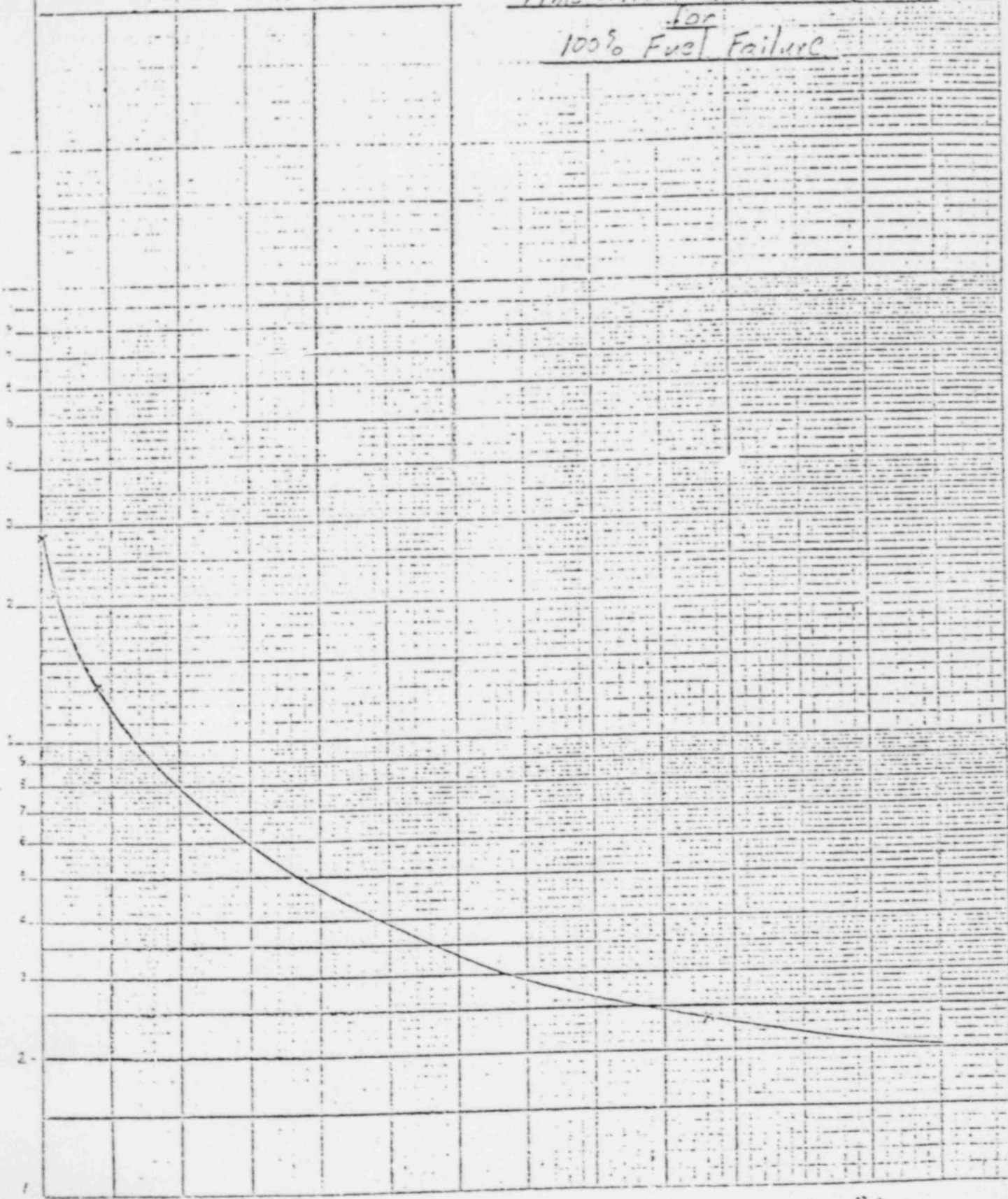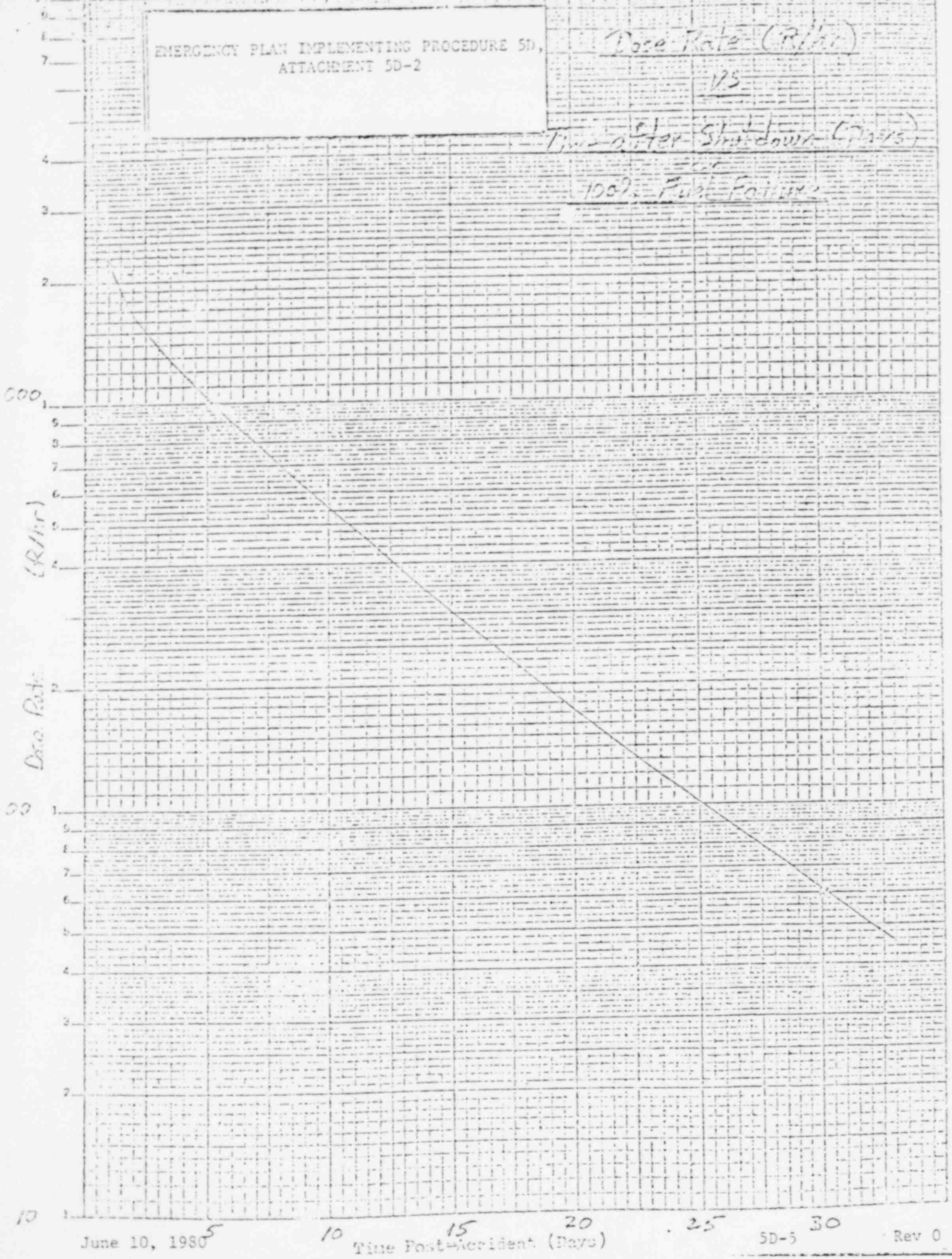
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EMERGENCY PLAN IMPLEMENTING PROCEDURE 5D,
ATTACHMENT 5D-2

Dose Rate (R/hr)

vs

Time after Shutdown (Days)
for
100% Fuel Failure

Dose Rate (R/hr)

Time Post-Accident (Days)

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IMPLEMENTING PROCEDURE 5D, ATTACHMENT 5D-3

EXTENT OF CORE DAMAGE DATA SHEET

Date 1	Time 2	Initial 3	Monitor Reading (R/h) 4	Time from t=0 5	Graph Reading (R/h) 6	$\left(\dfrac{\text{Step } 6.1.4}{\text{Step } 6.2}\right)$ 100 = % Core Damage 7

Calculated by _____

Reviewed by Plant Health Physicist _____

Reviewed by Site Emergency Director _____

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June 10, 1980

prph80-0053e-97

Rev 0