

To: Foley, Phillip W.
Subject: Dose Reconstruction at PGDP

Phillip,

When we discuss dose and exposure at PGDP, it is very difficult to qualify and quantify any data from the past. During the PEM up rating from 1975 to 1980, Instrument Mechanics routinely used high radiation sources to determine functionality of the radiation monitoring systems in the plant. We used a fishing pole to suspend the Cobalt 60 and other sources in front of the 2 MR detectors, argon gamma graphs, and CAAS clusters. The standard practice when using the high radiation source from the pipe well and lead pot was to remove your badge and put it in the truck. We were told by our supervision that it would mess up our dose monitoring for the period and we needed to keep the badge away from the sources. We had to retrieve the source from the lead pot and attach it to the fishing pole with our bare hands while leaning over the pot. All this detail is to illustrate that retrievable dose accumulation data is at best unreliable, and in most cases demonstrably low. I personally performed these jobs and there are other I&C mechanics that can verify this as fact. Attached is a copy of the source inventory from 1979.

2/2/05

S&EC DEPT 1/11/74

RCB Management System

- ⑤ New Co-60 source
- ⑥ New NAD's in - R.F. S. to expose in Reactor
- ③ - Film Badge - Nuc. Div. Badge -

BEM

1. Retraining Chem Op Supv. on use of (38 inst & Time Limits)
2. HWP Audits - Familiarity w HWP SPP -

KAD

1. Film Badge
2. Gen White has a program for Annual report data
3. Nobody knows how many badges went into the land fill (BEM ~ 40 badges missing)

AWR ① Made Periodic Safety Reports

- ② Safety Audit on C-400
- " " " " C-420
- ③ F₂ Header test still not made - Water not yet tried -
- ④ Code for Color for quarters -

(1) working to get Audio & Resp. tra Data Proc. scheduling.

(2) Purchase Req. in for Resp. Testing - Space (?) prob CCH's space near Credit Union

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INVENTORY AND INSPECTION OF RADIATION SOURCES

October 1979

Location	Source No	Type of Source (s)	Strength (Microcurie)	Storage	Maximum Gamma Radiation @ Surface of Container (mRad/hr)
C-400 Office	37 (1)	226 Ra (In Foil)	0.1	Alnor Dew Pointer (C-9905)	32
C-400 Cylinder Wash Area	40 (1)	226 Ra (In Foil)	0.1	Alnor Dew Pointer (C-6369)	25
C-420 HF Scrubber Inside	35 (1)	137 Cs	1500	Lead Chamber of Ohmart Meter	5
C-420 Office <i>Engineering</i>	36 (1)	241 Am-Be	50	Sealed In Protaprobe	10
C-710 Radio-Chemistry Lab	29* (1)	226 Ra (Salts)	10	Soil Density Meter	150
C-720 Technical Assk. Lab.	15 (1)	226 Ra (Salts)	0.1	Alphatron Gauge on Induction Furnace	45
C-720 Instrument Office	38 (1)	137 Cs	100	Gamma Survey Instrument Calibrator	25
C-720 Industrial X-Ray	42 (1) 43 (1) 45 (1)	226 Ra (In Foil) 226 Ra (In Foil) 60 Co (Metal)	0.1 0.1 1300.0	Alnor Dew Pointer (C-6368) Alnor Dew Pointer (C-25993) Lead Pot	25 25 115
C-721 Calibration Room (Health Physicis and Instrument Maintenance <i>have keys</i>)	1 (1) 4 (1) 5* (1) 11 (1) 16 (1) 31 (1) 39 (1)	60 Co (Metal) 60 Co (Metal) 226 Ra (Salts) 60 Co (Metal) 60 Co (Metal) 60 Co (Metal) 60 Co (Metal)	9.39 4.00 10 41.51 85.48 509.0 785.54	Steel Encased Lead Pot <i>Pipe Well</i> Lead Pot	100 20 10
C-722 Instrument Office	32 (9) 41 (1) 44 (1)	60 Co (Metal Pellets) 226 Ra (In Foil) 137 Cs	4.93 0.1 10.0	Lead Pot Alnor Dew Pointer (C-6367) Ohmart Levelarc 100 Level Meter	25 25 4

29 Stores No. 50-701-1154, Source ID No. 154
5 Stores No. 50-701-1244, Source ID No. 244

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INTERNAL CORRESPONDENCE

NUCLEAR DIVISION

POST OFFICE BOX 1410, PADUCAH, KENTUCKY 42001

To (Name) D. D. Barclay
 Division H. D. Bewley
 Location C. C. Hopkins
 G. T. Hull
 B. T. Kraemer
 J. R. Merriman
 Copy to R. Millican
 C. C. McDowell
 D. K. Riley
 A. M. Tuholsky
 A. K. Yancy
 E. G. Yates
 HP File - RC

Date July 19, 1977

Originating Dept.

Answering letter date

Subject Removal of Radiation
 Sources from Inventory

Listed in Table I are twenty-five encapsulated radiation sources no longer in use. These sources have been embedded in a 55 gallon drum of concrete and deposited in the C-404 solid radioactive waste disposal area. The approximate location is documented by C-400 Chemical Operations.

Approximately 200 mCi of material was disposed of, 135 mCi deleted from inventory and 65 mCi of (Cesium) in a small instrument not on inventory. The total activity in 50 years will be approximately 30 mCi.

The maximum surface reading at the drum was 60 mr/hr and 7 mr/hr at 3 feet. The drum was deposited in the storage area several rows from the outside edge and is totally shielded by other waste material.

A. Davis
Health Physics

KAD:cc

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Reviewed for Classification and UCN By:		
<i>Charles E. Carmichael</i>	<i>10/04/01</i>	
(Derivative Classifier) ADC	(Number) Records Mgmt/USEC	(Date)
(Title)	(Organization)	
Derived from: TG-PGD-1, CG-PGD-5, TG-NNP-1 - <i>ehy-1</i>		
(Source Document or Classification Guide and Date Guide)		
UNCLASSIFIED - NOT UCN.		

REVIEWED FOR
CLASSIFICATION

JP
Date

8-31-99
Date

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TABLE I

RADIATION SOURCES REMOVED FROM INVENTORY

Location	Source No.	Number and Type of Source(s)	Approximate Strength (MilliCurie)	Storage
C-340 Powder Unit 6th Floor	18-19-20	(3) ^{60}Co (Metal)	0.65	Lead Cases
C-340 Powder Unit 5th Floor	21-22-23 24-25-26	(6) ^{60}Co (Metal)	0.65	Lead Cases
C-420 HP Scrubber Roof	10	(1) ^{137}Cs	48	Lead Chamber of Omart Source Unit.
C-420 Control Room Level 1	12	(1) ^{226}Ra (Salts)	0.1	Omart Density Meter
C-710 Radiochemistry Lab	10	(1) ^{90}Sr (Liquid)	16	Glass Bottle in 1-inch wooden block
C-720 Instrument Office	11	(1) ^{60}Co (Metal)	0.71	Lead Pot
C-721 Calibration Room (Health Physics & Instrument Maint. have keys)	2 3	(1) ^{60}Co (Metal) (1) ^{60}Co (Metal)	54.71 1.8	Lead Pot Lead Pot
	6-7-8	(3) ^{60}Co (Metal)	0.65	Lead Pot

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TABLE I (continued)

RADIATION SOURCES REMOVED FROM INVENTORY

Location	Source No.	Number and Type of Source(s)	Approximate Strength (Milliurie)	Storage
C-721 Calibration Rm 13-14 Health Physics &	9	(2) ^{226}Ra (Salts)	1.0	Lead Pot
		(1) ^{60}Co (Metal)	0.65	Lead Pot
	28	(1) ^{60}Co (Liquid)	0.34	Lead Pot
	33	(1) ^{226}Ra	0.5	Sealed in Alphatron Gauge
	34	(1) ^{60}Co (Metal)	0.65	Lead Case

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MEMO

AVOID ORAL INSTRUCTIONS

Date APRIL 7 1978

To BRUCE Mc DOUGAL

D.K. RILEY

I HAVE HAD THE CAMPBELL SHOP PREPARE A
CONCRETE CASE TO BURY 2 TITANIUM SOURCES

#1 - 300 MILLICURIES ORIGINAL IN ~ 1960

#2 - 300 MILLICURIES ORIGINAL IN ~ 1970

THESE WERE PLATED ONTO TITANIUM FOILS INSIDE METAL
HOLDERS.

BURIAL CASE ENCAPSULATED THEM TOGETHER IN A CUBE
ABOUT 1 1/2 FT EACH SIDE. CARL FULLER WILL ARRANGE

BURIAL WITH MIKE WILKINSON

C-404

Signed

CR Beverly

JCN-486
12356 10-70)

Reviewed for Classification and UCNi By:		
<u>Charles E. Cummings</u>	<u>10/04/01</u>	
(Derivative Classifier) ADC	(Number) Records Mgmt/USEC	(Date)
(Title)	(Organization)	
Derived from <u>TG-PGD-1, CG-PGD-5, TG-NNP-1</u>		
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