

8/24/66 Summary 3<sup>30</sup> pm

Charles Brown Gates  
Allred Edward & Burkett  
Stimpson Ellen Neel  
Youngblood Guinn

524-5791

~~Water~~ 68 samples taken random - UCC will ship to 4-12  
(5 Gap) NBL - process material -  
22 ~~100~~ samples to NBL  
46 ~~100~~ " to 4-12

Porting & Labeling  
one gallon water in can  
had C & M sign on outside (+)(1)  
did not show amount -  
label on inside of can stated

1800 gm

130.99 grams	U308	93%	OK for (+)(1)
100.08 "	U diaph	93%	
31.45 "	U308	50%	
126.65 "	U308	93%	

Net 409.17 grams

(Water raid record showed 342 grams)

Summary

55 grams estimated on basis of mercury readings  
by means of ~~Stimpson~~ Sauer Meter 50% efficiency  
(Window size on Sauer 46 cm)  
Product price  $106 \times 10^6$  dpm/gram (red 93%)

## Track out + Laundry

Everyone wears shoes which are worked  
Filters in washers are maintained & if material  
is removed. Trace ants found -

## Water effluents

WANK water 64 Gpm

AVR " 6 "

70 Gpm

Sampler of solutions in chem lot for analysis -  
poured into sewer (500-750,000 gallons of  
Comm water daily)

~~water~~ sewer water from plant goes thru 2  
settling ponds - Sample once monthly  
at #2 pond & in Shoal Creek -

@ 70 Gpm estimate based on analytical data

Highest concentrations noted in 1965-1966

Shoal Creek - 1700 ppb/L (8/3/65)

#2 Settling Pond - 645 ppb/L in the pond on date above

895 ppb/L (9-27-65)

Sample Shoal Creek in 6 different locations -

2 located above VCC entrance - no significant  
difference in samples -

## Solid wastes

## Air Sampling (outside plant) south

1 sampler ~ 1000 yds from plant

1 " ~ 1/2 mile "N" "

1 " ~ 1 1/2 " "N" "

1 " ~ 5 " "N" "

Samplers Roth Lummerville Sampler -  
change weekly & count for alpha & beta

Highest in 1965 -  $.79 \mu\text{Ci}/\text{M}^3$  5-26-65  
~~4-21-65~~  $5.162 \mu\text{Ci}/\text{M}^3$  P

" in 1966 -  $1.6 \mu\text{Ci}/\text{M}^3$  5-31-66  
 $6.8 \mu\text{Ci}/\text{M}^3$  P 5-31-66

Average ~  $1.2 \mu\text{Ci}/\text{M}^3$  L  
 $2.5 \mu\text{Ci}/\text{M}^3$  P

## Air Sampling (inside plant)

up to 500 samples monthly - but varies  
w/ "circuit in" system - Whetman #41 filter

Highest noted in 1965 & 1966

231 ~~pp~~ d/M/M<sup>3</sup> in ashing room area I

ct. min

$$= \text{dM}/\text{M}^3$$

Sampling rate (M<sup>3</sup>) X time X eff

$$\text{dM}/\text{M}^3$$

$$= \text{ppc/cc}$$

$$2.22 \times 10^6 \text{ dM}/\mu\text{c}$$

Report in dM/M

## Urinalysis Data

once monthly or every 3 Mos depending  
on location of work -

highest in 1966

G. Brady 2-7-66 65 d/m/20hr

Brumby 5-23-66 48 d/m/20hr

Don Lint 70 d/m/20hr -

Maximum is 50 d/m/20hr or over  
Hospital Security

Security Fence -

Receptionist Control - entrance

Exit

Keep Material locked - (storage combination lock)

695

Great Creek Y Y

UCC-CPD

H<sup>TL</sup>  
~~AEC 167~~

From 6857 AEC 4853

RAV 70

Jan 9/29/1

net 2546

Surveys

Instrument ✓

Swear tests ✓

~~Air sampling~~

2. Effluent releases ✓

Air ✓

Water ✓

3. Area Monitoring ✓

4. Waste disposal

5. Hospital Security ✓

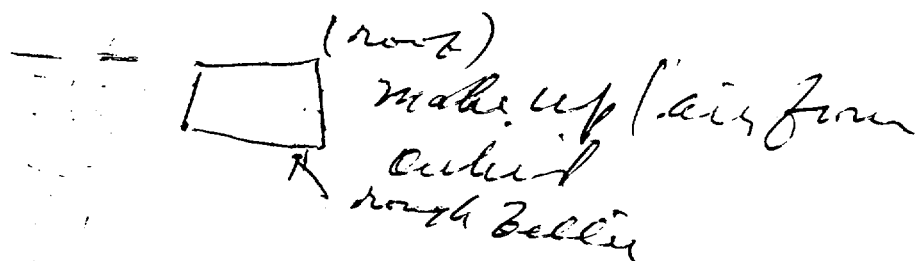
6. Take Swear & Instrument readings

See other notes  
on Filtering system

## Filter System

Recirculating system -

not exhausted to outside atmosphere



(3)(2)(1)

- (1) rough filter - ~~glass~~ & wire mesh (pleffusler)
- (2) prefilter - Glass wool (22 leaves)
- (3) absolute - Cambridge

maths.

Preparation - Took sample of filter after removal - dissolved + analysed for U content:

Area per filter = 22 leaves  $\times 11" \times 22" = 5324 \text{ sq. in.}$

U conc =  $0.175 \text{ mg/in}^2$

U conc/filter =  $932 \text{ mg} = 0.932 \text{ g}$

total U =  $0.932 \times 84 \text{ filters} = 78.3 \text{ g filters}$

252 filters = 3 tanks of 84 filters total  
(Room Ventilation)

Final Filter - (Sample 8 Filter described & analyzed)

$$\text{area per filter} = 144 \text{ leaves} \times 11 \times 22 = 35,816 \text{ in}^2$$

$$U \text{ conc} = 0.034 \text{ mg/in}^2$$

$$U \text{ conc/filter} = 1290 \text{ mg} = 1.290 \text{ g}$$

$$\text{Total } U = 1.290 \times 84 = 108.4 \text{ g}$$

deffusers (~~Screen wire~~ <sup>mesh wire</sup>)

$$4 \text{ g}^* \text{ total load} \times 1/5 \text{ (AVR)} = 0.8 \text{ g/deffuser}$$

$$\text{Total } U = 0.8 \times 84 = 67 \text{ g}$$

\* 4 g determined previously by working all 84 deffusers. The above 0.8 g/deffuser is estimate, & <sup>only 20% or maybe 1/3 now</sup> ~~calculated to be on high side~~ being used.

Total U in Filter Bank

$$28 + 108 + 67 = 253 \text{ g}$$

1. Recirculating system 252 filter

2. Proless filter, on hook, glove boxes etc

51 absolute filter

29 roughing filter

No estimate of U content made

Estimate of V contents in hood -

13 hoods being used -

Took reading with Samson meter in each hood got dpm reading - (50% efficiency)

Example of Method -

Station 19 front hood

~~area~~  $3' \times 2' \times 4'$

$$\text{Floor } 6 \text{ ft}^2 = 5000 \text{ cm}^2$$

$$\text{wall } 12 \times 2 + 8 \times 4 = 56 \text{ ft}^2 = 8064 \text{ in}^2 = 52,000 \text{ cm}^2$$

$$10000 \text{ dpm} = 0.09 \times 10^{-3} \text{ g/100 cm}^2 = 0.07 \text{ g}$$

Station 19 back hood

$58" \times 26" \times 49"$

$$\text{Floor } 58 \times 26 = 1508 \text{ in}^2 = 9724 \text{ cm}^2$$

$$\text{wall } 58 \times 49 \times 4 + 2 \times 26 \times 49 = 11368 + 2548 = 13916$$

$$13,916 \text{ sq in} = 89760 \text{ cm}^2 =$$

$$\frac{.02}{0.07 \text{ g}}$$

Repeated procedure for all 13 hoods

total V for 13 hoods = 2.0 g



## Ducts for circulating system

Workings, calculated area converted to U total  
High Bay (2 ducts)

$$3' \times 20' = 60 \text{ ft}^2 = 5600 \text{ cm}^2 \quad 0.6 \text{ g}$$

$$(10' \times 3' + 10' \times 4')^2 + (20' \times 3')^2$$

$$(30 + 40)^2 + 60 \times 4 = 190 + 290 = 380 \text{ ft}^2$$

$$= 352,900 \text{ cm}^2 \quad 0.2 \text{ g}$$

$$\text{U total} \quad 1.0 \text{ g}$$

$$2 \text{ ducts} = 2.0 \text{ g}$$

7. rail ducts (two)

$$\frac{4' \times 6' + 2' \times 2'}{2} = \frac{24 + 4}{2} = 14 \text{ ft}^2 (\text{avg})$$

$$\text{avg dim } 3' \times 4' \quad \text{avg perimeter } 24' *$$

$$24 \times 177 = 4250 \text{ ft}^2 = 3.9 \times 10^6 \text{ cm}^2$$

working 3000 dpm

$$1.3 \text{ g}$$

$$2 \text{ ducts} \quad 2.6 \text{ g}$$

\* duct taper

$$\text{Total in ducts} \quad 4.6 \text{ g}$$

## Other estimates

Took readings on trays, & containers, burner, gloves etc. - Calculated area converted to total in grams -

Estimate in high bay area 5g

" in other areas 25g

## Stack Release

Use a halman #1 filter <sup>2.0"</sup> ~~to~~ <sup>to</sup> draw (0.1 g. liter per minute) flow - Sample each stack periodically. Sample stack from room in which filter is changed. Count filter by means of Beckman Low Beta II counter. Correc from 1964 chart data in 1966

Stack #	Corr (Grams) Total	Height Conc noted (g/cc)
2	.1344	$1.2 \times 10^{-12}$ (7-15-66)
3	.69287	$2.37 \times 10^{-12}$ (2-11-66)
4	.12417	$1.03 \times 10^{-12}$ (7-18-66)
5	.42478	$8.6 \times 10^{-12}$ (5-9-66)
6	.260291	$17.0 \times 10^{-12}$ (2-3-66)
7		
8	.70925	$.63 \times 10^{-12}$ (5-6-66)
9	.27054	$.84 \times 10^{-12}$ (2-1-66)
10	.60631	(then 8/19/65 not in use) (then 4-15-65 - not in use)
11	.00071	
12	.72736	$1.0 \times 10^{-12}$ (2-7-66)
13	.422299	$.32 \times 10^{-12}$ (3-21-66)

Burkett conference - 2<sup>nd</sup> Jan (see kept for attendees)

OR Group ordered Gamma Spectrometer to aid in selecting filter + mesh for sampling purposes -

16% material shown on sheet is 93% equivalent -

769.324 Kg Released to date (from 10/63 to 8-22-64)

M. N. Burkett, prod mgr

Bob Stumpson  
Pat Brown  
John Bales

1. no formal inventory procedures
2. contaminated equipment in Highway area containing unknown quantity.
3. no quantities declared on primary filter on hood, ducts, vents, glove

box

4. Evaluation of crossover  
11.6 K<sub>1</sub> loss (contract) and  
no gain on WANL ~~gain~~ gain  
On a gain 9.205 on AVR

(Contract) WANL - Westinghouse Astronuclear Laboratory

Lilene H+L+R - High temperature lattice test reactor (Hanford)

(Lilene) AVR. Arbeitsgemeinschaft Versuchs Reaktor  
Jülich, West Germany

5. Some information missing on some labels on containers. (over)

6.

Some labels & values should be declared or filtered in process.  
Contractors urged to:  
Establish <sup>35</sup> values on contaminated equipment and in process air filter and all materials in plant -