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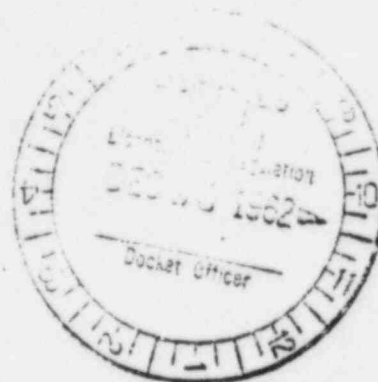
# PETROTOMICS COMPANY

TIDEWATER OIL COMPANY • MANAGING PARTNER

P. O. DRAWER 2400

December 18, 1962

Mr. R. Lowenstein, Director  
Division of Licensing & Regulation  
U. S. Atomic Energy Commission  
Washington 25, D. C.



Dear Mr. Lowenstein:

Attached is the report covering radiation safety survey  
results which is due for this quarter.

Sincerely,

PETROTOMICS COMPANY

By D. S. Hutchinson  
D. S. Hutchinson  
Radiologist

DSH:afn

Enclosures

8507290684 850530  
PDR FOIA  
BURR85-229 PDR

ACKNOWLEDGED

11356

December 14, 1962

Petrotomics Company

#### Airborne Radioactivity

A comparison between November's General Air samples and the average for 1962 to date is included on an attached sheet. This shows November results to be about the same level as, or lower than, the year's average in almost all areas, indicating no growing dust conditions.

During the months of September, October and November, there occurred two fourteen-day periods (September 6-19 and October 17-30) when one Packaging operator and two Precipitation operators worked 120 hours; their MPC's were lowered to  $3.2 \times 10^{-11}$  uc/ml respectively. The attached Job Exposure sheets show that none of these men were over-exposed during these periods.

Only the Packaging and Precipitation operators work in areas in which dust concentrations reached MPC or near MPC levels.

The dryer discharge stack was sampled three times during November, with greatly varied results. Concentrations ranged from  $1.68 \times 10^{-11}$  to  $19.99 \times 10^{-11}$  uc/ml. These samples were taken in a manner planned to show maximum conditions. Presently we are conducting a more intensified sampling program to better determine the average concentrations. When completed, this should show if certain mechanical revisions are necessary. Use of diffusion calculations is also planned.

#### External Radioactivity

Film badges worn by various Petrotomics mill personnel have shown no measurable gamma radiation since September 24. Maximum beta reading for this period was 139 mrem, received by A. P. Jackson, a Precipitation operator. Only five of the sixteen badged employees have received measurable amounts of beta during these ten weeks.

#### Water Surveys

December assays have not been received as yet.

Only the drinking water has been above MPC levels. The average after nine months sampling (March - November) was at 99% equivalent MPC. High readings were due entirely to Ra 226.

A copy of a chart showing month by month variations of potable water assays is also attached.

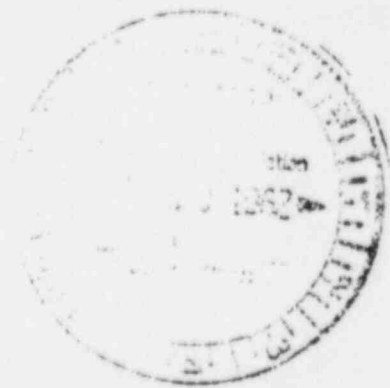
GENERAL AIR SAMPLES  
NOVEMBER - YEAR-TO-DATE COMPARISON

| Area                       | Building  | No.<br>Samples | Year-to-Date<br>Average<br>(uc/ml x 10 <sup>-11</sup> ) | November Only |
|----------------------------|-----------|----------------|---|---------------|
| Grizzly                    | Primary   | 4              | .64   | --            |
| Feeder Floor               |           | 6              | .23   | .07           |
| Crusher Floor              |           | 5              | .36   | .34           |
| Pit                        |           | 5              | 1.23  | .23           |
| Screen Floor               | Secondary | 6              | .18   | .04           |
| Impactor Floor             |           | 6              | .19   | .22           |
| Ground Floor               |           | 6              | .17   | .09           |
| Tripper Floor              | Fine Ore  | 5              | .13   | .41           |
| Feeder Floor               |           | 6              | .04   | .06           |
| Sample Prep Room           |           | 5              | .07   | .08           |
| Grind                      | Mill      | 6              | .18   | .06           |
| Leach                      |           | 6              | .11   | .01           |
| Precipitation (Mezzanine)  |           | 6              | .50   | .03           |
| Precipitation (Main Floor) |           | 6              | .34   | .10           |
| Packaging Room             |           | 5*             | 7.00  | 2.98          |
| Drying Room                |           | 12**           | 3.51  | 2.43***       |
| Shift Office               |           | 6              | .35   | .03           |
| Change Room                |           | 6              | .26   | .11           |
| Supt. Office               |           | 6              | 1.42  | .19           |
| Met. Office                |           | 6              | .24   | .37           |
| CCD Walk                   | CCD       | 5              | .01   | N:1           |
| CCD Tunnel                 |           | 4              | .01   | .05           |
| Tails Pump House           |           | 4              | .05   | .13           |
| SX Dock                    | SX        | 5              | .05   | .21           |
| SX Lab                     |           | 5              | .03   | N:1           |

\*General air samples only in Packaging room.

\*\*Includes average of samples for specific locations.

\*\*\*Average of results for both locations at temp. gauges and furnace opening.





# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Sept., 1962

BUILDING Mill PROCESS AREA Final Product Packaging  
 OPERATOR Packaging 1 men/shift 1 shift/day 1 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br>d/m/m <sup>3</sup> |     |      |     | TXC    |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|-------------------------------------|-----|------|-----|--------|
|                                |                      |                       |                          |               | High                                | Low | Avg. | (C) |        |
| Packaging Room:                |                      |                       |                          |               |                                     |     |      |     |        |
| Painting and Labeling          | 10                   | 4                     | 40                       | 127           |                                     |     | .02  |     | .8     |
| Shaking, and Changing          | 15                   | 4                     | 60                       | 130           |                                     |     | 1.70 |     | 102.00 |
| Weighing and Checking          |                      |                       |                          |               |                                     |     |      |     |        |
| Drums                          | 8                    | 8                     | 64                       | 128           |                                     |     | 7.73 |     | 494.72 |
| Sampling                       | 6                    | 4                     | 24                       | 128           |                                     |     | 7.73 |     | 185.52 |
| Sample Table                   |                      |                       | 75                       | 129           |                                     |     | .54  |     | 40.50  |
| Clean-up                       |                      |                       | 60                       | 127           |                                     |     | .02  |     | 1.20   |
| Mill Floor - Stacking          |                      |                       |                          |               |                                     |     |      |     |        |
| Drums and Clean-up             |                      |                       | 72                       | 155           |                                     |     | .03  |     | 2.16   |
| Shift Office                   |                      |                       | 45                       | 145           |                                     |     | .03  |     | 1.35   |
| Change Room                    |                      |                       | 40                       | 148(a)        |                                     |     | .11  |     | 4.40   |
| Bucking Room                   |                      |                       | 240                      | 161,138       | .08                                 | .03 | .06  |     | 14.40  |

$\Sigma(T) = 720$

$\Sigma(TXC) = 847.05$

$$\frac{\Sigma(TXC)}{\Sigma(T)} = \frac{847.05}{720} = 1.18 \text{ uc/ml} \times 10^{-11}$$

$$= \boxed{.26*}$$

MPC

\*.37 MPC during the period of Sept. 6-19.

MPC (Normal) =  $4.60 \times 10^{-11}$  uc/ml

MPC (Sept. 6-19) =  $3.2 \times 10^{-11}$  uc/ml (42 hrs.)

# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Oct., 1962

BUILDING Mill PROCESS AREA Final Product Packaging

OPERATOR Packaging 1 men/shift 1 shift/day 1 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br>d/m/m <sup>3</sup> |     |      |     | TxC    |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|-------------------------------------|-----|------|-----|--------|
|                                |                      |                       |                          |               | High                                | Low | Avg. | (C) |        |
| Packaging Room:                |                      |                       |                          |               |                                     |     |      |     |        |
| Painting and Labeling          | 10                   | 4                     | 40                       | 143           |                                     |     | 0.43 |     | 17.20  |
| Shaking and Changing           | 15                   | 4                     | 60                       | 135, 137      | 3.62                                | .41 | 2.01 |     | 120.60 |
| Weighing and Checking          |                      |                       |                          |               |                                     |     |      |     |        |
| Drums                          | 8                    | 8                     | 64                       | 134           |                                     |     | 2.33 |     | 149.12 |
| Sampling                       | 6                    | 4                     | 24                       | 142           |                                     |     | 1.87 |     | 44.88  |
| Sample Table                   |                      |                       | 75                       | 136           |                                     |     | 3.84 |     | 288.00 |
| Clean-up                       |                      |                       | 60                       | 143           |                                     |     | 0.43 |     | 25.80  |
| Mill Floor - Stacking          |                      |                       |                          |               |                                     |     |      |     |        |
| Drums and Clean-up             |                      |                       | 72                       | 155           |                                     |     | .03  |     | 2.16   |
| Shift Office                   |                      |                       | 45                       | 145           |                                     |     | .03  |     | 1.35   |
| Change Room                    |                      |                       | 40                       | 148(a)        |                                     |     | .11  |     | 4.40   |
| Bucking Room                   |                      |                       | 240                      | 138           |                                     |     | .03  |     | 7.20   |

$\Sigma(T) = 720$

$\Sigma(TxC) = 660.71$

$$\frac{\Sigma(TxC)}{\Sigma(T)} = 0.92 \frac{\text{uc/ml} \times 10^{-11}}{\text{MPC}} =$$

.20\*

MPC

\*.29 MPC during the period of Oct. 17-30.

MPC (Normal) =  $4.60 \times 10^{-11}$  uc/ml (42 hrs.)

MPC (Oct. 17-30) =  $3.2 \times 10^{-11}$  uc/ml (120 hrs.  
per 14 days)

# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Nov., 1962

BUILDING Mill PROCESS AREA Final Product Packaging

OPERATOR Packaging 1 men/shift 1 shift/day 1 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br><del>XXXXXX</del> uc/ml x 10 <sup>-11</sup> |     |          | TXC    |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|--|-----|----------|--------|
|                                |                      |                       |                          |               | High   | Low | Avg. (C) |        |
| Packaging Room:                |                      |                       |                          |               |  |     |          |        |
| Painting and Labeling          | 10                   | 4                     | 40                       | 143           |  |     | .435     | 17.40  |
| Shaking and Changing           | 15                   | 4                     | 60                       | 154           |  |     | 2.50     | 150.00 |
| Weighing and Checking          |                      |                       |                          |               |  |     |          |        |
| Drums                          | 8                    | 8                     | 64                       | 142           |  |     | 1.87     | 119.68 |
| Sampling                       | 6                    | 4                     | 24                       | 142           |  |     | 1.87     | 44.88  |
| Sample Table                   |                      |                       | 75                       | 136, 129      | 3.84   | .54 | 2.19     | 164.25 |
| Clean-up                       |                      |                       | 60                       | 146           |  |     | 2.98     | 178.80 |
| Mill Floor - Stacking          |                      |                       |                          |               |  |     |          |        |
| Drums and Clean-up             |                      |                       | 72                       | 155           |  |     | .10      | 7.20   |
| Shift Office                   |                      |                       | 45                       | 145           |  |     | .03      | 1.35   |
| Change Room                    |                      |                       | 40                       | 148(a)        |  |     | .11      | 4.40   |
| Bucking Room                   |                      |                       | 240                      | 161           |  |     | .08      | 19.20  |

$\Sigma(T) = 720$

$\Sigma(TXC) = 707.16$

$$\frac{\Sigma(TXC)}{\Sigma(T)} = \frac{0.98 \text{ uc/ml} \times 10^{-11}}{720} =$$

.21

MPC

$$MPC = 4.60 \times 10^{-11} \text{ uc/ml}$$

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# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Oct., 1962

BUILDING Mill PROCESS AREA Precipitation

OPERATOR Precipitation 1 men/shift 2 shift/day 2 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br>d/m/m <sup>3</sup> |     |          | TXC   |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|-------------------------------------|-----|----------|-------|
|                                |                      |                       |                          |               | High                                | Low | Avg. (C) |       |
| Precip - Mezzanine             |                      |                       | 434                      | 149           |                                     |     | .03      | 13.02 |
| Precip - Main Floor            |                      |                       | 168                      | 155           |                                     |     | .03      | 5.04  |
| Dryer Room:                    |                      |                       |                          |               |                                     |     |          |       |
| Temp. Control                  |                      |                       | 24                       | 141           |                                     |     | 1.79     | 42.96 |
| Cleaning Grates                |                      |                       | 24                       | 132, 131      | .95                                 | .12 | .54      | 12.96 |
| Shift Office                   |                      |                       | 41                       | 145           |                                     |     | .03      | 1.23  |
| Change Room                    |                      |                       | 29                       | 148(a)        |                                     |     | .11      | 3.19  |

$\Sigma(T) = 720$

$\Sigma(TXC) = 78.40$

$$\frac{\Sigma(TXC)}{\Sigma(T)} = \frac{0.11 \text{ uc/ml} \times 10^{-11}}{720} =$$

.02\*

MPC

\*.01 MPC during Oct. 17-30.

MPC (Normal) =  $5.7 \times 10^{-11}$  uc/ml (42 hrs.)  
MPC (Oct. 17-30) =  $4.0 \times 10^{-11}$  uc/ml (120 hrs.)

# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Sept., 1962

BUILDING Mill PROCESS AREA Precipitation

OPERATOR Precipitation 1 men/shift 2 shift/day 2 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br>d/m/m <sup>3</sup> |     |          | TXC   |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|-------------------------------------|-----|----------|-------|
|                                |                      |                       |                          |               | High                                | Low | Avg. (C) |       |
| Precip - Mezzanine             |                      |                       | 434                      | 149           |                                     |     | .03      | 13.02 |
| Precip - Main Floor            |                      |                       | 168                      | 155           |                                     |     | .03      | 5.04  |
| Dryer Room:                    |                      |                       |                          |               |                                     |     |          |       |
| Temp. Control                  |                      |                       | 24                       | 125           |                                     |     | .05      | 1.20  |
| Cleaning Grates                |                      |                       | 24                       | 126           |                                     |     | .07      | 1.68  |
| Shift Office                   |                      |                       | 41                       | 145           |                                     |     | .03      | 1.23  |
| Change Room                    |                      |                       | 29                       | 148(a)        |                                     |     | .11      | 3.19  |

$\Sigma(T) = 720$

$\Sigma(TXC) = 25.36$

$$\frac{\Sigma(TXC)}{\Sigma(T)} = \frac{.04}{720} \times 10^{-11} \text{ uc/ml} =$$

.08\*

MPC

\*.06 MPC during Sept. 6-19.

MPC (Normal) =  $5.7 \times 10^{-11}$  uc/ml (42 hrs.)

MPC (Sept. 6-19) =  $4.0 \times 10^{-11}$  uc/ml (120 hrs.)



# PETROTOMICS COMPANY

## JOB EXPOSURE EVALUATION

Survey Period Nov., 1962

BUILDING Mill PROCESS AREA Precipitation

OPERATOR Precipitation 1 men/shift 2 shift/day 2 men/day

| Operation<br>or Operating Area | Time<br>Per<br>Oper. | Oper.<br>Per<br>Shift | Time<br>Per<br>Shift (T) | Sample<br>No. | Concentration<br>d/m/m <sup>3</sup> |     |          | TXC    |
|--------------------------------|----------------------|-----------------------|--------------------------|---------------|-------------------------------------|-----|----------|--------|
|                                |                      |                       |                          |               | High                                | Low | Avg. (C) |        |
| Precip - Mezzanine             |                      |                       | 434                      | 149           |                                     |     | .03      | 13.02  |
| Precip - Main Floor            |                      |                       | 168                      | 155           |                                     |     | .10      | 16.80  |
| Dryer Room:                    |                      |                       |                          |               |                                     |     |          |        |
| Temp. Control                  |                      |                       | 24                       | 151           |                                     |     | .19      | 4.56   |
| Cleaning Grates                |                      |                       | 24                       | 152           |                                     |     | 4.66     | 111.84 |
| Shift Office                   |                      |                       | 41                       | 145           |                                     |     | .03      | 1.23   |
| Change Room                    |                      |                       | 29                       | 148(a)        |                                     |     | .11      | 3.19   |

$\Sigma(T)$  720

$\Sigma(TXC)$  150.64

$$\frac{\Sigma(TXC)}{\Sigma(T)} = \frac{0.21 \text{ } \cancel{\text{uc/ml}} \times 10^{-11}}{\cancel{\text{uc/ml}} \times 10^{-11}} =$$

|     |
|-----|
| .04 |
|-----|

MPC

MPC =  $5.7 \times 10^{-11}$  uc/ml (42 hrs.)

# PETROTOMICS COMPANY

## AREA EXPOSURE EVALUATION

Date Nov., 1962

BUILDING Mill


PROCESS AREA Product Drying

OPERATOR \_\_\_\_\_

men/shift \_\_\_\_\_

shift/day \_\_\_\_\_

men/day \_\_\_\_\_

| Description of Location   | Prevailing Conditions | Time Per Sample (T) | Sample No.      | Concentration d/m/m <sup>3</sup> |       |          | T X C |
|---|-----------------------|---------------------|-----------------|----------------------------------|-------|----------|-------|
|   |                       |                     |                 | High                             | Low   | Avg. (C) |       |
| Dryer Discharge Stack<br>(at discharge point)<br><br> | --                    | 20                  | 140, 141<br>169 | 199.94                           | 16.79 | 83.55    |       |

$\bar{N}(T)$  \_\_\_\_\_

$\bar{N}(T \times C)$  \_\_\_\_\_

$$\frac{\bar{N}(T \times C)}{\bar{N}(T)} = \frac{83.55 \text{ } \cancel{\text{uc/ml}} \times 10^{-12}}{\cancel{\text{uc/ml}}} =$$

41.78

MPC

$$\text{MPC} = 2.0 \times 10^{-12} \text{ uc/ml}$$

# POTABLE WATER ANALYSIS

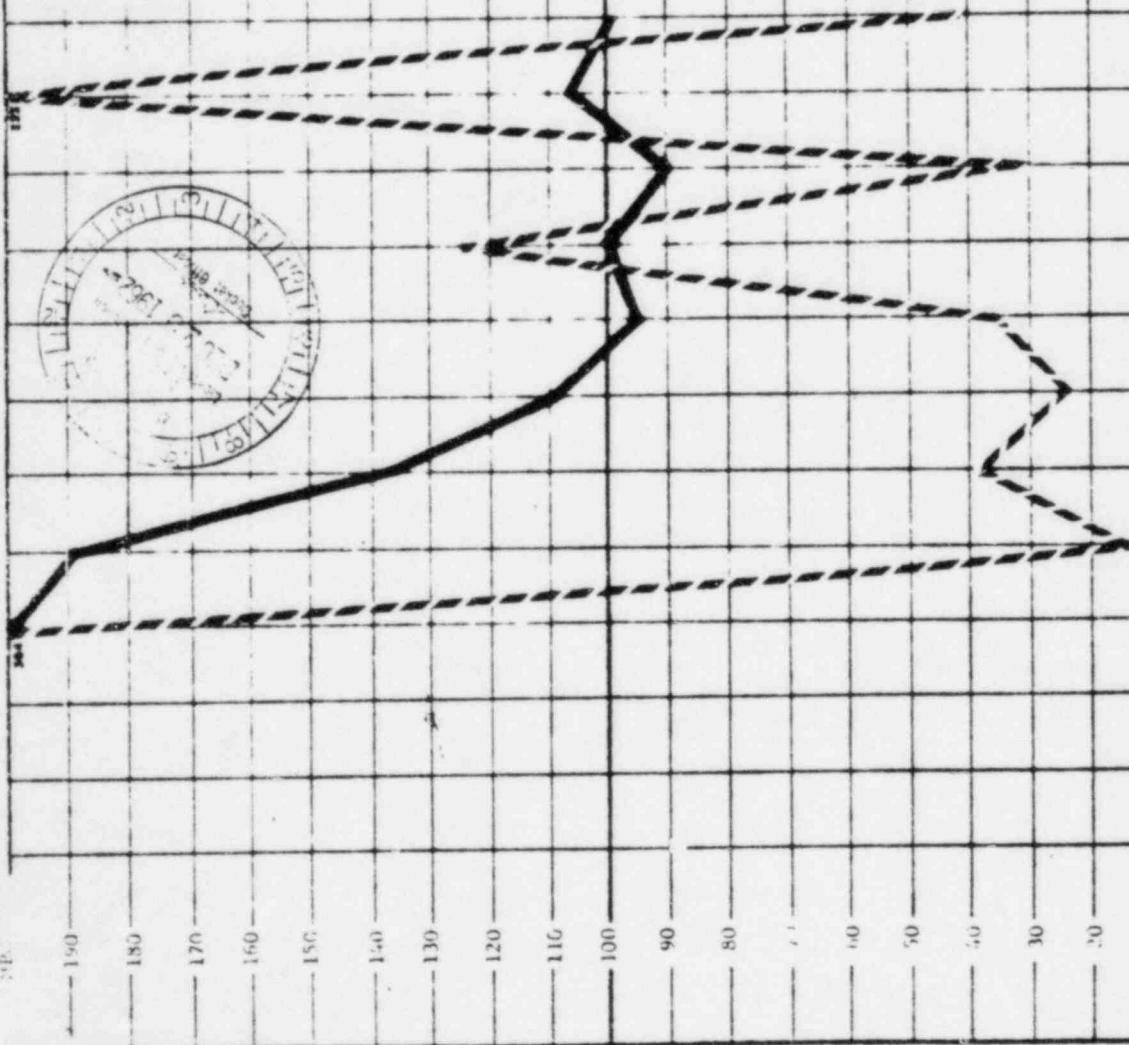
|           | <u>Ra 226</u><br><u>uc/ml</u> | <u>Th 230</u><br><u>uc/ml</u> | <u>U<sub>3</sub>O<sub>8</sub></u><br><u>uc/ml</u> |
|-----------|-------------------------------|-------------------------------|---|
| August    | $1.2 \times 10^{-8}$          | $< 5 \times 10^{-9}$          | $6.2 \times 10^{-7}$                              |
| September | $2.7 \times 10^{-9}$          | $< 5 \times 10^{-9}$          | $5.9 \times 10^{-7}$                              |
| October   | $2.2 \times 10^{-8}$          | $6.5 \times 10^{-9}$          | $4.7 \times 10^{-7}$                              |
| November  | $3.8 \times 10^{-9}$          | $< 5 \times 10^{-9}$          | $5.2 \times 10^{-7}$                              |

POTABLE WATER ANALYSIS  
FOR THE MONTH OF JULY

Month  
Average

1962-1963

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Petrotechnics Company  
Casper, Wyoming

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ENCLOSURES:

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Radiation Safety Survey Results for  
this quarter.

REMARKS:

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MAIL CONTROL FORM

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