



11234 East Coley Avenue  
Englewood, Colorado 80111  
(303) 790-2727 (800) 282-1835  
FAX # (303) 790-2756

REPORT ON SERVICE NUMBER 34681AH  
June 20, 1988

PLAINTIFF'S  
EXHIBIT  
KRC-235b

To: Ms. Janet C. Smith  
Kerr McGee Corporation  
Oklahoma City, Oklahoma

Analysis: The following sample was submitted for analysis:  
One membrane filter sample and one blank for asbestos count.

Method: ASBESTOS (count)  
The fiber concentration of each filter sample was determined following NIOSH Method 7400. Wedges from each filter were examined at 400 power using phase contrast microscopy. All fibers longer than five (5) microns with a length-to-width ratio of 3:1 or more were counted as asbestos.

Results: The results are found on Table 1.

Discussion: The present OSHA permissible exposure limit (PEL) for asbestos is 0.2 fibers/cc.

LT( ) indicates "less than" with the lower limit of quantification shown in parentheses.

All samples have been corrected for the blank unless otherwise noted.

Laboratory data are filed and available upon request.

Hager Laboratories Inc. has been AIHA accredited since 1977 and EPA approved for asbestos since 1979. A portion of each sample is retained for subsequent review and future analysis.

If you have any questions, please call customer service.

Submitted by:

*Patricia Manning*  
Patricia Manning  
Microscopy Supervisor

PM/agg

RECEIVED  
JUN 24 1988  
Medical Services

SN 34681AH  
June 20, 1988

TABLE 1

| Sample Number | Counted<br>(fibers) | Counted<br>(fields) | Total<br>(fibers) | Air Volume<br>(liters) | Air Concentration<br>(fibers/cc) |
|---------------|---------------------|---------------------|-------------------|------------------------|----------------------------------|
| 1841A         | 259.                | 100.                | 113000.           | 226.                   | 0.50                             |
| 1841B Blank   | 1.                  | 100.                | LT(4380.)         | -                      | -                                |

INSTRUCTIONS: Originator attaches Part 2 to laboratory results and forwards to Medical Services.

|               |         |
|---------------|---------|
| ID/SAMPLE NO. | 1841    |
| DATE          | 4-22-81 |

INDUSTRIAL HYGIENE SURVEY DATA - AIR MONITORING KM-4293-A

|                             |                       |               |                 |             |
|-----------------------------|-----------------------|---------------|-----------------|-------------|
| FACILITY                    | Southwestern Refinery | WORK LOCATION | Scrapyard       |             |
| EMPLOYEE NAME (LAST, FIRST) | Terrell, Bennie       |               | EMPLOYEE NUMBER | 454-04-0503 |

|                                       |                           |                     |                     |                    |                        |
|---------------------------------------|---------------------------|---------------------|---------------------|--------------------|------------------------|
| JOB TITLE                             | Insulator                 | SURVEYOR            | Campy               |                    |                        |
| TYPE OF PERSONAL PROTECTIVE EQUIPMENT | RESPIRATOR                | SAMPLING CONDITIONS | TEMPERATURE         | CALIBRATION RECORD | PUMP MANUFACTURER/S.N. |
|                                       | BODY                      |                     | RELATIVE HUMIDITY   |                    | BDX #3                 |
|                                       | GLOVES                    |                     | BAROMETRIC PRESSURE |                    | PRE FLOW RATE          |
|                                       | OTHER                     |                     | AIR VELOCITY        |                    | POST FLOW RATE         |
|                                       | hand hat / safety glasses |                     | SE 9 fpm mph        |                    | DIFFERENCE FLOW        |

|                |                   |        |  |  |                     |
|----------------|-------------------|--------|--|--|---------------------|
| SAMPLING DATA  | Lab Sample Number | 88-47  |  |  |                     |
|                | I.D. Number       | 1841   |  |  |                     |
|                | Time On           | 0837   |  |  |                     |
|                | Time Off          | 10:30  |  |  |                     |
|                | Total Time (min.) | 113    |  |  | TOTAL TIME<br>113   |
|                | Flow Rate (LPM)   | 20 Lpm |  |  |                     |
|                | Sample Media      | MCEF   |  |  |                     |
|                | Volume (Liters)   | 226    |  |  | TOTAL VOLUME<br>226 |
| Net Sample Wt. |                   |        |  |  |                     |

|                    |    |          |      |  |  |  |
|--------------------|----|----------|------|--|--|--|
| LABORATORY RESULTS | 1. | Asbestos | C.S. |  |  |  |
|                    | 2. |          |      |  |  |  |
|                    | 3. |          |      |  |  |  |
|                    | 4. |          |      |  |  |  |
|                    | 5. |          |      |  |  |  |
|                    | 6. |          |      |  |  |  |

\* Note - These samples found while cleaning I.H. office 06/08/88

|                               |                 |             |            |           |       |           |           |          |                   |
|-------------------------------|-----------------|-------------|------------|-----------|-------|-----------|-----------|----------|-------------------|
| FOR MEDICAL SERVICES USE ONLY | SAMPLE ANALYSIS | SUBSTANCE   | TWA (Time) | TWA 8(hr) | UNITS | AUTHORITY | STND. NO. | SEVERITY | ANALYTICAL METHOD |
|                               |                 | 1. Asbestos | C.S.       | 12        | 1/cc  | C-1111    | C-2       |          | NICSH-1400        |
|                               |                 | 2.          |            |           |       |           |           |          |                   |
|                               |                 | 3.          |            |           |       |           |           |          |                   |
|                               |                 | 4.          |            |           |       |           |           |          |                   |
|                               |                 | 5.          |            |           |       |           |           |          |                   |
|                               |                 | 6.          |            |           |       |           |           |          |                   |

|                                                               |      |                       |          |
|---------------------------------------------------------------|------|-----------------------|----------|
| LABORATORY USED                                               |      | Nitrogen Laboratory - |          |
| (WORK ACTIVITIES, OPERATION, LOCATION, VENTILATION, CONTROLS) |      |                       |          |
| Sample taken during removal from piping in scrapyard          |      |                       |          |
| REVIEWED BY                                                   | DATE | BLANKS (No.)          | 2 blanks |
|                                                               |      | BULKS (No.)           |          |

|          |  |
|----------|--|
| COMMENTS |  |
|----------|--|

# EMPLOYEE MONITORING NOTIFICATION KM-4772-B

ID NUMBER

1841

DATE

7/5/88

SUBSIDIARY/DIVISION

Refining

FACILITY

Southwestern Refinery

EMPLOYEE NAME (LAST, FIRST)

Terrell, Bennie

EMPLOYEE NUMBER

454-04-0503

JOB TITLE

Insulator

WORK LOCATION

Scrapyard

| NOISE SURVEY     | EMPLOYEE'S ACTUAL 8 HOUR-TIME-WEIGHTED AVERAGE         |                                         |                                        |                        |            |                                                   | TYPE/BRAND HEARING PROTECTION WORN |                                    |    |                   |
|------------------|--------------------------------------------------------|-----------------------------------------|----------------------------------------|------------------------|------------|---------------------------------------------------|------------------------------------|------------------------------------|----|-------------------|
|                  | EMPLOYEE'S REPRESENTATIVE 8 HOUR-TIME WEIGHTED AVERAGE |                                         |                                        |                        |            |                                                   |                                    |                                    |    |                   |
| SUBSTANCE SURVEY | OSHA PERMISSIBLE EXPOSURE                              |                                         | OSHA ACTION LEVEL                      |                        |            | EMPLOYEE ENROLLED IN HEARING CONSERVATION PROGRAM |                                    |                                    |    |                   |
|                  | SUBSTANCE                                              | EMPLOYEE'S 8 HOUR-TIME-WEIGHTED AVERAGE | OSHA 8 HOUR PERMISSIBLE EXPOSURE LIMIT | CEILING EXPOSURE LEVEL |            | SHORT TERM EXPOSURE LEVEL                         |                                    | PERSONAL PROTECTIVE EQUIPMENT WORN |    | OSHA ACTION LEVEL |
|                  |                                                        |                                         |                                        | EMPLOYEE               | OSHA/ACGIH | EMPLOYEE                                          | OSHA/ACGIH                         | YES                                | NO |                   |
|                  | Asbestos                                               | 0.12                                    | 0.2                                    | -                      | -          | -                                                 | -                                  | X                                  | -  | 0.1 f/            |
|                  |                                                        |                                         |                                        |                        |            |                                                   |                                    |                                    |    |                   |
|                  |                                                        |                                         |                                        |                        |            |                                                   |                                    |                                    |    |                   |

|                               |                           |                     |  |             |
|-------------------------------|---------------------------|---------------------|--|-------------|
| PERSONAL PROTECTIVE EQUIPMENT | RESPIRATOR                | SURVEY PERFORMED BY |  | SURVEY DATE |
|                               | Halfmask with HEPA filter | C. DeYong           |  | 4/22/88     |
|                               | BODY                      | ENGINEERING CONTROL |  |             |
|                               | Tyvek                     |                     |  |             |
| GLOVES                        |                           |                     |  |             |
| OTHER                         | H. Hat/Safety Glasses     |                     |  |             |

ACTION TAKEN

Note: Delay in sample analysis due to departure of industrial hygienist.

EMPLOYEE SIGNATURE

COMPANY REPRESENTATIVE SIGNATURE

DATE

DISTRIBUTION: ORIGINAL - Employee  
COPY - Facility File  
COPY - Corporate Medical Services

MEDICAL SERVICES DEPARTMENT  
ENVIRONMENT AND HEALTH MANAGEMENT DIVISION  
KERR-MCGEE CORPORATION

## ATTACHMENT II

SOUTHWESTERN REFINERY  
AIRBORNE CONCENTRATIONS

| =DATE= | =LOCATION= | =EMPLOYEE NAME= | =EMP. NUMB= | =JOB TITLE= | =TWA-T= | =TWA-B= | =STND= | =UNITS= | =BK= | TIME= | P P E= | =R= | B= | R= |
|--------|------------|-----------------|-------------|-------------|---------|---------|--------|---------|------|-------|--------|-----|----|----|
|--------|------------|-----------------|-------------|-------------|---------|---------|--------|---------|------|-------|--------|-----|----|----|

SUBSTANCE: ASBESTOS

|            |                |           |             |                |        |     |     |     |      |     |     |
|------------|----------------|-----------|-------------|----------------|--------|-----|-----|-----|------|-----|-----|
| 01-12-87   | MAINTENANCE    | R WOLFORD | 453-23-1404 | INSULATOR      |        | .43 | .03 | .20 | F/CC | 60  | Y Y |
| 01-12-87   | MAINTENANCE    | V VALLEJO | 464-58-2722 | INSULATOR      |        | .14 | .02 | .20 | F/CC | 60  | Y Y |
| 02-24-87   | CRUDE I        | L WOLFORD | 569-22-2865 | PRODUCTION OP. |        | .02 | .00 | .20 | F/CC | 55  | Y Y |
| 02-25-87   | CRUDE II       | V VALLEJO | 464-58-2722 | INSULATOR      |        | .00 | .00 | .20 | F/CC | 95  | Y Y |
| 03-07-87   | CRUDE II       |           | 000-00-0000 | INSULATOR      |        | .00 | .00 | .20 | F/CC | 45  | Y Y |
| 04-13-87   | MAINTENANCE    | R WOLFORD | 000-00-0000 | INSULATOR      |        | .07 | .00 | .20 | F/CC | 33  | Y Y |
| 07-30-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .00 | F/CC | 110 |     |
| 07-30-87   | CAT I          | R WOLFORD | 453-23-1404 | INSULATOR      |        | .04 | .01 | .20 | F/CC | 115 | Y Y |
| 07-31-87   | CAT I          | R WOLFORD | 453-23-1404 | INSULATOR      |        | .03 | .03 | .20 | F/CC | 400 | Y Y |
| 07-31-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .01 | F/CC | 420 |     |
| 08-03-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      | <      | .04 | <   | .01 | F/CC | 125 | Y Y |
| 08-03-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .00 | F/CC | 125 |     |
| 08-05-87   | SCRAPYARD      | B GREER   | 454-04-0503 | INSULATOR      |        | .02 | .00 | .20 | F/CC | 25  | Y Y |
| 08-12-87   | SULFOLANE UNIT | R WOLFORD | 453-23-1404 | INSULATOR      |        | .04 | .01 | .20 | F/CC | 115 | Y Y |
| 08-12-87   | SULFOLANE UNIT | AREA      | 000-00-0000 |                | <      | .01 | <   | .00 | F/CC | 120 |     |
| 08-17-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      | <      | .01 | <   | .00 | F/CC | 225 | Y Y |
| 08-17-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .01 | F/CC | 262 |     |
| 08-18-87   | CAT I          | N WOLFORD | 453-23-1404 | INSULATOR      |        | .02 | .02 | .20 | F/CC | 415 | Y Y |
| 08-19-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .01 | F/CC | 300 |     |
| 08-19-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      |        | .01 | .01 | .20 | F/CC | 295 | Y Y |
| 08-20-87   | CAT I          | N WOLFORD | 453-23-1404 | INSULATOR      | 000000 |     | .00 | .20 | F/CC | 0   | Y Y |
| 08-20-87   | CAT I          | AREA      | 000-00-0000 |                | <      | .01 | <   | .01 | F/CC | 410 |     |
| 08-21-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      |        | .04 | .01 | .20 | F/CC | 155 | Y Y |
| 09-01-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      |        | .02 | .02 | .20 | F/CC | 370 | Y Y |
| 09-02-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      | <      | .01 | <   | .01 | F/CC | 430 | Y Y |
| 09-03-87   | CAT I          | V VALLEJO | 464-58-2722 | INSULATOR      |        | .02 | .01 | .20 | F/CC | 323 | Y Y |
| 09-10-87   | CAT I UNIT     | N WOLFORD | 453-23-1404 | INSULATOR      |        | .01 | .01 | .20 | F/CC | 270 | Y Y |
| 09-11-87   | CAT I UNIT     | N WOLFORD | 453-23-1404 | INSULATOR      |        | .05 | .03 | .20 | F/CC | 240 | Y Y |
| 09-16-87   | ALKY UNIT      | N WOLFORD | 453-23-1404 | INSULATOR      |        | .18 | .04 | .20 | F/CC | 100 | Y Y |
| 09-17-87   | ALKY UNIT      | N WOLFORD | 453-23-1404 | INSULATOR      |        | .08 | .03 | .20 | F/CC | 150 | Y Y |
| 09-23-87   | CRUDE I        | N WOLFORD | 453-23-1404 | INSULATOR      |        | .03 | .00 | .20 | F/CC | 34  | Y Y |
| 09-24-87   | SULFOLANE UNIT | V VALLEJO | 464-58-2722 | INSULATOR      |        | .04 | .04 | .20 | F/CC | 435 | Y Y |
| 09-25-87   | SULFOLANE UNIT | V VALLEJO | 464-58-2722 | INSULATOR      |        | .03 | .03 | .20 | F/CC | 410 | Y Y |
| 09-29-87   | SULFOLANE UNIT | V VALLEJO | 464-58-2722 | INSULATOR      |        | .01 | .01 | .20 | F/CC | 295 | Y Y |
| 10-01-87   | SULFOLANE UNIT | V VALLEJO | 464-58-2722 | INSULATOR      |        | .13 | .12 | .20 | F/CC | 445 | Y Y |
| 10-06-87</ |                |           |             |                |        |     |     |     |      |     |     |

05-Jul-88

SOUTHWESTERN INDUSTRIAL HYGIENE AIR MONITORING

Page 2

| =DATE=   | =LOCATION= | =EMPLOYEE NAME= | =EMP. NUMB= | =JOB TITLE= | =TWA-T= | =TWA-8= | =STND= | =UNITS= | =BK= | TIME= | =P P E= |
|----------|------------|-----------------|-------------|-------------|---------|---------|--------|---------|------|-------|---------|
|          |            |                 |             |             |         |         |        |         |      |       | =R=B=G= |
| 11-24-87 | CAT I      | N WOLFORD       | 453-23-1404 | INSULATOR   | .01     | .00     | .20    | F/CC    | 210  | Y Y Y |         |

TWA-T: TIME-WEIGHTED AVERAGE CONCENTRATION FOR THE TIME SAMPLED.

TWA-8: TIME-WEIGHTED AVERAGE CONCENTRATION FOR AN 8-HOUR WORKDAY.

STND: STANDARD FOR THE SUBSTANCE MONITORED.

BK: BREAKTHROUGH. INDICATES POTENTIAL SAMPLE LOSS DUE TO BREAKTHROUGH OF THE SUBSTANCE IN THE SORBENT MEDIA.

TIME: TIME IN MINUTES OVER WHICH THE MONITORING WAS DONE.

PPE: PERSONAL PROTECTIVE EQUIPMENT. R INDICATES RESPIRATOR. B INDICATES BODY PROTECTION. G INDICATES GLOVES.