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September 25, 1996

Freedom of Information Office  
Nuclear Regulatory Commission  
Attn: Russell Powell  
Fax: (301) 415-5130

### FOIA/PA REQUEST

Case No: 96-381  
Date Rec'd: 9-26-96  
Action Off: Reed  
Related Case: \_\_\_\_\_

RE: Freedom of Information Act Request

Site Name: **Kerr-McGee Chemical Corporation Rare Earths Facility**  
Site Location: **West Chicago, Illinois**

Dear Mr. Powell:

In accordance with the provisions of 5 U.S.C., Section 522, the Freedom of Information Act ("FOIA"), I am writing to request documents and correspondence which concern a site known as the Kerr-McGee Chemical Corporation Rare Earths Facility located in West Chicago, Illinois.

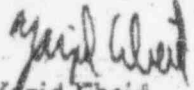
This morning I spoke with someone in the Public Documents Room and discovered that they have about six shelves of documents for the site (Docket 2061). I understand that I do not need to make a FOIA request in order to view the documents. However, I am submitting this FOIA just in case there are documents relating to the site that are in addition to what is available in the Public Documents Room.

Specifically I am interested in all regulatory information relating to the Facility including but not limited to, correspondence, reports and other documents relating to licenses, permits, inspections, notices of violations, enforcement activities, remediation and investigation of contamination, and other operations information.

I wish to go as far back as possible. The Facility commenced operations in 1932 after Lindsay Light and Chemical Company acquired the property. Lindsay (and the Facility) was acquired by American Potash and Chemical Corporation in May 1958. American Potash (and the Facility) was acquired by Kerr-McGee Chemical Corporation ("Kerr-McGee") in December 1967.

Please forward my request to all the appropriate offices within the NRC. Please call me at (847) 577-0022 if you have any questions. Thank you.

Very Truly Yours,

  
Yazid Ebeid

International Environmental Services, Inc.

9610180124 961016  
PDR FOIA  
EBEID96-381 PDR



**Energy Measurements Group**



Aerial Measuring Systems

**AN AERIAL RADIOLOGICAL SURVEY OF  
WEST CHICAGO, ILLINOIS**

**DATE OF SURVEY: SEPTEMBER 1977**

**AUGUST 1978**

8004030308 2011.

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## AN AERIAL RADIOLOGICAL SURVEY OF WEST CHICAGO, ILLINOIS

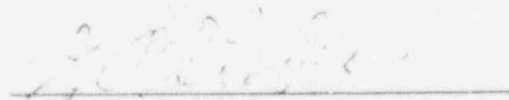
DATE OF SURVEY: SEPTEMBER 1977

P. K. Boyns, W. A. Frankhauser, T. J. Hendricks, G. R. Shipman  
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This Document is UNCLASSIFIED

  
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### ABSTRACT

An aerial radiological survey was conducted over the City of West Chicago, Illinois. The survey was performed in September 1977, using sodium iodide detectors mounted on a helicopter. Gamma gross count and "excess thallium" radiation isopleths were superimposed on an aerial photograph of the City. Several areas with high concentrations of  $^{208}\text{Th}$  were located.

The survey was sponsored by the United States Nuclear Regulatory Commission and conducted by EG&G.

## ACKNOWLEDGMENTS

EG&G wishes to thank Dr. N. A. Frigerio, Dr. LaVoy, and Mr. T. Larson of Argonne National Laboratory, whose ground survey and soil sampling data were extremely valuable for interpreting the aerial data.

Special appreciation is given to B. H. Weiss, Office of Inspection and Enforcement, United States Nuclear Regulatory Commission, for his support and encouragement in this program.

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## 1.0 INTRODUCTION

The United States Department of Energy (DOE) operates an aerial surveillance operation called AMS (Aerial Measuring Systems).<sup>\*</sup> From its inception in 1958, the program has included radiological surveys of nuclear power plants, processing plants for nuclear materials, and research laboratories. AMS aircraft have been deployed to nuclear accident sites or in search of lost radioisotopes. AMS aircraft also have mapping and multispectral camera arrays for aerial photography, a thermal mapper for infrared imagery, a broad array of meteorological sensors, and air sampling systems for particulate and whole gas measurements.

This system is maintained and operated for the DOE by EG&G. At the request of federal agencies, such as the Nuclear Regulatory Commission (NRC), or state agencies, AMS is deployed for various aerial survey operations.

In September 1977, NRC requested EG&G to conduct an aerial survey of the City of West Chicago, Illinois. On 12 September, the AMS Hughes H-500 helicopter started the West Chicago survey. The survey was conducted at an altitude of 150 m. The Federal Aviation Agency restricted the helicopter to a minimum altitude of 150 m over the populated area of West Chicago. The survey area covered a 55 km<sup>2</sup> area centered over the City.

This report discusses the survey plan and the results in considerable detail. The data acquisition equipment will be discussed only briefly, since it is carefully presented elsewhere.<sup>(1)</sup>

## 2.0 SURVEY PLAN

A highly enlarged aerial photo of the City of West Chicago was used to lay out the survey flight lines.

The navigator visually directed the aircraft along the programmed flight lines on the photograph. The survey pattern consisted of 40 parallel lines spaced at 183 m intervals and 7.4 km in length. The flight lines were oriented in a north-south direction (Fig. 1).

## 3.0 AIRBORNE EQUIPMENT

A Hughes H-500 helicopter (Fig. 2) was used for the survey of West Chicago. The H-500 carried a crew of two - pilot and navigator. It employed a light weight version of the Radiation and Environmental Data Acquisition and Recorder (REDAR) system. Two pods, each containing ten 12.7 cm diameter by 5.1 cm thick NaI(Tl) detectors, were mounted on the sides of the helicopter. Gamma ray signals from the 20 detectors were summed and routed through an analog-to-digital converter and a pulse-height analyzer. Gamma spectra were accumulated in 3 sec intervals and recorded on 1/2 in magnetic tape.

The helicopter position was established with two systems: a Trisponder/202A Microwave Ranging System (MRS) and an AL-101 radio altimeter. The Trisponder master station mounted in the helicopter interrogated two remote transceivers mounted on towers outside the survey area. By measuring the round-trip propagation time between the master and

remote stations, the master computed the distance to each. These distances were recorded on magnetic tape each second. In subsequent computer processing they were converted to position coordinates.

The radio altimeter similarly measured the time lag for the return of a pulsed signal and converted this to aircraft altitude. For altitudes up to 150 m, the accuracy was  $\pm 0.6$  m or  $\pm 2\%$ , whichever is greater. These data were also recorded on magnetic tape so that any variations in gamma signal strength caused by altitude fluctuation could be accurately compensated.

The detectors and electronic systems which accumulate and record the data are described only briefly here. They are described in considerable detail in a previous report.<sup>(1)</sup>

## 4.0 DATA PROCESSING SYSTEM

Data processing was begun in the field with the Radiation and Environmental Data Analyzer and Computer (REDAC) system. This is a computer analysis laboratory, mounted in a mobile van (Fig. 3). The van and aircraft were based at the DuPage County Airport near St. Charles, Illinois.

The REDAC (Fig. 4) consists primarily of two Cipher Data tape drives, a Data General NOVA 840 computer, two CalComp plotters, and a Tektronics CRT display screen. The computer has a 32 k-word core memory and an additional  $1.2 \times 10^6$ -word disc memory. An extensive collection of software routines is available for data processing.

<sup>\*</sup>Formerly the Aerial Radiological Measuring System (ARMS).



## 5.0 DATA ANALYSIS

The basic objective of the West Chicago survey was to locate areas of "anomalous" thorium activity and provide a quantitative interpretation of the results.

### 5.1 ANOMALOUS THORIUM ACTIVITY

One hundred percent of the naturally occurring thorium exists as the radioactive isotope  $^{232}\text{Th}$  (half life of  $1.39 \times 10^{10}$  years), which is the parent of all radionuclides in the thorium chain. If no chemical separation has taken place, the decay rates of all members of this chain will be equal in any given mass of soil. Since  $^{232}\text{Th}$  does not emit energetic  $\gamma$ -rays that are readily detected by the AMS, the presence of this nuclide is inferred from the 2.614 photon emitted by one of its daughters,  $^{208}\text{Tl}$ .

A window covering the range between 2.51 MeV and 2.77 MeV was set to monitor this  $\gamma$ -ray. The count rate in this window can be written:

$$N_2 = B_2 + T_2 \quad (1)$$

where

$B_2$  = "background" count rate due to naturally occurring  $^{208}\text{Tl}$ , cosmic rays and aircraft background

$T_2$  = count rate due to "excess"  $^{208}\text{Tl}$

Due to changes in natural terrestrial background levels, the value of  $B_2$  changes with location. In nature it is found that the ratio of the contribution of the natural emitter components ( $^{40}\text{K}$ , the uranium chain, and the thorium chain) varies less with position than their absolute magnitude. For this reason, it is advantageous to monitor a second window that senses primarily the most active natural emitter,  $^{40}\text{K}$ . If one assumes a constant ratio between concentrations of natural emitters, the count rate in this window (extending from 1.39 MeV to 1.54 MeV) can be used to remove that portion of the  $^{208}\text{Tl}$  window count rate due to naturally occurring  $^{208}\text{Tl}$ . The count rate in this second,  $^{40}\text{K}$ , window can be written:

$$N_1 = B_1 + T_1 \quad (2)$$

where

$B_1$  = "background" count rate due to natural terrestrially occurring  $^{208}\text{Tl}$ ,  $^{214}\text{Bi}$ , and  $^{40}\text{K}$ , and non-terrestrial cosmic rays and aircraft background

$T_1$  = count rate due to terrestrial "excess"  $^{208}\text{Tl}$

It will be assumed that:

$$B_1 = b_{12}B_2 \quad (3)$$

This assumption will be in error if the ratio of terrestrial components changes or if the non-terrestrial (constant) portion of the window count rates becomes an appreciable fraction of the total window count rates. The value of  $b_{12}$  is determined from data taken over areas near the contaminated area, but believed to be devoid of excess thallium.

The following equation results from substituting the expression for  $B_1$  from equation 3 into equation 2, and eliminating  $B_2$  between this equation and equation 1:

$$T_2 = \frac{b_{12}N_2 - N_1}{b_{12} - T_1/T_2} \quad (4)$$

This equation gives the excess thallium in terms of measured window count rates, a ratio,  $b_{12}$ , determined from data over uncontaminated regions, and the ratio  $T_1/T_2$ , which represents the ratio of counts in the  $^{40}\text{K}$  window to counts in the thallium window for a pure thallium spectrum. This last ratio is obtained by subtracting data taken over a background region from data taken over a highly contaminated thallium region.

Figure 5 shows the gross count rate vs. time for a flight line that passed over the West Chicago Park and Industrial areas where a high concentration of  $^{208}\text{Tl}$  had been detected by ground surveys. The first 81 seconds of data on this flight line were assumed to represent background. Figure 6 shows the  $\gamma$ -ray spectrum taken over this time interval. Arrows in this figure define the major photopeak, and bars enclose the two energy windows used to extract excess thallium. The spectral data over the Park area (Fig. 7) indicated an increase in the  $^{208}\text{Tl}$  activity. A  $^{208}\text{Tl}$  spectrum (Fig. 8) was obtained by subtracting the background spectrum from the Park area spectrum. Both spectra were normalized to the same collection lifetime before subtraction. The constant  $T_1/T_2$  could now be determined from the resultant net spectrum over the Park containing nearly pure  $^{208}\text{Tl}$ .

Figure 9 shows the result of applying the "excess thallium" algorithm with a 5 sec sliding interval smoothing function to the window data corresponding to the gross count data shown in Fig. 5.

The minimum detectable change in the thallium concentration was determined by plotting the distribution of the "excess thallium". A symmetrical distribution at zero would result if there were no areas of changing thallium to potassium ratios. The upper or



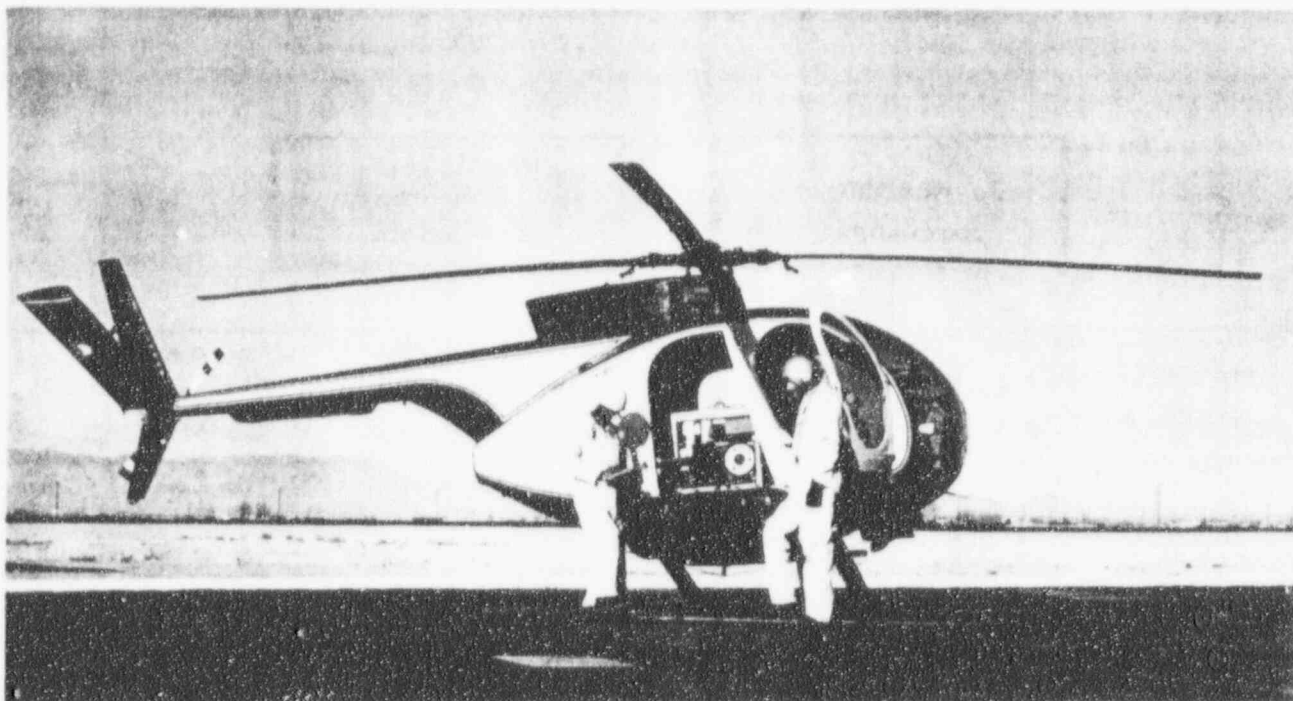


Figure 2. The Hughes H-500 helicopter is operated by a pilot and a navigator. The latter also operates the REDAR system in the rear compartment. Each detector pod contains ten sodium iodide detectors.

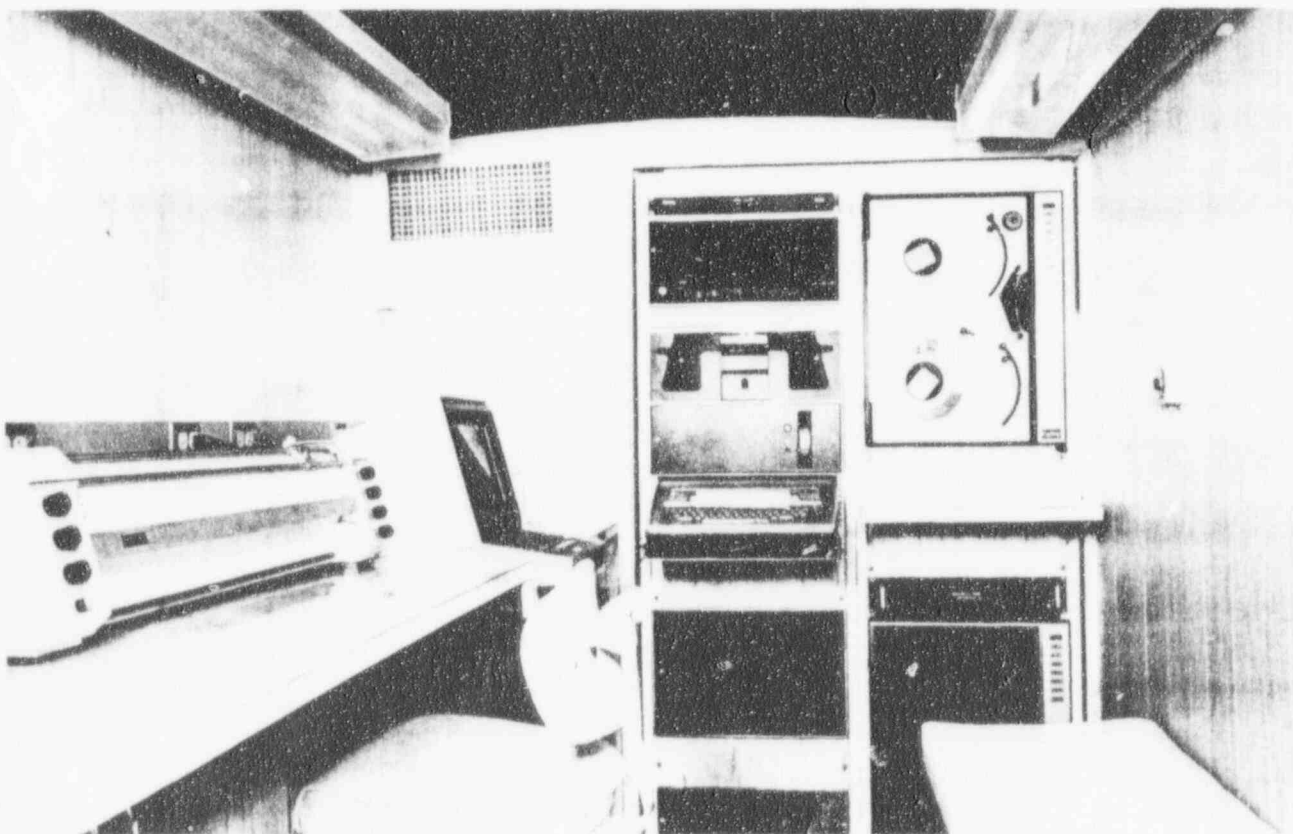


Figure 3. The heart of the REDAC system is a NOVA 840 computer. Sophisticated software routines allow preliminary isopleths to be prepared in the field. Gamma spectra may be obtained immediately after the aircraft returns from a mission.

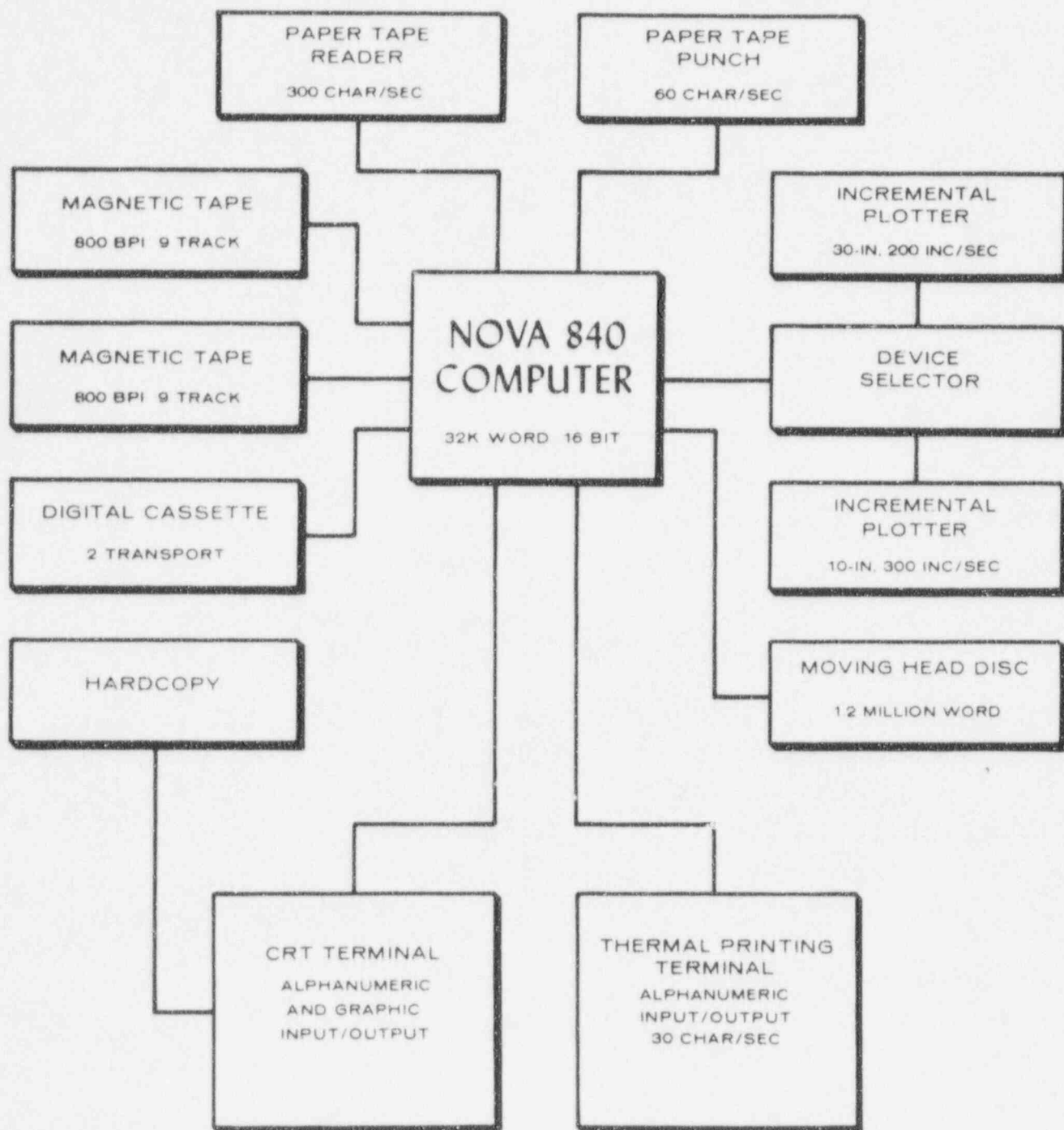


Figure 4. A block diagram of the REDAC system.



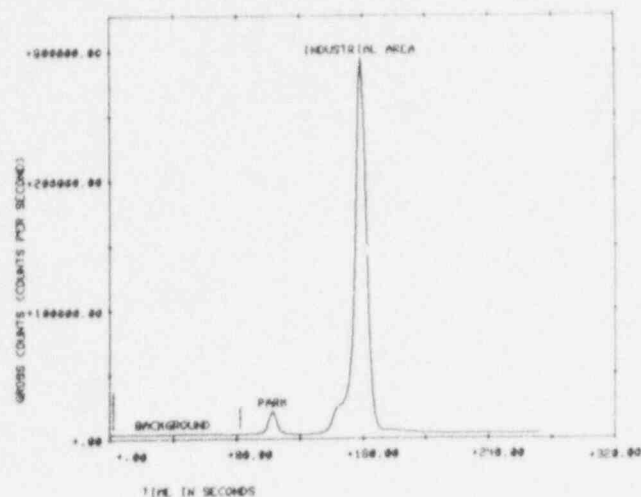


Figure 5. Gross count rate vs. time for background over the Park and Industrial areas.

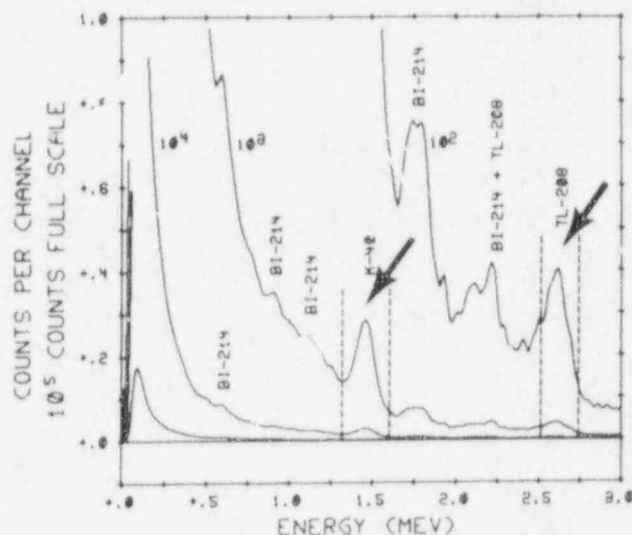


Figure 6. "Normal" background for West Chicago survey.

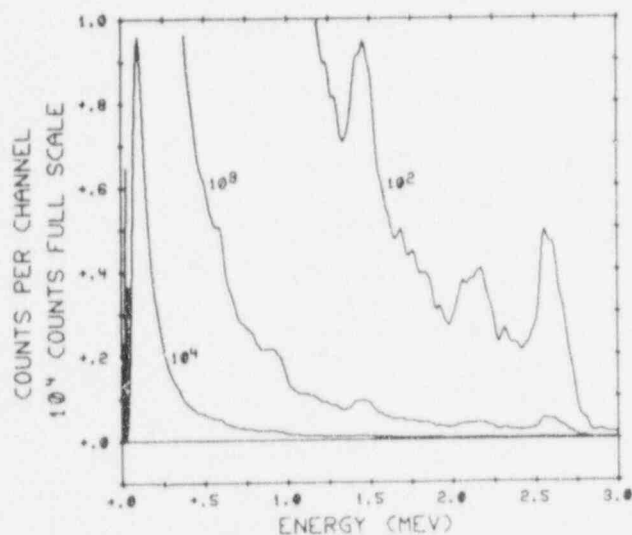


Figure 7. Gross spectrum of Park area.

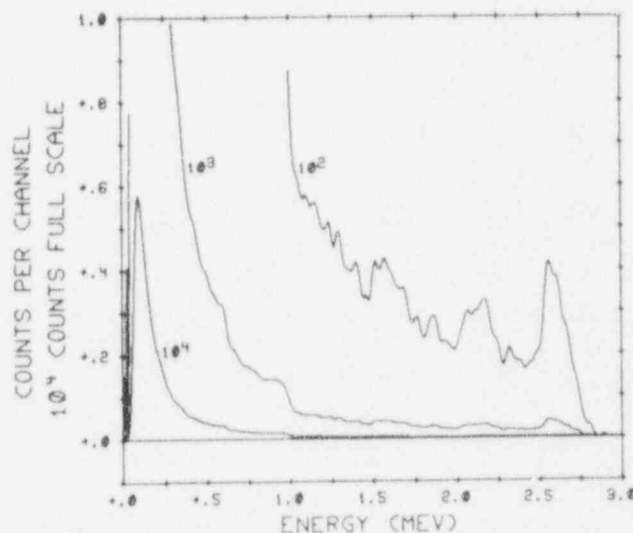


Figure 8.  $^{208}\text{Tl}$  spectrum.

positive side of the distribution is distorted due to the increase in the thallium to potassium ratio detected in the survey. Therefore, the lower or negative side of the distribution was used to determine the statistical variations in the "excess thallium" algorithm. The three sigma or 99% confidence level was selected as the minimum detectable change in the thallium activity. Figure 10 shows the three sigma level was  $\pm 5.9$  counts per second (cps).

Figure 11 shows the "excess thallium" compared to the "normal" background in the West Chicago area, using the three second spectral data smoothed with a five second sliding interval. The exposure rate in the

"normal" background area was  $7 \pm 1 \mu\text{R/h}$  at 1 m above ground level.

## 5.2 QUANTITATIVE DATA

Since the airborne detector system has a large field-of-view, it is very difficult to differentiate between a point source and a small area distributed source. A source distributed over a circular area of less than a few hundred meters will appear as a point source to the AMS detector system moving at 60 knots at an altitude of 150 m.

It is difficult to give quantitative results when sources are distributed over an area less than the field-of-view

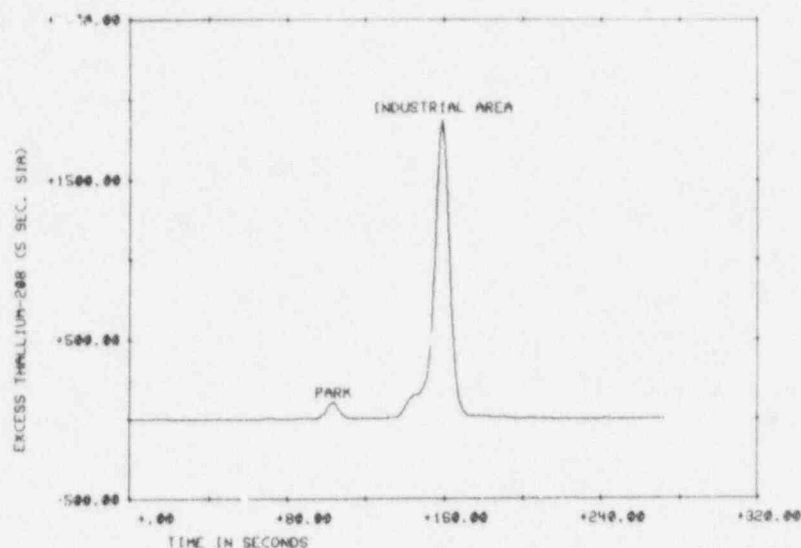


Figure 9. Stripped "excess thallium" with five second sliding interval analysis for flight over the Park and Industrial areas.

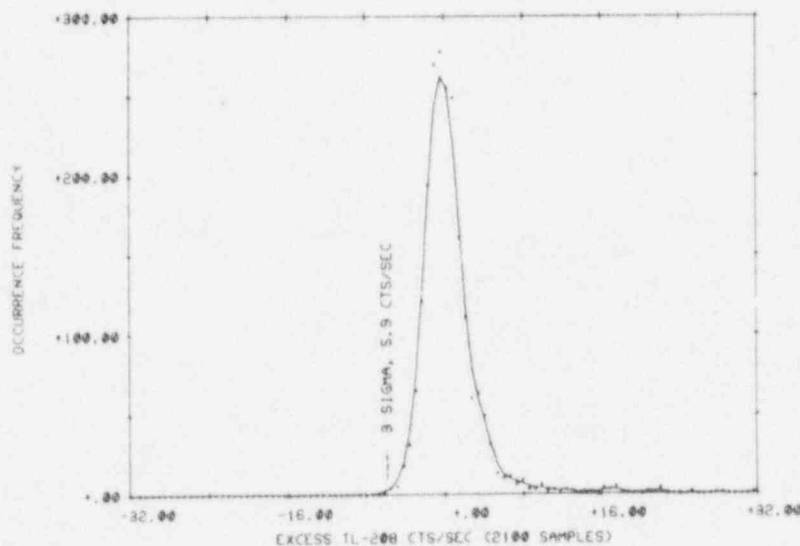


Figure 10. Distribution of the stripped "excess thallium" occurrence frequency for the West Chicago survey.

of the detector system. Theoretical data have been calculated to aid in the interpretation of the contours into useful information for point and distributed sources.<sup>(1)(2)</sup>

#### 5.2.1 Point Source

The detector system can detect the energetic 2.614 MeV gammas from  $^{208}\text{Tl}$  at distances of up to 600 m from a point source. The aerial data from a point source will produce contours extending over large areas. It is important to limit the areas of investigation when the contours indicate the presence of a point

source. Figure 12 shows the theoretical signal shape for a  $^{208}\text{Tl}$  point source vs. time for the AMS at 150 m altitude. These data have been scaled to the same levels (right hand side of Fig. 12) used for the "excess thallium" contour (Fig. 11).

The resulting contours in Fig. 13 can be used to determine the presence of a point source. If the actual contours do not follow the shape of the theoretical contours, there may be numerous point sources or extended distributed sources present. The theoretical contours and "excess thallium" contours have the same distance scaling factor.



Figure 11. "Excess thallium" contour over the City of West Chicago.

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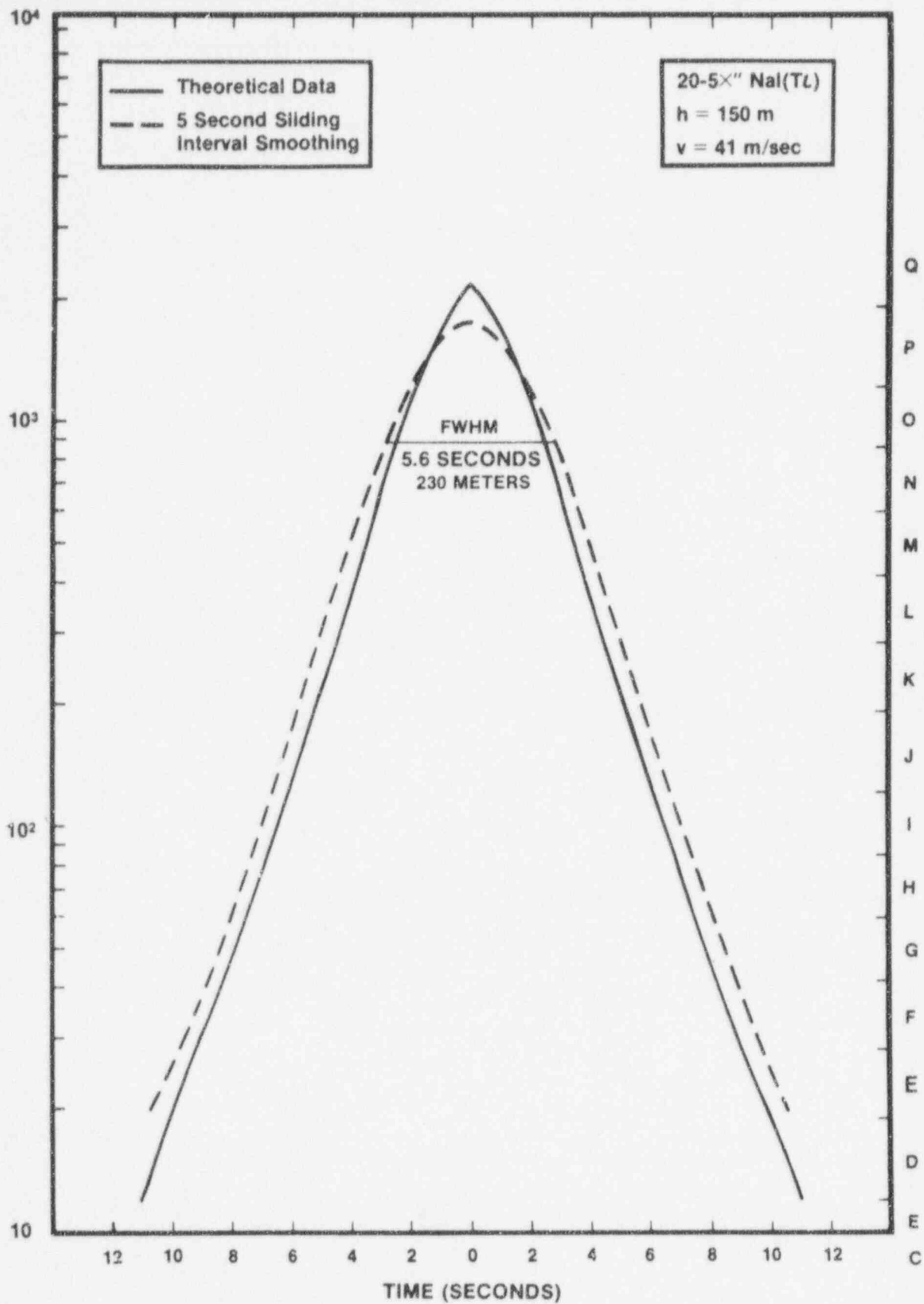


Figure 12. Photoppeak count rate vs. time for a 1 Ci  $^{208}\text{Tl}$  point source.



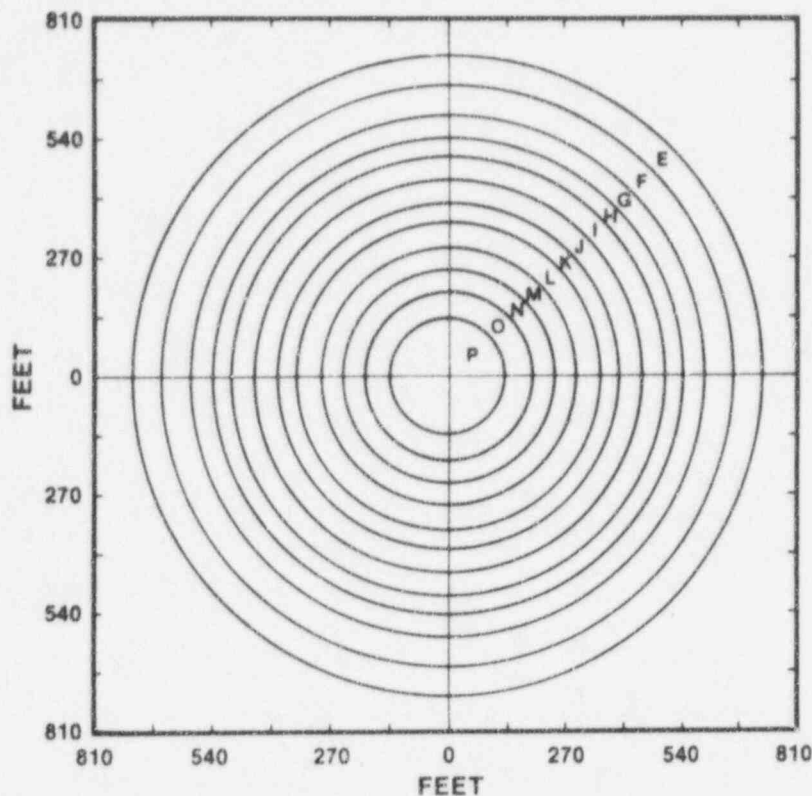


Figure 13. Resultant contours for a 1 ci  $^{208}\text{Tl}$  point source (see attached scaled template for overlay on Fig. 11).

### 5.2.2 Distributed Sources

A volume source assumption was used to calculate the exposure rate data for distributed sources (assuming the source was uniformly distributed vertically in the soil). The  $^{208}\text{Tl}$  source has to be uniformly distributed to a depth greater than 34 cm to approximate a volume source.

According to ground sampling studies by the Argonne National Laboratory, the West Chicago area has numerous sources distributed horizontally over areas less than the 600 m diameter field-of-view of the detector system. Theoretical data were used again to calculate the exposure rate for various diameter (d) volume sources. The source is assumed to be uniformly distributed in a cylinder of soil of infinite depth.

The exposure rates are letter labeled in Table I. They are used in the conversion scale in the "excess thallium" contour as a function of the diameter of the source. The exposure rate was determined by computing the  $^{208}\text{Tl}$  activity in pico-curies per gram of soil. A conversion factor of  $1.36 \mu\text{R/h}$  per  $\text{pCi/g}$  of soil was then used.<sup>(3)</sup>

If the  $^{232}\text{Th}$  and  $^{208}\text{Tl}$  are in secular equilibrium, the  $^{208}\text{Tl}$  activity can be used as a direct conversion to  $^{232}\text{Th}$  activity. In this case, the exposure rate conversion factor for  $^{232}\text{Th}$  and all of its daughters is  $2.82 \mu\text{R/h}$  per  $\text{pCi/g}$ .<sup>(3)</sup> The result would be an increase of a factor of 2.07 in the exposure rates in Table I.

## 6.0 RESULTS

### 6.1 "EXCESS THALLIUM"

Estimating the exposure rate for the "excess thallium" contours is dependent on many variables. Basically the following assumptions were made to estimate the exposure rate: (1) source uniformly distributed in the soil, (2) ratio of the naturally occurring  $^{40}\text{K}$  to  $^{208}\text{Tl}$  was constant in the survey area, and (3) exposure rate was due to  $^{208}\text{Tl}$  or  $^{232}\text{Th}$  and their daughters.

Soil sampling will provide the information on the depth distribution and the local spatial extent of the source horizontally in areas indicating "excess thallium". Estimates of the exposure rates can be made if the diameter of the source's distribution can be determined (Table I).

Table 1. Exposure Rate Conversion Factors for "Excess Thallium"

LETTER LABEL	EXCESS $^{208}\text{Tl}$ 2.51 - 2.77 MeV CTS/SEC	ESTIMATED EXPOSURE RATE IN ( $\mu\text{R/h}$ ) AT ONE METER ABOVE TERRAIN AS A FUNCTION OF SOURCE DIAMETER (d) IN METERS.			
		d=61	d=122	d=244	d=305
@	-5.9 - -5.9	0.0	0.0	0.0	0.00
A	-5.9 - 5.9	4.1	1.0	0.3	0.16
B	5.9 - 8.5	5.9	1.5	0.4	0.24
C	8.5 - 12.0	8.3	2.1	0.5	0.33
D	12.0 - 19.0	13.2	3.3	0.8	0.53
E	19.0 - 28.0	19.5	4.9	1.2	0.78
F	28.0 - 41.0	28.5	7.1	1.8	1.14
G	41.0 - 59.0	41.0	10.3	2.6	1.64
H	59.0 - 85.0	59.1	14.8	3.7	2.36
I	85.0 - 120.0	83.4	20.9	5.2	3.34
J	120.0 - 190.0	132.0	33.0	8.2	5.28
K	190.0 - 280.0	195.0	48.7	12.1	7.78
L	280.0 - 410.0	285.0	71.2	17.8	11.4
M	410.0 - 590.0	410.0	103.0	25.6	16.4
N	590.0 - 850.0	591.0	148.0	36.9	23.6
O	850.0 - 1200.0	834.0	209.0	52.0	33.4
P	1200.0 - 1900.0	1320.0	330.0	82.4	52.8
Q	1900.0 - 2800.0	1950.0	487.0	121.0	77.8
*MAXIMUM EXPOSURE RATE FOR EACH SYMBOL ASSUMING THE SOURCE IS UNIFORMLY DISTRIBUTED VERTICALLY AND HORIZONTALLY OVER A CIRCULAR AREA WITH VARIOUS DIAMETERS (d).					

The absence of identifiable photopeaks in Fig. 8 demonstrates that the excess thallium component of the spectrum far overshadows any difference between natural emitters in the background region and highly contaminated region. The use of the ratio technique (equation 4) to further remove background will improve accuracy in fringe areas of low excess thallium activity. Also, the small sigma ( $\pm 5.9$  cps) of the "excess thallium" occurrence frequency distribution in Fig. 10, indicates the ratio of the naturally occurring  $^{40}\text{K}$  to  $^{208}\text{Tl}$  was fairly constant over the survey area. Therefore, the basic assumption of the constant ratio of  $^{40}\text{K}/^{208}\text{Tl}$  in the survey area for the "excess thallium" stripping technique was satisfactory.

Soil sample data will be required to determine the  $^{232}\text{Th}$  to  $^{208}\text{Tl}$  equivalence factor. If the  $^{232}\text{Th}$  and  $^{208}\text{Tl}$  are in secular equilibrium, the exposure rate would be

due to  $^{232}\text{Th}$  and all of its daughters, including  $^{208}\text{Tl}$ . The exposure rate conversion factors would increase by 2.07 for each letter symbol in the "excess thallium" contour.

#### 6.1.1 Industrial Area

"Excess thallium" was detected over the entire Industrial area. The highest concentration of thallium was detected in the southern section of the Industrial complex. This was apparently a storage area for the material used in the industrial operation.

The contours do not decrease as expected outside the perimeter of the Industrial area. This indicates that some of the material is outside the complex. The theoretical contours from a point source (Fig. 13) indicate the contours should decrease at the rate of approximately one interval per 22 m. It appears that natural erosion has spread the activity outside the

perimeter of the Industrial area and along the Kress Creek. The removal of the  $^{208}\text{Tl}$  material to areas in the residential sections could account for the activity detected outside the perimeter of the Industrial area.

#### 6.1.2 Park Area

A substantial quantity of  $^{208}\text{Tl}$  activity was detected in the Park area. The exposure rates were estimated to be between  $3\text{--}84\ \mu\text{R/h}$ , depending on the diameter of the source distribution. The  $^{208}\text{Tl}$  activity was definitely not a single point source. The activity was spread over an area of several hundred meters.

#### 6.1.3 Sewage Treatment Plant

Exposure rates in this area were between  $2\text{--}59\ \mu\text{R/h}$ , again depending on the diameter of the source distribution. The activity appears to be distributed over an area greater than 230 m in diameter, the full width half maximum (FWHM) of the signal from a point source (Fig. 12).

#### 6.1.4 Kress Creek

The  $^{208}\text{Tl}$  activity appears to be deposited in the banks of Kress Creek from the Industrial area to the DuPage River.

### 6.2 GROSS COUNT CONTOUR

The gross count rate is the integration of all gamma rays interacting with the detectors with energies between 0.05 and 3.00 MeV.

An increased gross count activity was detected near

the National Accelerator Laboratory. This area did not indicate the activity was due to "excess thallium" in Fig. 11. The spectral data in Fig. 14 indicates the increased activity was due to man-made activation products, namely  $^{22}\text{Na}$  and  $^{54}\text{Mn}$ . The activity is located in a building complex which is part of the National Accelerator Laboratory (Fermi Laboratory) operations. The activation products are accountable and discussed in a survey of the Laboratory area.<sup>(4)</sup>

The cosmic ray and aircraft background were measured over a lake near Warrenhurst, Illinois. The cosmic ray exposure rate was approximately  $3.7\ \mu\text{R/h}$  at the time of the survey. Figure 15 is the resultant terrestrial gross count contour. The cosmic ray and aircraft backgrounds have been removed from these data.<sup>(1)</sup> The gross count contours show an increase over the same areas indicating "excess thallium" in Fig. 11, as expected.

Generally a constant conversion factor of approximately 500 cps per  $\mu\text{R/h}$  at 1 m above terrain can be used to convert the gross counts to an exposure rate. However, the constant conversion factor implies a nominal mixture of natural isotopes uniformly distributed vertically and horizontally in the soil. It is impractical to apply a constant conversion factor to the gross count data, due to the uncertainty in the  $^{208}\text{Tl}$  source distribution and equilibrium. The constant conversion factor can be applied to areas without "excess thallium" and man-made isotopes.

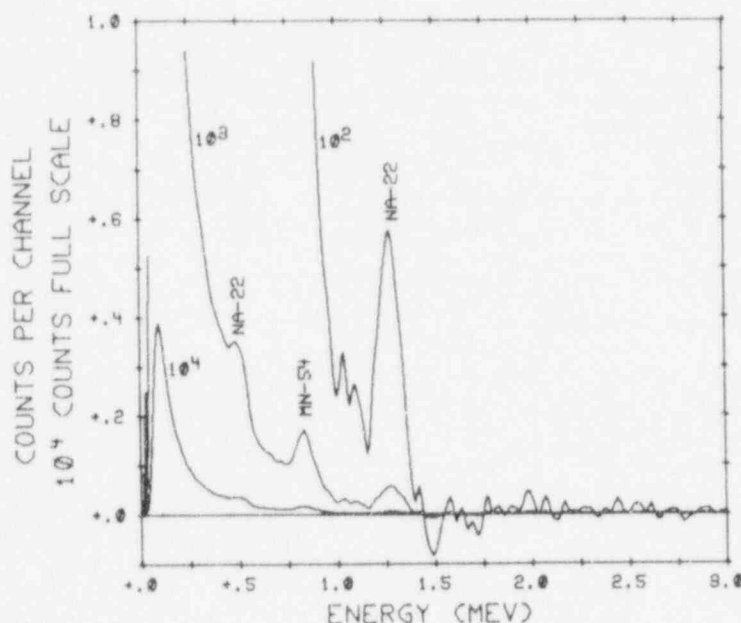


Figure 14. Man-made activity detected near Fermi Laboratory.

boratory. This area did due to "excess thallium" in Fig 14 indicates the o man-made activation  $^{204}\text{Mn}$ . The activity is  $^{204}\text{Mn}$  which is part of the ory (Fermi Laboratory) oducts are accountable the Laboratory area. <sup>40</sup>

ft background were arenhurst, Illinois. The approximately  $3.7 \mu\text{R/h}$  sure 15 is the resultant ir. The cosmic ray and ours show an increase g "excess thallium" in

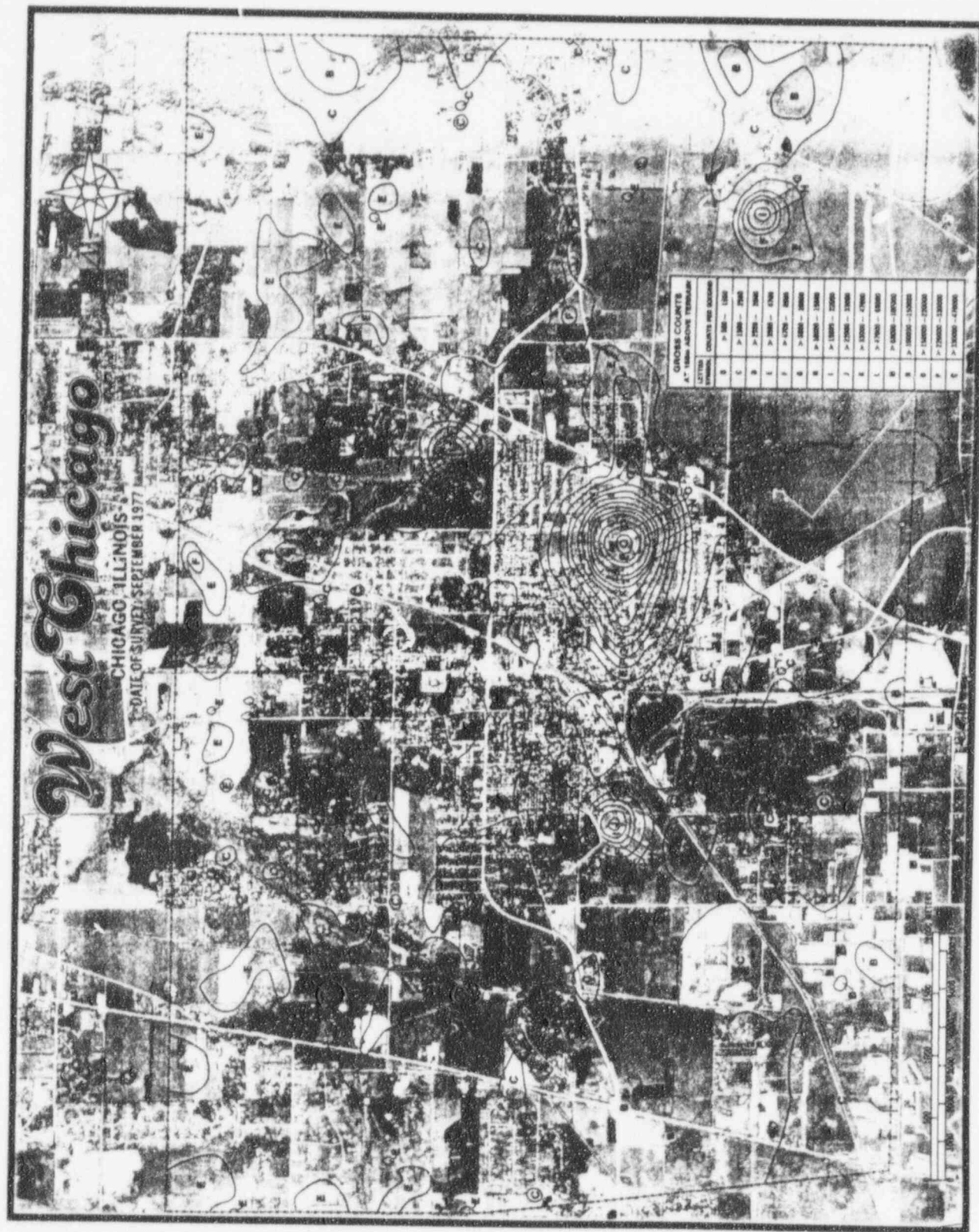


Figure 15. Terrestrial gamma ray exposure rate at 1 m above ground level.



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3. "In SITU Ge(Li) and NaI(Tl) Gamma-Ray Spectrometry," Table 8, p. 50, Report No. HASL-258, Health and Safety Laboratory, New York, New York, September 1972.
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In the Matter of

STATE OF ILLINOIS

(Amendment Number One to the Section 274  
Agreement between the NRC and Illinois)Docket No.  
PR MISC 90-1MEMORANDUM AND ORDER

CLI-90-09

## 1. Introduction

On March 28, 1990, the NRC issued a notice of a proposed amendment to the agreement which it entered into with the State of Illinois in 1987 for State assumption of regulatory authority over specified radioactive materials. See 55 Fed. Reg. 11459 (March 28, 1990). The amended agreement would empower Illinois to regulate uranium and thorium mill tailings under the Uranium Mill Tailings Radiation Control Act (UMTRCA), as amended, codified in scattered sections of 42 U.S.C.

The Kerr-McGee Chemical Corporation holds an NRC license for the West Chicago Rare Earths Facility, an Illinois site which contains a large quantity of thorium mill tailings. Kerr-McGee's license was recently amended by NRC staff to authorize the company to dispose of the tailings onsite in an earthen cell, but the amendment was contested and no final NRC action on it has yet been taken. See In the Matter of Kerr-McGee Chemical Corporation (West

A/2

Chicago Rare Earths Facility), LBP-90-9, 31 NRC 150 (February 13, 1990). In addition to filing comments on the proposed amendment, together with a request for oral argument on the proposed amendment, Kerr-McGee filed a motion on April 27, 1990 requesting that the Commission comply with section 274o of the Atomic Energy Act (AEA) which Kerr-McGee reads to require a full adjudicatory hearing before deciding whether to amend the agreement with Illinois.

For the reasons given below, the Commission is denying both Kerr-McGee's motion and its request for oral argument on the proposed amendment.

## 2. Background

Section 274 of the AEA empowers the Commission to enter into an agreement with a state whereby the state exercises regulatory authority over specified nuclear materials in lieu of the NRC. See 42 U.S.C. 2021b and c.

Before the agency can transfer any of its authority, it must find

that the State program is in accordance with the requirements of subsection o. [in cases where the State would regulate mill tailings] and in all other respects compatible with the Commission's program for the regulation of such materials, and that the State program is adequate to protect the public health and safety with respect to the materials covered by the proposed agreement.

42 U.S.C. 2021d(2). Section 274 also empowers the Commission to "terminate or suspend all or part of its agreement with the State and reassert ... regulatory authority ... if the Commission finds that (1) such termination or suspension is required to protect the public health and safety, or (2) the State has not complied with one or more of the requirements of this section." See 42 U.S.C. 2021j(1).

Illinois and the NRC entered into a section 274 agreement in 1987. See 52 Fed. Reg. 22864 (June 16, 1987). However, under that agreement, Illinois cannot exercise regulatory authority over mill tailings, or "byproduct" material as defined in section 11e(2) of the AEA (42 U.S.C. 2014e(2)).

Illinois now seeks to have the agreement amended so that the State can exercise such authority. The State has adopted standards for the regulation of section 11e(2) byproduct material which differ in some respects from the Commission's standards for such material. Section 274o explicitly provides that, for the regulation of section 11e(2) byproduct material, the State may adopt alternatives (including site-specific alternatives) to the requirements adopted and enforced by the Commission for the same purpose. 42 U.S.C. 2021o(2).

However, a state may adopt different 11e(2) byproduct material standards only

if, after notice and opportunity for public hearing the Commission determines that such alternatives will achieve [(1)] a level of stabilization and containment of the sites concerned, and [(2)] a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose ....

42 U.S.C. 2021o (last paragraph).

On March 28, 1990, the NRC staff published for comment its assessment of Illinois' program for the regulation of 11e(2) byproduct material. See 55 Fed. Reg. 11459 (March 28, 1990). As required by section 274o, the staff reviewed those regulations of Illinois' which differed from the NRC. *Id.* at 11462, col. 2. Considering the standards one by one, the staff concluded that the differing regulations in a general sense (i.e. without reference or application to a specific site or licensee) were equivalent to, or more stringent than, the NRC's corresponding standards, *id.* at 11462, col. 2 to 11463, col. 1.



The Commission is today approving the amendment to the Illinois agreement. In doing so, the Commission is approving the staff's final analysis of Illinois' generic program for regulation of 11e(2) byproduct material, including its analysis of areas where Illinois' program is more stringent. However, as this analysis makes clear:

The staff is finding several of the sections discussed above [in the analysis] more stringent and in accord with Section 274o of the Act only for the purpose of finding the Illinois program adequate, compatible and in compliance with statutory requirements so that authority may be relinquished lawfully to the State. In making the findings, NRC staff expressed a programmatic judgment that, in the majority of reasonably foreseeable circumstances, the sections would achieve a level of stabilization and containment, and a level of protection of the public health, safety, and the environment from radiological and nonradiological hazards, which is equivalent to, to the extent practicable, or more stringent than the level that must be achieved by NRC's and EPA's requirements. The staff offers no opinion whether, as applied to any particular site, the findings required by the last paragraph of section 274o can necessarily be made.

At the present time, Kerr-McGee is the only 11e(2) byproduct material licensee in Illinois. Moreover, the NRC staff only recently amended Kerr-McGee's license to permit permanent onsite disposal of the tailings at the company's West Chicago Rare Earths Facility. The NRC staff had concluded that Kerr-McGee's proposed method of disposal, with certain modifications, "would have the smallest overall health effects" of all the methods the staff had considered. See NUREG-0904, Supplement No. 1, Supplement to the Final Environmental Statement Related to the Decommissioning of the Rare Earths Facility, West Chicago, Illinois, April 1989, at 1-19. Illinois opposes permanent onsite disposal. The amendment was contested. While the NRC staff has reaffirmed its position, conditioned on the incorporation into the license amendment of certain design details provided by Kerr-McGee in July 1990, no final agency action has been taken on the license amendment.

In addition to voluminous comments on Illinois' program for 11e(2) byproduct material and the staff's assessment of that program, Kerr McGee filed a motion on April 27, 1990 calling on the NRC to comply with the last paragraph of section 274o by holding a full adjudicatory hearing -- before deciding whether to amend the agreement with Illinois -- to determine whether, as applied to permanent disposal of the West Chicago tailings, Illinois' differing standards in fact achieved a level of protection of the public and the environment at least as high as that achieved by the onsite disposal program authorized by Kerr-McGee's license. Kerr-McGee requests that the Commission issue now a notice for an opportunity for such a hearing, or at least hold the hearing.

3. The positions of Kerr-McGee and Illinois

Kerr-McGee argues first that the Commission must hold a hearing before amending the agreement with Illinois because section 274d(2), quoted above, requires that the Commission find compliance with section 274o before entering into an agreement for regulation of 11e(2) byproduct material, and the last paragraph of section 274o in turn requires that a state's differing standards be assessed not in the abstract but rather with respect to the "sites concerned", in the words of the statute.

Kerr-McGee argues second that the "public hearing" required by the last paragraph of section 274o must be a formal adjudicatory hearing because assessing Illinois' alternative standards with respect to the one "site concerned" will necessarily involve factual disputes which will require formal adjudication to resolve properly. Kerr-McGee acknowledges in its hearing request that the State's differing standards are "more stringent in some respects than the NRC standards" but asserts that, paradoxically, an

adjudicatory assessment of these standards would show that application of them to disposal of the West Chicago tailings would have a greater adverse impact on health, safety, and the environment than would the authorized program for onsite disposal.

In response, Illinois argues first that the provisions in the last paragraph of section 274o for notice and opportunity for a public hearing apply only after a state acquires regulatory authority of 11e(2) byproduct material. Illinois claims that those provisions are triggered only by a state's act of implementation with regard to an "identifiable area", but that the state regulations the NRC has assessed in considering Illinois' application for mill tailings authority are not tailored to a particular site but rather to all possible sites, present and future. Illinois believes that the hearing provisions of the last paragraph of section 274o were not intended to be yet another hurdle for a state to clear on the way to acquiring regulatory authority over 11e(2) byproduct material.

Illinois argues in the alternative that if the hearing provisions of section 274o have been triggered merely by Illinois' having proposed for the NRC staff's consideration general standards which differ from the NRC's corresponding standards, then the notice and comment procedures which the NRC has employed with respect to the proposed amendment to its agreement with Illinois constitute the "public hearing" required by the last paragraph of section 274o, just as notice and comment procedures are sufficient to satisfy the requirement in section 189a of the AEA that there be a hearing in connection with the issuance or modification of rules and regulations.

Illinois claims that if Congress had wanted a formal adjudication on a state's differing standards for 11e(2) byproduct material, it would have said so, as it did when, in another part of section 274o, it explicitly required states

exercising 11e(2) authority to provide their licensees "a public hearing, with a transcript, ... an opportunity for cross-examination, and ... a written determination ... based upon the evidence ... and ... subject to judicial review." See 42 U.S.C. 2021o(3)(A). According to Illinois, its differing standards raise no factual dispute which would require resolution by adjudication: The question of whether Illinois has an adequate program for the regulation of mill tailings is, for Illinois, distinct from the question of the fate of the tailings at the West Chicago site.

#### 4. Discussion

The Commission agrees with Kerr-McGee that the hearing requirements of the last paragraph of section 274o are triggered by Illinois' bringing forward general standards as well as site-specific alternatives. This much seems clear from the plain language of the statute. However, the Commission also agrees with Illinois that notice and comment procedures are sufficient for the purpose of assessing the State's general standards and satisfy the hearing requirement of section 274o with regard to the NRC's approval of the State's general standards and program.<sup>1</sup> See Siegel v. AEC, 400 F.2d 778 (D.C. Cir. 1968). In reviewing the Illinois program, we believe that we are required only to make a quasi-legislative judgment under 274o on whether the generic standards within the program will, in general and without reference to a particular site or licensee, lead to a level of stabilization and containment and a level of protection for public health and the environment equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the Commission's standards. Consistent with this view of what the

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<sup>1</sup> For this reason, we are denying Kerr-McGee's request for oral argument on the proposed amendment to the agreement with Illinois.

statute requires, the Commission is today reaching a final decision on entering into the amended agreement with Illinois and endorsing, as a rationale for that decision, staff's proposed assessment of March 28, 1990, as supplemented by the staff's analysis in SECY-90-253 and SECY-90-253A.

Kerr-McGee believes that we cannot assess a general standard without an adjudicatory application of that standard to the "sites concerned". We disagree. We believe that we are required only to make the quasi-legislative judgment discussed above for purposes of amending our agreement with the State of Illinois to relinquish our authority over 11(e)(2) byproduct material.

To subject every state proposal for a different standard to a formal adjudication would, where a state had a number of potentially affected sites, entail exhaustive licensee and site specific hearings before any transfer of 11e(2) authority. The West Chicago site may be the only 11e(2) site in Illinois now, but we hesitate to presume what the future may yield. Moreover, section 274o applies to other states and we cannot endorse an interpretation of that section that could prove generally unsound and unworkable for future agreements. Before relinquishing some of our authority over 11e(2) byproduct material, we should make programmatic judgments about the general standards that the State has proposed. It would be as much a mistake to approve the program because it could lead to sound results in a single case as it would be to disapprove the whole program because it could lead to unsound results in a single case.

In addition to its obligation to assess a state's general standards, the Commission also has the very important obligation to assure that a state's application of standards that differ from those established by the Commission also achieve a level of stabilization and containment of particular sites, and a level of protection of public health and the environment, equivalent to, to



the extent practicable, or greater than, the level which would be achieved by the Commission's standards. This latter obligation is quite distinct from the former, because it is not infrequent in the law that a body of general standards each of which is sound in the abstract may, when applied singly or together to a particular case, yield unsound results. We believe that this site-specific obligation will arise only later if and when Illinois, having acquired authority over 110(2) byproduct material, seeks to impose standards which differ from the Commission's own standards.

#### 5. Conclusion

Kerr-McGee's request for oral argument on the proposed amendment to the Commission's agreement with Illinois, and Kerr-McGee's motion that a formal adjudication on Illinois' differing 110(2) standards be held before the Commission decides whether to amend its agreement with Illinois, are denied. However, if the State seeks to adopt alternatives to any requirements adopted and enforced by the Commission for disposal of the materials at the West Chicago site, the Commission will determine, after notice and opportunity for a hearing, whether the State's alternatives will achieve a level of stabilization and containment of the West Chicago site, and a level of protection for public health, safety and the environment from both radiological and nonradiological hazards associated with the site, which is equivalent to, to the extent practicable, or more stringent than, the level

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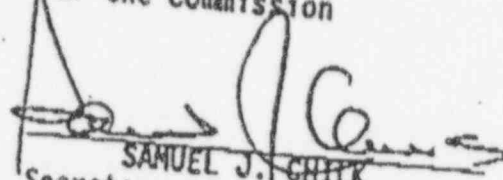
which would be achieved by any requirements adopted and enforced by the Commission for disposal of the materials at the West Chicago site.

It is so ORDERED.



Dated at Rockville, Maryland,  
this 17<sup>th</sup> day of October, 1990

For the Commission

  
SAMUEL J. CHIRK  
Secretary of the Commission

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSIONDOCKETED  
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In the Matter of

STATE OF ILLINOIS

(Amendment Number One to the Section 274  
Agreement between the NRC and Illinois)Docket No.  
PR MISC 90-1

SERVED OCT 17 1990

MEMORANDUM AND ORDER

CLI-90-09

## 1. Introduction

On March 28, 1990, the NRC issued a notice of a proposed amendment to the agreement which it entered into with the State of Illinois in 1987 for State assumption of regulatory authority over specified radioactive materials. See 55 Fed. Reg. 11459 (March 28, 1990). The amended agreement would empower Illinois to regulate uranium and thorium mill tailings under the Uranium Mill Tailings Radiation Control Act (UMTRCA), as amended, codified in scattered sections of 42 U.S.C.

The Kerr-McGee Chemical Corporation holds an NRC license for the West Chicago Rare Earths Facility, an Illinois site which contains a large quantity of thorium mill tailings. Kerr-McGee's license was recently amended by NRC staff to authorize the company to dispose of the tailings onsite in an earthen cell, but the amendment was contested and no final NRC action on it has yet been taken. See In the Matter of Kerr-McGee Chemical Corporation (West

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Chicago Rare Earths Facility), LBP-90-9, 31 NRC 150 (February 13, 1990). In addition to filing comments on the proposed amendment, together with a request for oral argument on the proposed amendment, Kerr-McGee filed a motion on April 27, 1990 requesting that the Commission comply with section 274o of the Atomic Energy Act (AEA) which Kerr-McGee reads to require a full adjudicatory hearing before deciding whether to amend the agreement with Illinois.

For the reasons given below, the Commission is denying both Kerr-McGee's motion and its request for oral argument on the proposed amendment.

## 2. Background

Section 274 of the AEA empowers the Commission to enter into an agreement with a state whereby the state exercises regulatory authority over specified nuclear materials in lieu of the NRC. See 42 U.S.C. 2021b and c.

Before the agency can transfer any of its authority, it must find

that the State program is in accordance with the requirements of subsection o. [in cases where the State would regulate mill tailings] and in all other respects compatible with the Commission's program for the regulation of such materials, and that the State program is adequate to protect the public health and safety with respect to the materials covered by the proposed agreement.

42 U.S.C. 2021d(2). Section 274 also empowers the Commission to "terminate or suspend all or part of its agreement with the State and reassert ... regulatory authority ... if the Commission finds that (1) such termination or suspension is required to protect the public health and safety, or (2) the State has not complied with one or more of the requirements of this section." See 42 U.S.C. 2021j(1).

Illinois and the NRC entered into a section 274 agreement in 1987. See 52 Fed. Reg. 22864 (June 16, 1987). However, under that agreement, Illinois cannot exercise regulatory authority over mill tailings, or "byproduct" material as defined in section 11e(2) of the AEA (42 U.S.C. 2014e(2)).

Illinois now seeks to have the agreement amended so that the State can exercise such authority. The State has adopted standards for the regulation of section 11e(2) byproduct material which differ in some respects from the Commission's standards for such material. Section 274o explicitly provides that, for the regulation of section 11e(2) byproduct material, the State may adopt alternatives (including site-specific alternatives) to the requirements adopted and enforced by the Commission for the same purpose. 42 U.S.C. 2021o(2).

However, a state may adopt different 11e(2) byproduct material standards only

if, after notice and opportunity for public hearing the Commission determines that such alternatives will achieve [(1)] a level of stabilization and containment of the sites concerned, and [(2)] a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose ....

42 U.S.C. 2021o (last paragraph).

On March 28, 1990, the NRC staff published for comment its assessment of Illinois' program for the regulation of 11e(2) byproduct material. See 55 Fed. Reg. 11459 (March 28, 1990). As required by section 274o, the staff reviewed those regulations of Illinois' which differed from the NRC. Id. at 11462, col. 2. Considering the standards one by one, the staff concluded that the differing regulations in a general sense (i.e. without reference or application to a specific site or licensee) were equivalent to, or more stringent than, the NRC's corresponding standards, id. at 11462, col. 2 to 11463, col. 1.



The Commission is today approving the amendment to the Illinois agreement. In doing so, the Commission is approving the staff's final analysis of Illinois' generic program for regulation of 11e(2) byproduct material, including its analysis of areas where Illinois' program is more stringent. However, as this analysis makes clear:

The staff is finding several of the sections discussed above [in the analysis] more stringent and in accord with Section 274o of the Act only for the purpose of finding the Illinois program adequate, compatible and in compliance with statutory requirements so that authority may be relinquished lawfully to the State. In making the findings, NRC staff expressed a programmatic judgment that, in the majority of reasonably foreseeable circumstances, the sections would achieve a level of stabilization and containment, and a level of protection of the public health, safety, and the environment from radiological and nonradiological hazards, which is equivalent to, to the extent practicable, or more stringent than the level that must be achieved by NRC's and EPA's requirements. The staff offers no opinion whether, as applied to any particular site, the findings required by the last paragraph of section 274o can necessarily be made.

At the present time, Kerr-McGee is the only 11e(2) byproduct material licensee in Illinois. Moreover, the NRC staff only recently amended Kerr-McGee's license to permit permanent onsite disposal of the tailings at the company's West Chicago Rare Earths Facility. The NRC staff had concluded that Kerr-McGee's proposed method of disposal, with certain modifications, "would have the smallest overall health effects" of all the methods the staff had considered. See NUREG-0904, Supplement No. 1, Supplement to the Final Environmental Statement Related to the Decommissioning of the Rare Earths Facility, West Chicago, Illinois, April 1989, at 1-19. Illinois opposes permanent onsite disposal. The amendment was contested. While the NRC staff has reaffirmed its position, conditioned on the incorporation into the license amendment of certain design details provided by Kerr-McGee in July 1990, no final agency action has been taken on the license amendment.

In addition to voluminous comments on Illinois' program for 11e(2) byproduct material and the staff's assessment of that program, Kerr McGee filed a motion on April 27, 1990 calling on the NRC to comply with the last paragraph of section 2740 by holding a full adjudicatory hearing -- before deciding whether to amend the agreement with Illinois -- to determine whether, as applied to permanent disposal of the West Chicago tailings, Illinois' differing standards in fact achieved a level of protection of the public and the environment at least as high as that achieved by the onsite disposal program authorized by Kerr-McGee's license. Kerr-McGee requests that the Commission issue now a notice for an opportunity for such a hearing, or at least hold the hearing.

3. The positions of Kerr-McGee and Illinois

Kerr-McGee argues first that the Commission must hold a hearing before amending the agreement with Illinois because section 274d(2), quoted above, requires that the Commission find compliance with section 2740 before entering into an agreement for regulation of 11e(2) byproduct material, and the last paragraph of section 2740 in turn requires that a state's differing standards be assessed not in the abstract but rather with respect to the "sites concerned", in the words of the statute.

Kerr-McGee argues second that the "public hearing" required by the last paragraph of section 2740 must be a formal adjudicatory hearing because assessing Illinois' alternative standards with respect to the one "site concerned" will necessarily involve factual disputes which will require formal adjudication to resolve properly. Kerr-McGee acknowledges in its hearing request that the State's differing standards are "more stringent in some respects than the NRC standards" but asserts that, paradoxically, an

adjudicatory assessment of these standards would show that application of them to disposal of the West Chicago tailings would have a greater adverse impact on health, safety, and the environment than would the authorized program for onsite disposal.

In response, Illinois argues first that the provisions in the last paragraph of section 274o for notice and opportunity for a public hearing apply only after a state acquires regulatory authority of 11e(2) byproduct material. Illinois claims that those provisions are triggered only by a state's act of implementation with regard to an "identifiable area", but that the state regulations the NRC has assessed in considering Illinois' application for mill tailings authority are not tailored to a particular site but rather to all possible sites, present and future. Illinois believes that the hearing provisions of the last paragraph of section 274o were not intended to be yet another hurdle for a state to clear on the way to acquiring regulatory authority over 11e(2) byproduct material.

Illinois argues in the alternative that if the hearing provisions of section 274o have been triggered merely by Illinois' having proposed for the NRC staff's consideration general standards which differ from the NRC's corresponding standards, then the notice and comment procedures which the NRC has employed with respect to the proposed amendment to its agreement with Illinois constitute the "public hearing" required by the last paragraph of section 274o, just as notice and comment procedures are sufficient to satisfy the requirement in section 189a of the AEA that there be a hearing in connection with the issuance or modification of rules and regulations. Illinois claims that if Congress had wanted a formal adjudication on a state's differing standards for 11e(2) byproduct material, it would have said so, as it did when, in another part of section 274o, it explicitly required states

exercising 11e(2) authority to provide their licensees "a public hearing, with a transcript, ... an opportunity for cross-examination, and ... a written determination ... based upon the evidence ... and ... subject to judicial review." See 42 U.S.C. 2021o(3)(A). According to Illinois, its differing standards raise no factual dispute which would require resolution by adjudication: The question of whether Illinois has an adequate program for the regulation of mill tailings is, for Illinois, distinct from the question of the fate of the tailings at the West Chicago site.

#### 4. Discussion

The Commission agrees with Kerr-McGee that the hearing requirements of the last paragraph of section 274o are triggered by Illinois' bringing forward general standards as well as site-specific alternatives. This much seems clear from the plain language of the statute. However, the Commission also agrees with Illinois that notice and comment procedures are sufficient for the purpose of assessing the State's general standards and satisfy the hearing requirement of section 274o with regard to the NRC's approval of the State's general standards and program.<sup>1</sup> See Siegel v. AEC, 400 F.2d 778 (D.C. Cir. 1968). In reviewing the Illinois program, we believe that we are required only to make a quasi-legislative judgment under 274o on whether the generic standards within the program will, in general and without reference to a particular site or licensee, lead to a level of stabilization and containment and a level of protection for public health and the environment equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the Commission's standards. Consistent with this view of what the

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<sup>1</sup> For this reason, we are denying Kerr-McGee's request for oral argument on the proposed amendment to the agreement with Illinois.

statute requires, the Commission is today reaching a final decision on entering into the amended agreement with Illinois and endorsing, as a rationale for that decision, staff's proposed assessment of March 28, 1990, as supplemented by the staff's analysis in SECY-90-253 and SECY-90-253A.

Kerr-McGee believes that we cannot assess a general standard without an adjudicatory application of that standard to the "sites concerned". We disagree. We believe that we are required only to make the quasi-legislative judgment discussed above for purposes of amending our agreement with the State of Illinois to relinquish our authority over 11(e)(2) byproduct material.

To subject every state proposal for a different standard to a formal adjudication would, where a state had a number of potentially affected sites, entail exhaustive licensee and site specific hearings before any transfer of 11e(2) authority. The West Chicago site may be the only 11e(2) site in Illinois now, but we hesitate to presume what the future may yield. Moreover, section 2740 applies to other states and we cannot endorse an interpretation of that section that could prove generally unsound and unworkable for future agreements. Before relinquishing some of our authority over 11e(2) byproduct material, we should make programmatic judgments about the general standards that the State has proposed. It would be as much a mistake to approve the program because it could lead to sound results in a single case as it would be to disapprove the whole program because it could lead to unsound results in a single case.

In addition to its obligation to assess a state's general standards, the Commission also has the very important obligation to assure that a state's application of standards that differ from those established by the Commission also achieve a level of stabilization and containment of particular sites, and a level of protection of public health and the environment, equivalent to, to



the extent practicable, or greater than, the level which would be achieved by the Commission's standards. This latter obligation is quite distinct from the former, because it is not infrequent in the law that a body of general standards each of which is sound in the abstract may, when applied singly or together to a particular case, yield unsound results. We believe that this site-specific obligation will arise only later if and when Illinois, having acquired authority over 11e(2) byproduct material, seeks to impose standards which differ from the Commission's own standards.

#### 5. Conclusion

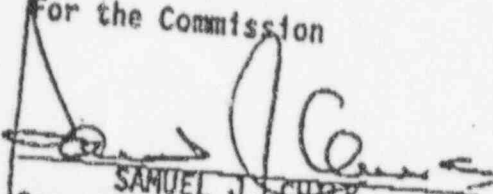
Kerr-McGee's request for oral argument on the proposed amendment to the Commission's agreement with Illinois, and Kerr-McGee's motion that a formal adjudication on Illinois' differing 11e(2) standards be held before the Commission decides whether to amend its agreement with Illinois, are denied. However, if the State seeks to adopt alternatives to any requirements adopted and enforced by the Commission for disposal of the materials at the West Chicago site, the Commission will determine, after notice and opportunity for a hearing, whether the State's alternatives will achieve a level of stabilization and containment of the West Chicago site, and a level of protection for public health, safety and the environment from both radiological and nonradiological hazards associated with the site, which is equivalent to, to the extent practicable, or more stringent than, the level

which would be achieved by any requirements adopted and enforced by the Commission for disposal of the materials at the West Chicago site.

It is so ORDERED.



Dated at Rockville, Maryland,  
this 17<sup>th</sup> day of October, 1990

For the Commission  
  
 SAMUEL J. CHALK  
 Secretary of the Commission