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# PSC 26 RADIOLOGICAL SURVEY REPORT

# FOR

# THE NAVAL AIR STATION JACKSONVILLE, FLORIDA

Prepared for

ABB ENVIRONMENTAL SERVICES, INC.

Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.
OAK RIDGE, TENNESSEE

MARCH 1995

REVISION 0

Bechtel Job No. 22567

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SUBJECT: Bechtel Job No. 22567
Department of the Navy Contract No. N62467-93-D-0936
**DO 0001, PSC 26 RADIOLOGICAL SURVEY REPORT FOR JACKSONVILLE NAVAL AIR STATION, JACKSONVILLE, FL**
Subject Code: 5320

Dear Mr. Moring:

Enclosed is a copy of the PSC 26 Radiological Survey Report for Jacksonville.

Please contact me at (904) 779-8900, or Lynn Sims at (615) 220-2450, if you have any questions.

Sincerely,

L. Sims for

V. Hermann Bauer
Project Manager

LMS:cw:LR0075
Enclosure: As stated

APR 13 1995
BY: _____

ACTION REQ'D [ ] YES [✓] NO DUE DATE _____
RESPONSE TO CHRON NO. _____

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# EXECUTIVE SUMMARY

From November 3, 1994 to January 12, 1995 a team of Bechtel and PTS radiological safety specialists conducted a survey to characterize the radiological levels and distribution over the surface of Potential Source of Contamination Number 26 (PSC 26) at the Jacksonville Naval Air Station (NAS) Jacksonville, Florida. The principal radiological contaminant had been previously determined to be radium-226, used in the 1940-1950s time frame as a luminous dial marker for aircraft instrumentation. The radium-226 contamination resulted from operation of an instrument repair and maintenance operation on the base that utilized the luminous paint as part of the facility operations.

The radiation survey consisted of a 100 percent walkover gamma survey to locate elevated activity in excess of twice the background. These elevated locations (hot spots) were then characterized to determine radiation level and size as well as location within the pre-established grid system on the site. Radiation levels were determined at the point of highest reading and consisted of beta, gamma, alpha, and dose rate readings. The size of the elevated reading was defined by the four compass points at which the gamma reading fell to 20 percent above background. The hot spot characterization was supplemented by recording the average gamma dose rate reading at each grid intersection point to provide a general gamma profile over the site. Sediment samples were taken in the moat surrounding the site and soil samples were taken on the site at selected hot spot locations, chosen to be representative of areal extent and level of activity encountered over the site.

The characterization identified a total of 169 hot spots over the 38 acre site that exceeded the twice background designation criteria. These hot spots were found to vary in size from several feet in diameter to areas as large as a total grid (150 ft by 150 ft). Levels of activity were as high as 500 μR/hr. The average background at the grid intersections onsite is approximately 5μR/hr within several centimeters of the surface. Several of the hot spots were removed and identified as electrical components. More detailed characterization determined that these components contained 2-3 μCi of radium-226. Applying this source level to the field characterization surface readings that ranged between twice background and the maximum observation of 500 μR/hr would infer, from radiation attenuation in soil, a distribution of components from 0 to 30 centimeters beneath the surface. Radioisotope concentrations in the sediment samples from the peripheral moat were in all cases below the levels for regulatory control.

# 1.0 INTRODUCTION

The U.S. Department of Navy, Southern Division, Naval Facilities Engineering Command intends to conduct radiological remedial actions at the Naval Air Station (NAS) Jacksonville, Florida, site in compliance with federal regulations. Prior to these activities, a Remedial Investigation/Feasibility Study (RI/FS) must be conducted to support the decision-making process for evaluating remedial action alternatives. Radiological characterization information is necessary to prepare the Remedial Investigation report.

Eighteen of the 45 specific areas within the NAS (Figure 1-1) have been identified as radiological potential sources of contamination (PSCs). Of these areas, PSC 26, an approximate 38-acre area, has been designated as a first priority for radiological remedial action. Detailed radiological surveillance of PSC 26 is required to determine the extent and magnitude of radioactive contamination remaining onsite for design of appropriate remedial actions. The radiological characterization entailed determination of the natural background radiation level and identification of contaminants at the NAS site and investigation of specific elevated radiation zones on PSC 26.

Bechtel Environmental, Inc. (BEI), the Environmental Response Action Contractor, performed these radiological characterizations in support of the remedial investigation being performed by ABB-Environmental Services, Inc. (ABB-ES).

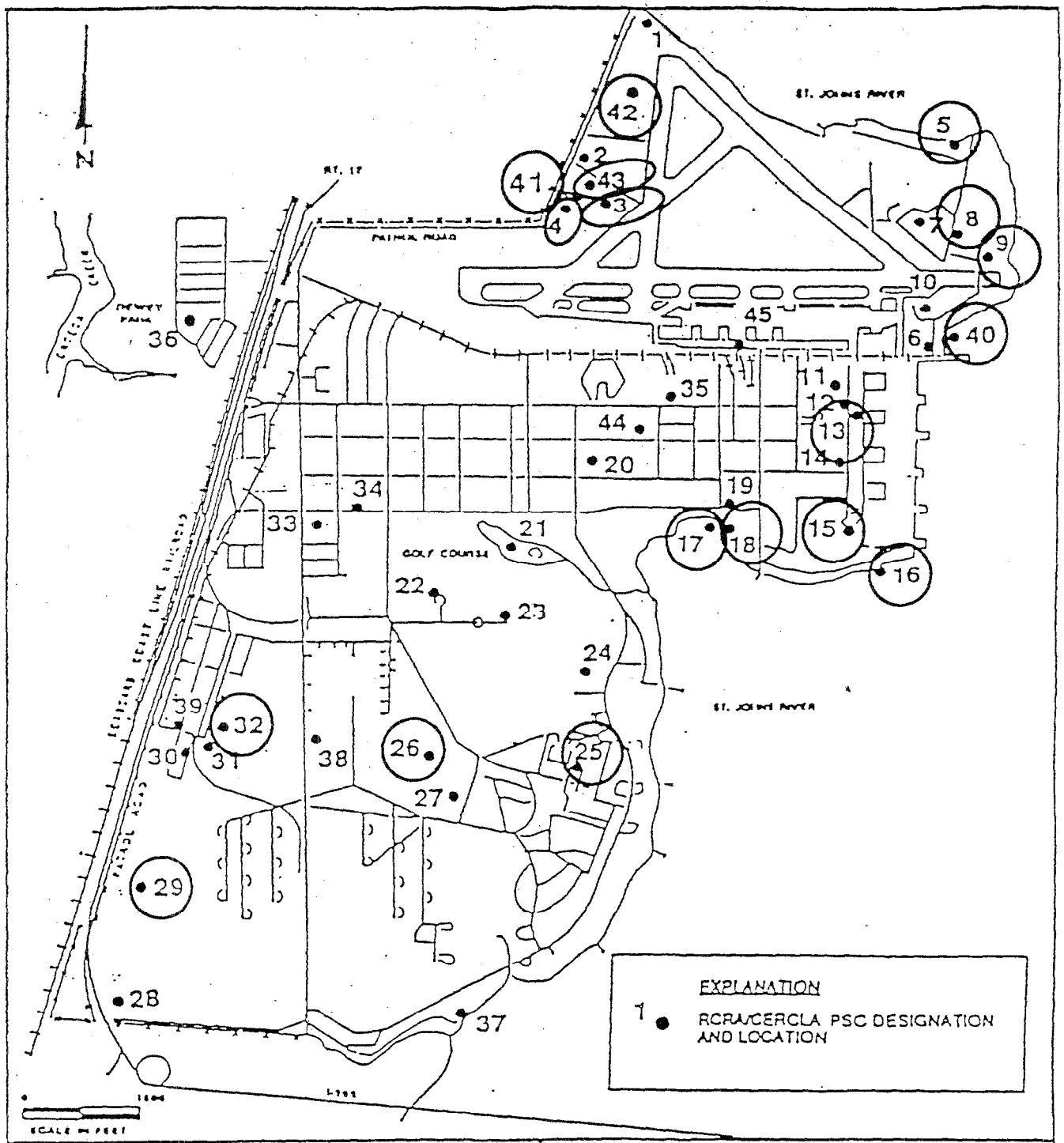
# 2.0 SITE HISTORY

The NAS Jacksonville site was originally designed for seaplane support, and when established in 1940, included facilities for pilot training and a Naval Aviation Trades School. At the end of World War II, NAS Jacksonville was devoted entirely to aviation training. The Naval Aviation Depot (NADEP) has been a major tenant of NAS Jacksonville since it operated as an assembly and repair department in 1940. The NADEP provides maintenance, engineering, logistic, and support services and performs rework, repair, and modification of aircraft, engines, and aeronautical components. Today, the NADEP is the largest tenant command on NAS Jacksonville and the largest industrial employer in Northeast Florida and Southeast Georgia, with a civilian work force of over 3,300 employees.

From June 28 to July 2, 1982, the onsite phase of a preliminary assessment (PA) was conducted as the first phase of the Naval Assessment and Control of Installation Pollutants program. This program has now been incorporated into the Navy and Marine Corps Installation Restoration (MCIR) program. The purpose of the PA was to identify, assess, and control environmental contamination from past hazardous materials storage, transfer, processing, and disposal operations. The PA identified 38 PSCs, of which 10 posed a potential threat to human health and the environment based on their Confirmation Study Ranking System (CSRS) scores. Two PSCs (PSCs 26 and 27) required interim remedial actions before conclusion of the PA.

## 2.1 PSC 26 - TERRAIN

PSC 26 is an approximate 38-acre area located near the southern midsection of the NAS site just to the west of Childs Street (Figure 2-1). This area is essentially flat terrain and contains a




PSC Locations
Figure 1-1

RI/FS WORK PLAN
FOR OU1

NAS JACKSONVILLE

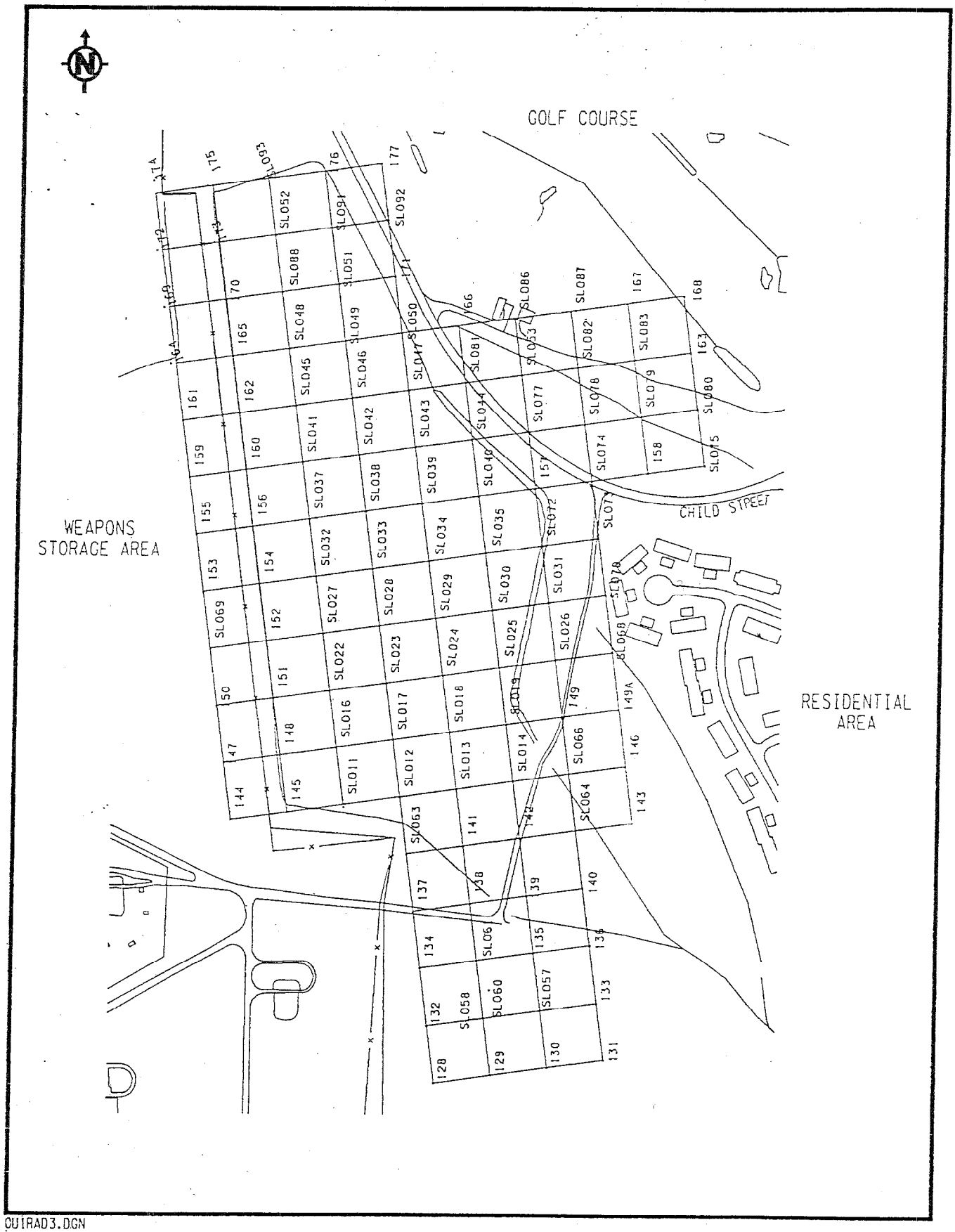



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Figure 2-1
PSC - 26 Area with Survey Grid

peripheral moat that encompasses about 25 acres of both cleared and forested landscape. It is estimated that about 40 percent of the PSC 26 terrain is forested and the cleared areas are covered with heavy grass. The moat width varies from approximately 10 to 20 ft, is about 3 ft deep, and contains a variety of aquatic vegetation. The moat is essentially a stagnant stream fed by the runoff from precipitation. During periods of heavy rainfall, the moat has been observed to increase in depth and run off into surrounding low lands. At several locations in its length, the moat has been dammed to permit development of roadways and also to prevent flow into other adjacent areas.

## 2.2 POTENTIAL REMEDIATION SOURCES

Several PSCs have been identified as having been potentially exposed to sources of low-level radioactive material or radioactive contamination over the past 50 years. Sources of low-level ionizing radiation in the form of luminous instrument dials are known to have been used at the site. Radium-226 was used as the source of luninesence in the dials. Several of the facilities at NAS Jacksonville were used to maintain, repair, store, or calibrate these gauges and dials.

PSC 26 is the main registered disposal area. This area was used for the disposal of a variety of wastes, including spent solvents, spent fuels, radium-painted luminous aircraft instrument dials, and low radiation level radium paint wastes. Vacuum tubes and other instrument parts with ionizing radiation sources may also have been disposed of on this site.

Many of the wastes were treated onsite by the Navy by burning. Demolition and construction debris as well as solid wastes were dumped at the edge of trenches and pits. Disposal was completed by bulldozing the remains into the trenches and pits, followed by the placement of an overburden. These disposal operations began in 1940 and continued until 1968. Air pollution controls ended the burning operations, and the solid wastes were disposed of offsite by a contractor. PSC 26 was officially closed on January 15, 1979.

## 2.3 PREVIOUS CLEANUP EFFORTS

A removal action for buried radium-painted aircraft instrument dials was conducted by the Navy on PSC 26 in the late 1950s. Over 500 55-gallon drums of contaminated soil and paint sources were cleaned up as a result of this effort and PSC 26 was released from radiological controls and returned to service after a verification survey.

In January 1993, through spot surveys, the Radiological Affairs Support Office (RASO) discovered that additional sources of radioactive material may still be buried at PSC 26. Additional areas throughout NAS Jacksonville were also identified by RASO as needing a formal radiological survey to evaluate whether additional sources of radioactive contamination exist.

## 3.0 RADIATION SURVEY PLAN

PSC 26 has been designated as a suspect area with possible residual radioactivity above background levels attributable to prior operations at NAS. Radiological remediation of this area has been assigned a first priority status, thereby necessitating the implementation of an accelerated survey plan. BEI developed a radiological survey plan that provides for radiation monitoring of 100 percent of the surface area of PSC 26 to identify areas exhibiting radiation levels that may be in excess of accepted cleanup standards. This plan also provides for the identification of radioisotopic concentrations in soil and sediment samples from PSC 26 through analytical investigations to assist in the design of remedial actions. The baseline for determining the significance of elevated radiation readings was derived from background radiological assessments in and around the NAS site. The radiological cleanup standard to be applied at NAS Jacksonville is 5 pCi/gm above background for radium-226 in soil. This will be confirmed by in situ surface measurements and surface soil samples on remediated surfaces.

### 3.1 PSC 26 PREPARATION

In order that a systematic method of radiation surveying could be employed and a convenient process of location identification be established, it was necessary to develop a grid system on PSC 26 from which work efforts and study findings could be related. The entire 38 acres of PSC 26 were surveyed and marked into a 150-ft grid pattern by a licensed civil survey subcontractor. This grid, shown in Figure 2-1, was located to a Florida State benchmark that ties it to the state grid system. As the grid was established, stakes with the proper identification notation were positioned at each grid intersection, thereby providing appropriate markers to assist the radiation survey operation. At grid intersect locations where stakes could not be positioned, as in the peripheral moat, offset stakes were positioned that identified their exact locations. Each grid intersect was assigned an identification number that assisted data collection and provided markers to which specific findings could be located.

The performance of walkover radiation surveys of the entire PSC 26 area required that its surface be cleared of shrubs, trees, and grass to a height no greater than 2 in. The areas covered with grass, small shrubs, and bushes were cut to an acceptable length using a farm tractor equipped with a bush hog. This included approximately 23 acres. About 15 acres of the 38 gridded acres were covered with very thick forest and required the services of a landscape subcontractor for removal. In this effort, all trees with trunks less than 5 in. in diameter were removed and all undergrowth was cut at ground level. The performance of radiation survey operations and landscape clearing was systematically scheduled so that clearing operations resulted in a minimum inpact on the survey efforts.

### 3.2 RADIOLOGICAL CHARACTERIZATION PROTOCOLS

The primary purpose for radiologically characterizing PSC 26 was to determine its radiological conditions compared to the NAS site and identify the extent and magnitude of radioactive contaminants and sources that were excluded in previous cleanup efforts. The information from these studies will be used in future decisions pertaining to the design of remedial action for PSC 26.

### 3.2.1 Methods of Detection

The detection of radiation-emitting sources and contaminants is normally achieved through either direct reading surveys with appropriate radiation detection instruments or by analytically determining radioisotopic concentrations in media using specific laboratory protocols. The methods used for characterizing PSC 26 involved both of these processes.

#### 3.2.1.1 Direct radiation reading surveys

Four specific direct reading survey operations were performed that accurately defined the radiological conditions of PSC 26. Initially, a 100 percent walkover gamma survey was conducted using a 2"x2" sodium iodide (NaI) detector to identify locations where radiation levels exceeded twice the background levels. In this survey, general area radiation levels were noted and "hot spots" were located, identified, and marked. The second survey involved the detailed characterization of hot spots by defining their radiological contours and measuring their peak radiation emissions. The measurements included gamma emissions, using a 2"x 2" NaI detector; gamma dose rates, using a μR meter; beta emissions, using a thin window pancake GM detector; and alpha emissions, using a zinc sulfide (ZnS) alpha scintillator detector. The description of the instruments used is summarized in Table 3-1. A third survey consisted of direct gamma emission and gamma dose rates near ground surface at each grid intersect location to characterize the average radiation status of PSC 26. A final survey was performed consisting of gamma dose rate measurements one meter above the surface at five random grid intersects using a highly accurate pressurized ion chamber (PIC) detector. Results of these surveys are discussed in Section 6.

#### 3.2.1.2 Analytical investigations

Radiation detection on PSC 26 was only intended to identify areas of elevated radiation emission and determine normal conditions and was not intended to develop detailed characterization of site media. Therefore, soil sampling and analytical study was limited to obtaining radiation information for areas where direct surveying was not possible (i.e., in the peripheral moat) and for identifying the radioisotopes present in the media of several hot spots.

An investigation of possible contaminants in the peripheral moat was performed by collecting eight sediment samples ( and one duplicate) at specific areas where contamination may be suspected (i.e., locations where excessive surface runoff into the moat may have occurred) and from random moat locations. These sediment samples were collected by standard techniques using protocols for collection, handling, and shipping that are in accordance with the Florida Department of Environmental Protection Regulation. Analyses for radioisotopic concentrations were performed using gamma spectroscopy and total uranium analytical methods.

Three soil samples from randomly selected hot spots were also collected to permit study of radioisotopic concentrations in these areas. In each case, a radioactive device was removed from a hot spot area, radioactive surveys were performed of the underlying soil, and soil samples were collected. These studies were intended to identify whether contaminants from the devices

Table 3-1
Portable Survey Instruments

| Activity | Detector type | Model | Readout |
|---|---|---|---|
| Dose rate | pressurized ion chamber | Reuter-Stokes | μR/hr |
| Dose rate | 1" by 1" NaI detector | Ludlum 19 | μR/hr |
| Gamma flux | 2" by 2" NaI detector | Ludlum 44-10 | cpm |
| Beta flux | thin window pancake GM detector | Ludlum 44-9 | cpm |
| Alpha flux | ZnS (Ag) alpha scintillator | Ludlum 43-65 | cpm |

migrated into the soil during the period of exposure. The information developed in these studies may also provide an order-of-magnitude comparison of radioisotopic concentrations with direct radiation readings.

### 3.2.2 Methods of Operation

The performance of 100 percent walkover radiation surveys of large land areas required the implementation of operational methods that ensure total survey coverage and thorough collection of relevant data. The radiation surveys on PSC 26 were performed using the 150 ft by 150 ft grid pattern that had been established to organize the survey methodology and to identify exact locations of findings. Initially, each grid section was assigned a specific number to assist worker operations and provide a simple system for data collection.

Since survey efforts were initiated prior to forest removal operations, only those grids on which surface vegetation could readily be cut to less than 2 in. in height were initially involved. Survey operations were conducted by radiation workers equipped with NaI detectors and gamma count meters following a prescribed method of monitoring. The instrument workers walked a specific pattern on each grid area accompanied by a helper who recorded data, mapped surface features, marked hot spot locations, and obtained supportive radiation measurements.

The survey method involved starting at a corner of the grid to be surveyed. The NaI detector was moved from side to side while walking at a pace of about 2 ft per second. The detector was swung in a serpentine pattern approximately 3 ft in width at a height of approximately 2 in. above the ground surface. In using this procedure, the detection capability of the radiation instruments provided a high probability for the detection of elevated gamma radiation emissions. Upon reaching the adjacent grid intersect location, the instrument worker would move sideways 3 ft and reverse his direction of travel so as to return directly to the grid line of origination. To insure parallel coverage and alignment, traffic cones connected by string were used to define the survey path. The radiation surveys performed on the grids of PSC 26 were normally conducted in the north-south direction. This process was repeated until the entire area of each grid had been surveyed.

During the performance of these surveys, area locations that exhibited elevated gamma emissions (hot spots) greater than 2 times the background radiation level, established as part of the daily source check for each NaI detector, were marked with flags and assigned specific identification numbers. The gamma radiation levels for these locations were noted on data sheets and detailed characterization surveys were conducted at a later date. Each hot spot was precisely located by measuring its distance from the southeast interval of the grid within which it was present. These measurements were recorded as *x,y* coordinates.

Hot spot characterization involved developing a radiation contour by defining the boundaries that exhibited radiation levels 20 percent higher than background levels and precisely locating the point within each hot spot with the peak gamma, beta, and alpha radiation levels. Separate data sheets for the hot spot information were generated to emphasize the size and radiation features of the various hot spots.

The normal background radiation characteristic of PSC 26 was studied by performing gamma radiation measurements at each of the 116 grid intersect locations. The intent of this survey was to identify the range of the local "apparent" background across the site. Since two of the grid intersect locations were underwater, only 114 of the positions were surveyed. The surveys included measurement of the gamma count rate for one full minute accompanied by measurement of the gamma dose rate. These studies were supplemented by a series of dose rate measurements at five random grid intersect locations using a PIC instrument to confirm the μR meter readings. Parallel PIC and μR meter readings were taken approximately one meter above the surface.. The PIC is recognized as the most reliable and accurate instrument for performing near background in situ gamma dose rate measurements. However, because of its size, configuration, and fragility, it is not a practical portable instrument for field use. It was used in these studies to obtain correlations for the dose rate readings from the different instruments used in this characterization.

After the forested areas were cleared, the radiation survey process was continued until all of the required locations on PSC 26 were complete. Additionally, temporary structures (tenting) that existed on some of the grid areas were removed, and the areas cleared and surveyed. These structures were repositioned upon completion of the survey work.

## 4.0 BACKGROUND DETERMINATION

### 4.1 INTRODUCTION

The operating history of the NAS Jacksonville site has included handling and disposal of materials containing low levels of radioactive materials. Onsite activities involving such materials included:

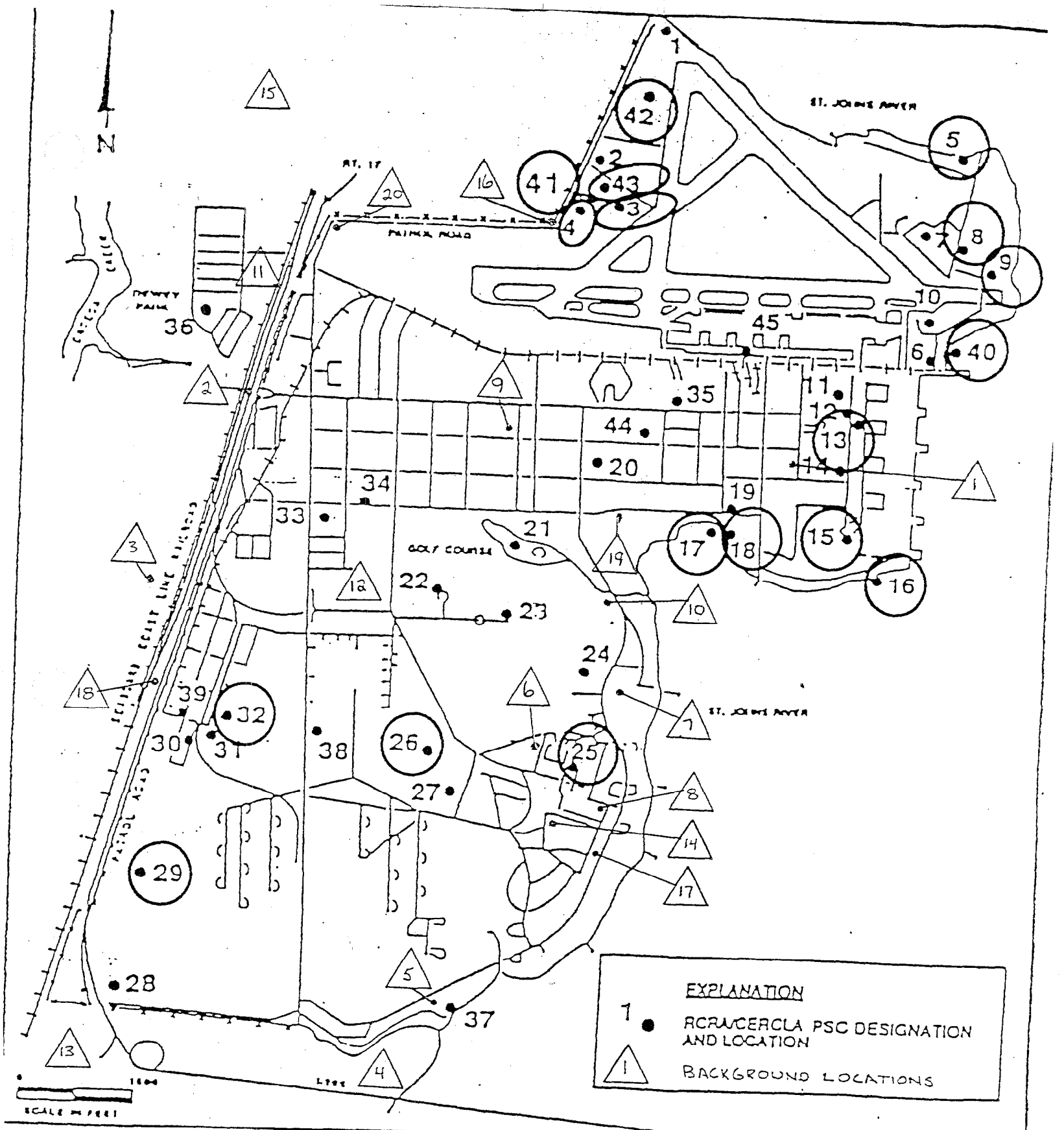
- Aircraft instrument maintenance and repair (radium-226)
- Sandblasting and cleaning (thorium-232)

Standards for both radium-226 and thorium-232 in soil are provided in regulations from the U.S. Environmental Protection Agency (EPA), in 40 CFR 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings." For concentrations in soil, this value is:

$\leq$ 5.0 pCi/gram above background [1]

Past cleanup and disposal activities involving these materials were based on regulatory standards that have been superseded by standards that are more directly applicable to the radioisotopes of interest and, in many cases, more restrictive than the previously applied standards. The NAS Jacksonville site is being resurveyed to evaluate the existing levels of residual activity for determining the needs of and planning the actions for further remediation.

To support remediation, it is necessary to determine the background activity against which the release criteria will be applied. The background levels for this site have been determined at 20 different locations on the base and around the periphery of the base. The 20 locations are shown on Figure 4-1 and are described in Table 4-1.




PSC Locations

Figure 4-1

RI/FS WORK PLAN FOR OU1

NAS JACKSONVILLE

Table 4-1
Background Measurement Locations: NAS/JAX

| Number | Location | Description |
|---|---|---|
| 1 | Saratoga & Ranger | Across from Naval Legal Office, between sidewalk and parking lot |
| 2 | Highway 17 | West side of road, south of main gate |
| 3 | Off Ortega Drive | Between apartments and railroad track |
| 4 | Collins & Malaga | NE corner of street intersection |
| 5 | Mustin Road | Edge of restricted area, adjacent to riverfront access road |
| 6 | Child Road | West edge of Naval Hospital parking lot |
| 7 | Mustin Road | Open area across from fire station, adjacent to BOQ |
| 8 | Adams & Knight | On corner of open field |
| 9 | Jason & Saratoga | Near parking lot to Yesterday Cafe |
| 10 | Mustin Road | West side of road, across from Navy Lodge |
| 11 | 120th | At North Florida Anchor Gate |
| 12 | Child Road | NW of Building 371, near ball fields |
| 13 | Highway 17 & Collins | West side of H-17, south of U-Haul |
| 14 | Tatum & Saphier | Wooded area along road, near Building 203 |
| 15 | Off Highway 17 | At end of road in mobile home park |
| 16 | Perimeter Road | NW corner of bend, south of Wastewater Treatment Area |
| 17 | Mustin Road | West of street, near park |
| 18 | Highway 17 | West side of road, near cement plant |
| 19 | Birmingham | Entrance to NAS-JAX RV park |
| 20 | Perimeter Road | North side of road at first bend after gate |

The background characterization consisted of a series of in situ measurements and soil samples at each location. The in situ measurements consisted of the following:

- Pressurized Ion Chamber (PIC) μR/hr
- Microroentgen Meter μR/hr
- Gamma Flux using 2" by 2" NaI detector cpm
- Beta activity cpm
- Alpha activity cpm

The soil samples were analyzed at an offsite radiochemistry laboratory for the following activities:

- Total Uranium
- Uranium-238 & daughters (naturally occurring)
- Radium-226 & daughters (naturally occurring)
- Thorium-232 & daughters (naturally occurring)
- Potassium-40 (naturally occurring)
- Cesium-137 fallout)

Since radium-226, and thorium-232 were the radioisotopes associated with past site activities, accurate determination of the background contribution was important. During remediation and final gamma clearance surveys, reliance will be placed on the in situ measurements using the μR meter and the 2" by 2" NaI detector. The PIC, used in this background study, will be employed as a secondary measurement standard for background level measurements, in addition to being the primary background dose rate measurement. The performance of the other instruments will be corrected for future application onsite, using the PIC as the secondary standard.

## 4.2 RESULTS - IN SITU MEASUREMENTS

The results of the in situ measurements are summarized in Table 4-2. The complete field logs for each location are provided in Appendix A. The measurements using the PIC were recorded by two different methods. The instrument was operated at each location for 30 minutes with data points plotted on a strip chart approximately 2 seconds apart. At 10 minute intervals, an estimate of the average of a digital readout was recorded in the field log. It was noted from the strip charts that this instrument required 10-15 minutes to stabilize. The value taken from the chart was the average of the final 10 minutes. The sigma ($\sigma$) value recorded for the chart reading is the half-thickness of the plotted data band which denotes the range, rather than statistical variations of the readings. The values obtained from the chart are the background dose rates assigned to each location for all subsequent comparative evaluations.

The 2"x2" NaI gamma values, in Table 4-2, and corresponding beta and alpha readings, summarized in Table 4-3, are a numerical average of three separate readings taken at each location. The sigma ($\sigma$) value shown for each is the variance of the three readings, <u>not</u> the statistics of the counting system. The beta and alpha readings were repeated at each location

Table 4-2
Background Summary: NAS Jacksonville
In Situ Measurements - Gamma

| Location: | Pressurized Ion Chamber | | | Micro Roentgen Meter | | | 2" by 2" NaI Detector | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Chart | | Meter | #109899 | | #95487 | #157 | | #165 | |
| | 11/7-8/94 | | | 11/7-8/94 | 11/1-2/94 | 11/1-2/94 | | | | |
| | μR/hr | σ | μR/hr | — μR/hr — | | | CPM | σ | CPM | σ |
| 1 | 6.2 | 1.0 | 6.5 | 3.5 | 6.0 | -- | -- | -- | 3783 | 101 |
| 2 | 5.7 | 0.6 | 6.5 | 2.5 | -- | 4.0 | 5087 | 43 | -- | -- |
| 3 | 5.8 | 0.7 | 6.0 | 3.0 | 4.0 | -- | -- | -- | 2339 | 132 |
| 4 | 6.8 | 0.7 | 7.0 | 4.5 | -- | 5.0 | 6691 | 163 | -- | -- |
| 5 | 6.6 | 1.0 | 6.2 | 4.5 | -- | 5.0 | 4964 | 2338 | -- | -- |
| 6 | 5.8 | 0.6 | 6.0 | 4.0 | -- | 4.0 | -- | -- | 2647 | 78 |
| 7 | 7.0 | 1.0 | 7.0 | 4.0 | -- | 5.0 | -- | -- | 3213 | 66 |
| 8 | 6.4 | 0.7 | 6.5 | 3.5 | 5.0 | -- | 5864 | 151 | -- | -- |
| 9 | 6.0 | 0.7 | 6.0 | 2.5 | 4.0 | -- | 4507 | 176 | -- | -- |
| 10 | 6.9 | 1.0 | 6.3 | 3.0 | 5.0 | -- | 6212 | 62 | -- | -- |
| 11 | 6.0 | 1.0 | 6.0 | 3.0 | 5.0 | -- | 4839 | 198 | -- | -- |
| 12 | 7.8 | 1.2 | 8.2 | 5.0 | -- | 6.5 | -- | -- | 4030 | 121 |
| 13 | 6.2 | 0.8 | 6.6 | 3.0 | -- | 5.0 | 5463 | 109 | -- | -- |
| 14 | 7.3 | 0.6 | 7.0 | 3.0 | -- | 5.0 | -- | -- | 3456 | 18 |
| 15 | 5.8 | 0.6 | 6.0 | 3.0 | 4.0 | -- | -- | -- | 2276 | 95 |
| 16 | 6.3 | 1.0 | 7.0 | 3.0 | 5.0 | -- | -- | -- | 3144 | 33 |
| 17 | 7.2 | 0.7 | 7.0 | 4.0 | -- | 5.0 | -- | -- | 3285 | 35 |
| 18 | 5.7 | 0.7 | 5.8 | 2.8 | -- | 4.0 | 4821 | 94 | -- | -- |
| 19 | 6.0 | 1.0 | 6.2 | 3.0 | 5.0 | -- | -- | -- | 2686 | 351 |
| 20 | 5.9 | 0.7 | 6.5 | 3.0 | 4.0 | -- | -- | -- | 2503 | 28 |

Table 4-3
Background Summary: NAS Jacksonville
In Situ Measurements - Beta and Alpha

| Location | Beta Measurements - CPM | | | | | | | | Alpha Measurements - CPM | |
|---|---|---|---|---|---|---|---|---|---|---|
| | #116872 | | #116876 | | #116881 | | #116878 | | #095044 | |
| | Face down | Face up | Face down | Face up | Face down | Face up | Face down | Face up | Face down | Face up |
| 1 | -- | -- | -- | -- | -- | -- | 48±9 | 40±8 | 1.3±2.3 | 0.3±0.6 |
| 2 | -- | -- | -- | -- | 35±2 | 34±2 | -- | -- | 1.7±2.3 | 1.0±1.7 |
| 3 | -- | -- | -- | -- | -- | -- | 31±4 | 35±7 | 0.7±0.6 | 0.7±0.6 |
| 4 | -- | -- | -- | -- | 46±5 | 36±5 | -- | -- | 2.7±2.1 | 1.0±1.0 |
| 5 | -- | -- | -- | -- | 39±3 | 33±6 | -- | -- | 2.7±2.1 | 2.0±2.0 |
| 6 | -- | -- | 37±4 | 27±2 | -- | -- | -- | -- | 1.3±1.5 | 1.0±1.0 |
| 7 | -- | -- | 34±3 | 35±4 | -- | -- | -- | -- | 2.3±2.3 | 2.0±2.0 |
| 8 | 33±4 | 28±4 | -- | -- | -- | -- | -- | -- | 3.0±3.0 | 1.0±1.0 |
| 9 | 34±3 | 29±4 | -- | -- | -- | -- | -- | -- | 2.0±2.0 | 0.7±0.6 |
| 10 | 40±4 | 36±8 | -- | -- | -- | -- | -- | -- | 2.7±0.6 | 0.7±1.2 |
| 11 | 40±7 | 33±4 | -- | -- | -- | -- | -- | -- | 33±1.2 | 23±2.5 |
| 12 | -- | -- | 50±7 | 33±6 | -- | -- | -- | -- | 2.0±1.0 | 0±0 |
| 13 | -- | -- | -- | -- | -- | -- | 33±6 | 37±11 | 1.7±1.2 | 0.3±0.6 |
| 14 | -- | -- | 31±5 | 41±6 | -- | -- | -- | -- | 1.7±1.2 | 0.7±0.6 |
| 15 | -- | -- | -- | -- | -- | -- | 30±7 | 37±8 | 3.7±0.6 | 1.7±1.5 |
| 16 | -- | -- | -- | -- | -- | -- | 31±7 | 41±8 | 1.7±0.6 | 0.7±1.2 |
| 17 | -- | -- | 39±5 | 35±3 | -- | -- | -- | -- | 1.0±1.0 | 0.7±1.7 |
| 18 | -- | -- | -- | -- | 36±1 | 37±5 | -- | -- | 1.7±0.6 | 1.0±1.0 |
| 19 | -- | -- | -- | -- | -- | -- | 36±4 | 37±12 | 1.7±1.5 | 1.0±1.0 |
| 20 | -- | -- | -- | -- | -- | -- | 30±1 | 40±4 | 2.3±1.5 | 0.7±0.6 |

with the meter face toward the ground and away from the ground to assess whether a difference exists (e.g., Is the activity directional or uniform?). No statistical difference could be noted between the face-up and face-down readings. The background response is uniform.

During the conduct of the field measurements, two different 2"x2" NaI detectors, two μR meters, and four beta detectors were used. The dashes in the data tables indicate that a particular instrument was not used at that location.

## 4.3 RESULTS - LABORATORY ANALYSIS

Two soil samples were obtained at each background measurement location and were submitted to the General Engineering Laboratory in Charleston, South Carolina, for isotopic analysis. One sample was analyzed for total uranium content using microwave digestion and kinetic phosphorescence analysis (KPA). The second sample was analyzed using gamma spectroscopy to identify the content of uranium-238, radium-226, thorium-232, potassium-40, and cesium-137. These results have been summarized in Table 4-4 with reference to the PIC in situ measured dose rate. The locations have been ordered from lowest to highest measured dose rate. The tables have been organized to present the decay chain activity together for easier comparison. This also facilitates the use of a single dose rate conversion for the entire chain for correlating with the in situ dose rate measurement.

More detailed inspection of the analytical results indicates several anomolies in the data. The uranium-235 values are not consistent with the isotopic ratios anticipated. The uranium-238 and radium-226 values from the gamma spectrum analysis are not consistent with isotopic ratios anticipated. With respect to the uranium-235 values, this data may be disregarded from further consideration. It may be noted that all but five of the analyses resulted in values less than the detection limit. Additionally, evaluation of uranium-235 from the 185 keV photopeak is confounded by the presence of a 186 keV photopeak from radium-226.

The primary issue to resolve for proper definition of the background is the inconsistency between the uranium and radium-226 results. Barring prior geological anomalies that could chemically/physically separate the radium from the uranium decay chain, these elements should be in essential equilibrium. The gamma spectrometry analysis indicates uranium-238 concentrations that are 2-4 times greater than the radium. Conversely, the total uranium from KPA is lower than the radium-226, although generally within a factor of two. Discussion with the lab provided the following observations:

(1) The radium is evaluated using the 609 keV photopeak which will be much more accurate than the uranium 60 keV photopeak, due to much greater compton interference from higher energy photopeaks into the 60 keV photopeak.

(2) The total uranium analysis ((KPA) could be biased low if complete dissolution of the uranium from the sample matrix does not occur. For soil samples, dissolution should be at least 70-80 percent.

Background Summary: NAS Jacksonville, Isotopic Composition - Picocuries per Gram

| Location[1] | PIC | Total | | Uranium-238 | | Thorium-234 | | Thorium-230 | | Radium-226 | | Uranium-235 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (μR/hr) | Uranium[2] | σ | Sv[3] | σ | Sv[4] | σ | Sv[5] | σ | Sv[6] | σ | Sv[7] | σ |
| 18 | 5.7±0.7 | 0.358 | 0.007 | 1.55 | 1.26 | 1.55 | | 0.511 | | 0.511 | 0.097 | 0.128(U) | 0.159 |
| 2 | 5.7±0.7 | 0.238(U) | 0.007 | 1.14 | 0.896 | 1.14 | | 0.462 | | 0.462 | 0.075 | 0.213 | 0.215 |
| 3 | 5.8±0.7 | 0.192(U) | 0.003 | 1.47 | 1.11 | 1.47 | | 0.467 | | 0.467 | 0.120 | 0.091(U) | 0.145 |
| 6 | 5.8±0.6 | 0.215(U) | 0.003 | 0.933(U) | 1.42 | 0.93 | | 0.681 | | 0.681 | 0.103 | 0.042(U) | 0.127 |
| 15 | 5.8±0.6 | 0.136(U) | 0.003 | 1.56 | 0.849 | 1.56 | | 0.385 | | 0.395 | 0.119 | 0.093(U) | 0.137 |
| 20 | 5.9±0.7 | 0.281(U) | 0.003 | 2.18 | 0.861 | 2.18 | | 0.484 | | 0.484 | 0.067 | 0.054(U) | 0.137 |
| 9 | 6.0±0.7 | 0.129(U) | 0.003 | 1.11 | 0.387 | 1.11 | | 0.367 | | 0.367 | 0.088 | 0.124 | 0.093 |
| 11 | 6.0±1.0 | 0.215(U) | 0.003 | 1.19 | 0.489 | 1.19 | | 0.536 | | 0.536 | 0.106 | 0.052(U) | 0.089 |
| 19 | 6.0±1.0 | 0.199(U) | 0.003 | 2.23 | 0.753 | 2.23 | | 0.449 | | 0.449 | 0.059 | 0.190 | 0.143 |
| 1 | 6.2±1.0 | 0.222(U) | 0.003 | 1.51 | 1.43 | 1.51 | | 0.708 | | 0.708 | 0.093 | 0.051(U) | 0.133 |
| 13 | 6.2±0.8 | 0.417 | 0.010 | 1.31 | 1.30 | 1.31 | | 0.532 | | 0.532 | 0.098 | 0.0003(U) | 0.106 |
| 16 | 6.3±1.0 | 0.391 | 0.007 | 1.06 | 0.486 | 1.06 | | 0.690 | | 0.690 | 0.142 | 0.223 | 0.162 |
| 8 | 604±0.7 | 0.202(U) | 0.003 | 1.89 | 0.065 | 1.89 | | 0.502 | | 0.502 | 0.063 | 0.108(U) | 0.026 |
| 5 | 6.6±1.0 | 0.662 | 0.010 | 2.09 | 0.895 | 2.09 | | 0.994 | | 0.994 | 0.088 | 0.091(U) | 0.173 |
| 4 | 6.8±0.7 | 0.295(U) | 0.007 | 1.73 | 1.43 | 1.73 | | 0.773 | | 0.773 | 0.182 | 0.329 | 0.174 |
| 10 | 6.9±1.0 | 0.268(U) | 0.003 | 1.71 | 0.734 | 1.71 | | 0.583 | | 0.583 | 0.084 | 0.132(U) | 0.173 |
| 7 | 7.0±1.0 | 0.437 | 0.007 | 1.41 | 1.12 | 1.41 | | 0.529 | | 0.529 | 0.108 | 0.009(U) | 0.121 |
| 17 | 7.2±0.7 | 0.225(U) | 0.003 | 1.42 | 0.547 | 1.42 | | 0.578 | | 0.578 | 0.118 | 0.045(U) | 0.098 |
| 14 | 7.3±0.6 | 0.268(U) | 0.003 | 1.40 | 1.14 | 1.40 | | 0.614 | | 0.614 | 0.111 | 0.103(U) | 0.127 |
| 12 | 7.8±1.2 | 0.536 | 0.010 | 1.69 | 1.38 | 1.69 | | 0.830 | | 0.830 | 0.125 | 0.160(U) | 0.125 |
| High | 7.8 | 0.662 | | 2.23 | | | | | | 0.994 | | | |
| Low | 5.7 | 0.129 | | 0.93 | | | | | | 0.367 | | | |
| Average | 6.4 | 0.294 | | 1.53 | | | | | | 0.589 | | | |

Note: Values accompanied by a (U) designator are reported at values less than the detection limit.

Table 4 (Continued)
Background Summary: NAS Jacksonville Isotopic Composition - Picocuries per Gram

[1]Locations are arranged in sequence from lowest to highest background reading.
[2]Microwave digestion (dissolution) followed by KPA (kinetic phosphorescence analysis); dissolution and uranium recovery should be > 80%.
[3]Analysis of 60 keV peak of thorium-234.
[4]Uranium-238 and thorium-234 assumed to be in equilibrium. Identical values reported.
[5]Thorium-230 and radium-226 assumed to be in equilibrium. Identical values reported.
[6]Analysis of 609 keV peak of bismuth-214 (equilibrium daughter).
[7]Analysis of 60 keV and 185 keV peaks after correcting for presence of 186 keV peak of radium-226.

4-4 (Continued)

Background Summary: NAS Jacksonville, Isotopic Composition - Picocuries per Gram

| Location[1] | PIC | Thorium-232 | | Radium-228 | | Thorium-228 | | Potassium-40 | | Cesium-137 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (μR/hr) | Sv[8] | σ | Sv[9] | σ | Sv[10] | σ | Sv[11] | σ | Sv[12] | σ |
| 18 | 5.7±0.7 | 0.678 | 0.060 | 0.782 | 0.142 | 0.693 | 0.061 | 1.42 | 0.38 | 0.010 | 0.021 |
| 2 | 5.7±0.7 | 0.478 | 0.058 | 0.427 | 0.145 | 0.492 | 0.058 | 1.51 | 0.41 | 0.032 | 0.039 |
| 3 | 5.8±0.7 | 0.525 | 0.095 | 0.580 | 0.172 | 0.529 | 0.096 | 1.15 | 0.45 | 0.283 | 0.080 |
| 6 | 5.8±0.6 | 0.901 | 0.071 | 0.828 | 0.189 | 0.910 | 0.072 | 1.68 | 0.54 | 0.145 | 0.041 |
| 15 | 5.8±0.6 | 0.469 | 0.050 | 0.480 | 0.142 | 0.472 | 0.050 | 2.20 | 0.55 | 0.362 | 0.053 |
| 20 | 5.9±0.7 | 0.796 | 0.056 | 0.736 | 0.110 | 0.803 | 0.056 | 2.28 | 0.39 | 0.161 | 0.027 |
| 9 | 6.0±0.7 | 0.366 | 0.059 | 0.350 | 0.104 | 0.369 | 0.060 | 0.824 | 0.350 | 0.084 | 0.030 |
| 11 | 6.0±1.0 | 0.574 | 0.086 | 0.568 | 0.137 | 0.579 | 0.087 | 1.87 | 0.38 | 0.262 | 0.057 |
| 19 | 6.0±1.0 | 0.553 | 0.048 | 0.519 | 0.097 | 0.557 | 0.049 | 1.56 | 0.41 | 0.205 | 0.027 |
| 1 | 6.2±1.0 | 0.776 | 0.077 | 0.772 | 0.180 | 0.782 | 0.078 | 2.99 | 0.70 | 0.065 | 0.031 |
| 13 | 6.2±0.8 | 0.746 | 0.060 | 0.703 | 0.167 | 0.752 | 0.060 | 2.11 | 0.57 | 0.167 | 0.044 |
| 16 | 6.3±1.0 | 0.948 | 0.132 | 0.956 | 0.203 | 0.956 | 0.133 | 2.03 | 0.42 | 0.085 | 0.028 |
| 8 | 604±0.7 | 0.605 | 0.050 | 0.532 | 0.095 | 0.610 | 0.050 | 2.08 | 0.35 | 0.107 | 0.027 |
| 5 | 6.6±1.0 | 0.789 | 0.066 | 0.879 | 0.156 | 0.796 | 0.066 | 5.12 | 0.60 | 0.109 | 0.035 |
| 4 | 6.8±0.7 | 0.774 | 0.125 | 0.786 | 0.194 | 0.780 | 0.126 | 5.22 | 1.02 | 0.486 | 0.126 |
| 10 | 6.9±1.0 | 0.920 | 0.060 | 0.836 | 0.129 | 0.927 | 0.060 | 3.77 | 0.56 | 0.268 | 0.044 |
| 7 | 7.0±1.0 | 0.853 | 0.070 | 0.914 | 0.165 | 0.861 | 0.070 | 2.00 | 0.43 | 0.376 | 0.053 |
| 17 | 7.2±0.7 | 0.734 | 0.109 | 0.791 | 0.191 | 0.740 | 0.110 | 2.75 | 0.51 | 0.111 | 0.036 |
| 14 | 7.3±0.6 | 0.873 | 0.088 | 0.856 | 0.167 | 0.881 | 0.089 | 3.97 | 0.55 | 0.054 | 0.023 |
| 12 | 7.8±1.2 | 1.08 | 0.073 | 1.14 | 0.193 | 1.090 | 0.074 | 3.81 | 0.60 | 0.101 | 0.039 |
| High | | 1.08 | | | | | | 5.22 | | 0.49 | |
| Low | | 0.37 | | | | | | 0.82 | | 0.01 | |
| Average | | 0.72 | | | | | | 2.52 | | 0.17 | |

**NOTE:** Vslues accompanied by a (U) designator are reported at less than the detection limit.

Table 4-4 (continued)
Background Summary: NAS Jacksonville
Isotopic Composition - Picocuries per Gram

[1]Locations are arranged in sequence from lowest to highest background reading.
[8]Analysis of 239 keV peak of lead-212, averaged with 3 other peaks.
[9]Analysis of 911 keV peak of actinium-228, averaged with 11 other peaks.
[10]Analysis of 239 keV peak of lead-212, averaged with 2 other peaks.
[11]Analysis of 1,400 keV peak of argon-40.
[12]Analysis of 662 keV peak of barium-137m.

The total uranium KPA results were corrected, assuming a 70 percent recovery from the microwave digestion process. A comparison of the corrected total uranium KPA results for values reported above the detection limit and the corresponding radium-226 results from gamma spectrometry analysis is shown on Table 4-5. The comparison indicates a good correlation which would validate the radium-226 analysis, shown on Table 4-4, as being representative of background concentrations for the uranium-238 decay chain.

## 4.4 CORRELATION BETWEEN IN SITU MEASUREMENT AND LAB ANALYSIS

An analysis was performed to correlate the isotopic composition, determined from the lab analysis, with the in situ dose rate measurement obtained with the PIC. The PIC response is assumed to be comprised of two source components: (1) cosmic radiation, and (2) terrestrial radiation.

Cosmic radiation may be assumed to be a constant at sea level. This value is taken from NCRP-94 as 28 mRem/yr.[2] which equates to 3.19 μR/hr. The remainder of the PIC response will be assumed to be from radioisotopes in the soil.

$$D(PIC) = D_s + D_c$$

$D_s$ = dose rate from soil
$D_c$ = dose rate from cosmic

The soil dose rate is estimated from the laboratory analysis radioisotope concentrations for:

(1) Uranium-238 + daughters
(2) Thorium-232 + daughters
(3) Potassium-40
(4) Cesium-137

Dose rate conversion factors (DCF) were obtained from three reference sources: EPA Federal Guidance Report No. 12[3], RESRAD, a DOE computer model[4], and NUREG-5512, an NRC pathway model[5]. Each set of conversion factors were applied to the lab results for each of two assumptions:

(1) The U-238 gamma photopeak analysis correctly represents the U-238 decay chain.
(2) The Ra-226 gamma photopeak analysis correctly represents the U-238 decay chain.

The total does rate ($D_T$) determined by adding cosmic dose to the soil dose, based on lab concentration results:

$$D_T = D_C + S_V\left(\frac{pCi}{gm}\right)DCF\left(\frac{\mu R}{hr}\Big/\frac{pCi}{gm}\right)$$

Table 4-5
NAS-JAX Background - Uranium vs Radium Analysis

| Location | Total Uranium Uncorrected KPA (pCi/gm) | Total Uranium Corrected KPA[a] (pCi/gm) | Radium-226 Gamma spec (pCi/gm) |
|---|---|---|---|
| 18 | 0.358 | 0.511 ± 0.010 | 0.511 ± 0.097 |
| 2 | 0.238 (U) | | 0.462 |
| 3 | 0.192 (U) | | 0.467 |
| 6 | 0.215 (U) | | 0.681 |
| 15 | 0.136 (U) | | 0.395 |
| 20 | 0.281 (U) | | 0.484 |
| 9 | 0.129 (U) | | 0.367 |
| 11 | 0.215 (U) | | 0.536 |
| 19 | 0.199 (U) | | 0.449 |
| 1 | 0.222 (U) | | 0.708 |
| 13 | 0.417 | 0.596 ± 0.014 | 0.532 ± 0.098 |
| 16 | 0.391 | 0.559 ± 0.010 | 0.690 ± 0.142 |
| 8 | 0.202 (U) | | 0.502 |
| 5 | 0.662 | 0.946 ± 0.014 | 0.994 ± 0.088 |
| 4 | 0.295 (U) | | 0.773 |
| 10 | 0.268 (U) | | 0.583 |
| 7 | 0.437 | 0.624 ± 0.010 | 0.529 ± 0.108 |
| 17 | 0.225 (U) | | 0.578 |
| 14 | 0.268 (U) | | 0.614 |
| 12 | 0.536 | 0.766 ± 0.014 | 0.830 ± 0.125 |

[a]Assumes a 70 percent recovery from the microwave digestion process.

(U) - indicates presence of analyte less than detection limit.

Table 4-6
Background Summary Comparison: NAS Jacksonville
Dose Rate vs Isotopic Composition

| Location | PIC | FRG # 12 - $\Gamma_\gamma$ | | | | RESRAD - $\Gamma_\gamma$ | | | | NUREG 5512 - $\Gamma_\gamma$ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (mR/hr) | Based on U-238 | | Based on Ra-226 | | Based on U-238 | | Based on Ra-226 | | Based on U-238 | | Based on Ra-226 | |
| | | $D_\Gamma$ | $D_\Gamma$/PIC | $D_\Gamma$ | $D_\Gamma$/PIC | $D_\Gamma$ | $D_\Gamma$/PIC | $D_\Gamma$ | $D_\Gamma$/PIC | $D_\Gamma$ | $D_\Gamma$/PIC | $D_\Gamma$ | $D_\Gamma$/PIC |
| 18 | 5.7±0.7 | 7.30 | 1.281 | 5.94 | 1.042 | 7.79 | 1.367 | 5.94 | 1.042 | 6.13 | 1.075 | 4.98 | 0.874 |
| 2 | 5.7±0.7 | 6.22 | 1.091 | 5.35 | 0.939 | 6.60 | 1.158 | 5.39 | 0.946 | 5.37 | 0.942 | 4.61 | 0.809 |
| 3 | 5.8±0.7 | 6.85 | 1.181 | 5.56 | 0.959 | 7.40 | 1.276 | 5.63 | 0.988 | 5.88 | 1.104 | 4.77 | 0.822 |
| 6 | 5.8±0.6 | 7.21 | 1.243 | 6.88 | 1.186 | 7.34 | 1.266 | 6.89 | 1.188 | 5.87 | 1.012 | 5.58 | 0.962 |
| 15 | 5.8±0.6 | 6.95 | 1.198 | 5.45 | 0.939 | 7.60 | 1.310 | 5.54 | 0.955 | 6.01 | 1.036 | 4.73 | 0.816 |
| 20 | 5.9±0.7 | 8.62 | 1.461 | 6.41 | 1.086 | 9.40 | 1.593 | 6.38 | 1.081 | 7.16 | 1.214 | 5.27 | 0.893 |
| 9 | 6.0±0.7 | 5.81 | 0.968 | 4.84 | 0.807 | 6.22 | 1.307 | 4.90 | 0.817 | 5.11 | 0.852 | 4.28 | 0.713 |
| 11 | 6.0±1.0 | 6.68 | 1.113 | 5.83 | 0.972 | 7.09 | 1.182 | 5.93 | 0.988 | 5.69 | 0.948 | 4.97 | 0.798 |
| 19 | 6.0±1.0 | 7.90 | 1.317 | 5.61 | 0.935 | 8.81 | 1.468 | 5.65 | 0.942 | 6.76 | 1.127 | 4.79 | 0.798 |
| 1 | 6.2±1.0 | 7.74 | 1.248 | 6.71 | 1.082 | 8.20 | 1.323 | 6.77 | 1.092 | 6.42 | 1.035 | 5.53 | 0.892 |
| 13 | 6.2±0.8 | 7.33 | 1.182 | 6.32 | 1.019 | 7.72 | 1.245 | 6.33 | 1.021 | 6.10 | 0.984 | 5.23 | 0.844 |
| 16 | 6.3±1.0 | 7.54 | 1.197 | 7.05 | 1.119 | 7.71 | 1.224 | 7.04 | 1.117 | 6.11 | 0.970 | 5.69 | 0.903 |
| 8 | 6.4±0.7 | 7.38 | 1.153 | 5.58 | 0.872 | 8.13 | 1.270 | 5.66 | 0.884 | 6.34 | 0.991 | 4.80 | 0.750 |
| 5 | 6.6±1.0 | 8.82 | 1.336 | 7.39 | 1.120 | 9.59 | 1.453 | 7.63 | 1.156 | 7.32 | 1.109 | 6.09 | 0.923 |
| 4 | 6.8±0.7 | 8.44 | 1.241 | 7.19 | 1.057 | 9.11 | 1.340 | 7.39 | 1.087 | 7.03 | 1.034 | 5.96 | 0.877 |
| 10 | 6.9±1.0 | 8.57 | 1.242 | 7.11 | 1.030 | 9.12 | 1.322 | 7.11 | 1.030 | 7.02 | 1.017 | 5.76 | 0.835 |
| 7 | 7.0±1.0 | 7.82 | 1.117 | 6.69 | 0.956 | 8.24 | 1.177 | 6.67 | 0.953 | 6.44 | 0.920 | 5.46 | 0.780 |
| 17 | 7.2±0.7 | 7.47 | 1.038 | 6.39 | 0.888 | 7.92 | 1.100 | 6.42 | 0.892 | 6.23 | 0.865 | 5.29 | 0.735 |
| 14 | 7.3±0.6 | 7.96 | 1.090 | 6.93 | 0.949 | 8.35 | 1.144 | 6.94 | 0.951 | 6.53 | 0.895 | 5.66 | 0.775 |
| 12 | 7.8±1.2 | 8.90 | 1.141 | 7.81 | 1.001 | 9.39 | 1.204 | 7.86 | 1.008 | 7.19 | 0.922 | 6.22 | 0.797 |
| | | 1.192±.112 | | 0.998±.094 | | 1.286±.120 | | 1.007±.095 | | 1.003±.093 | | 0.831±.065 | |

U-238: γ - spec using 60 keV peak (Th-234)

Ra-226: γ - spec using 609 keV peak (Bi-214)

A summary of this evaluation is presented in Table 4-6. This evaluation indicates a very good correlation for the EPA and DOE conversion factors, assuming Ra-226 lab analysis correctly represents the uranium decay chain and a poor correlation assuming the U-238 analysis is correct. The use of the NRC conversion factors results in an opposite conclusion.

Based on the various factors previously discussed, namely better correlation between total "corrected" uranium analysis from KPA and radium-226, and the difficulty in assessing the U-238 60 keV photopeak in the presence of numerous higher energy photopeaks, it is concluded that the gamma spectrometry analysis for radium-226 correctly predicts the concentration of the uranium decay chain in the background. The radium-226 that represents background at the NAS Jacksonville site is given by:

Maximum = 0.99 pCi/gm
Minimum = 0.37 pCi/gm
Average = 0.58 pCi/gm

For conservatism, use the low value, above which the release criteria is added. This implies that remediation has satisfied the criteria for unrestricted release when the residual activity for radium or thorium is:

$S_R \leq 5.4$ pCi/gm

## 5.0 PORTABLE SURVEY INSTRUMENT RESPONSE

To characterize the residual radium-226 activity in situ at NAS Jacksonville, the field instrument readings must be combined with a conversion factor appropriate to the geometry of the residual source. For radium-226, gamma measurement is the most sensitive technique for characterization. Two portable survey meters are utilized for gamma measurement on this site:

- 2"x2" NaI detector - Ludlum 44-10
- μR meter - Ludlum 19

Two in situ source configurations have been considered in the determination of conversion factors:

- distributed (infinite) source
- point source

### 5.1 DISTRIBUTED SOURCE RESPONSE

#### 2"x2" NaI Detectors

The primary instrument to be used for final verification shall be the 2"x2" NaI detector. The μ meter may be used to support the conclusions based on the 2"x2" NaI detector. For performing final verification surveys, assume that the residual activity is comprised of an infinite source of

uniformly distributed activity. The response of the 2"x2" NaI detector to radium-226 uniformly distributed in the soil was determined analytically using the shielding computer code MICROSHIELD.[6] This is shown on Figure 5-1. The normal protocol is to measure on the surface—the upper response curve. Note from this curve that for large excavations (> 5m radius), the response of the detector is approximately:

$$K = \frac{950 cpm}{(pCi / gm)}$$

The criteria for unrestricted release (≤ 5 pCi/gm) would be met for 2"x2" NaI detector response of:

$R_o$ < 4,750 cpm above background

**μR Meter**

The response of the μR meter is based on relationships derived from the background measurements summarized in Table 4-2. A direct comparison was made between the background dose rates, measured with the Reuter-Stokes pressurized ion chamber (PIC), and the μ
meters. These relationships are shown on figures 5-2 and 5-3 for the two μ
meters usedhe relationships that will be assumed applicable to evaluating all subsequent characterization measurements are:

Meter No. 95487 : $R_o$ = [0.76 * (PIC)] - μR/hr

Meter No. 109899 : $R_o$ = [0.53 * (PIC)] - μR/hr

where $R_o$ is the response of the μR meter.

The derivation of the actual dose rate, measured by the μR meter, that will be applied to the characterization data is taken as:

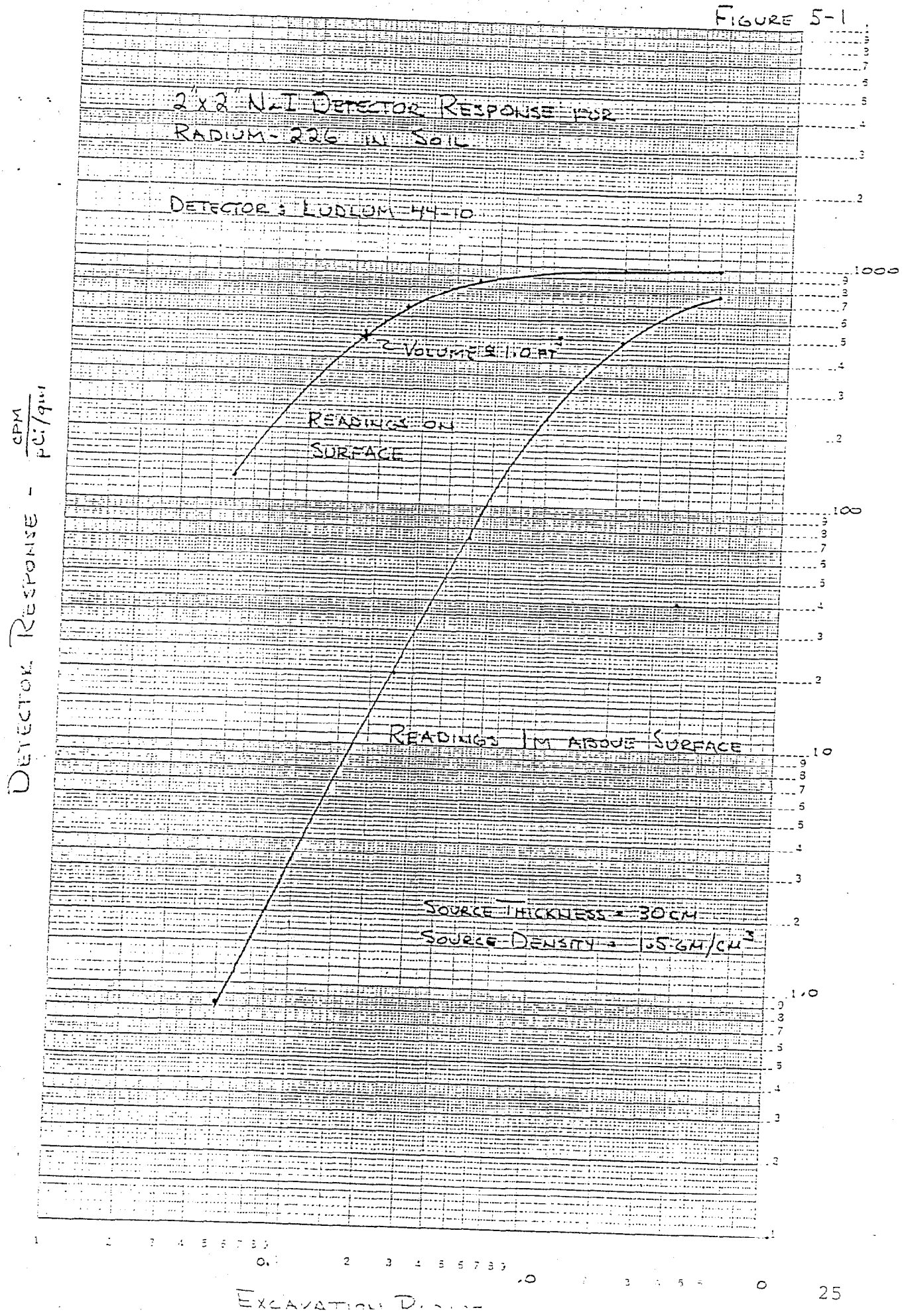
Meter No. 95487 Dγ = [1.32 * $R_o$] - μR/hr

Meter No. 109899 Dγ = [1.89 * $R_o$] - μR/hr

## 5.2 POINT SOURCE RESPONSE

Conversion factors were derived for both the 2"x2" NaI detector and the μR meter for estimating the amount of activity in a radium-226 point source. These relationships were derived from point source attenuation theory and the response of each meter to a cesium-137 point source. These response relationships are shown on Figure 5-4 for the 2"x2" NaI detector and on Figure 5-5 for the μR meter. Note that for both detectors, the measured response deviates from theoretical point source theory at distances approaching contact with the source. This is due to "finite" detector

FIGURE 5-1




46 7602
K&E LOGARITHMIC 5 x 3 CYCLES KEUFFEL & ESSER CO.

FIGURE 5-2

RESPONSE OF MICROR METER TO BACKGROUND

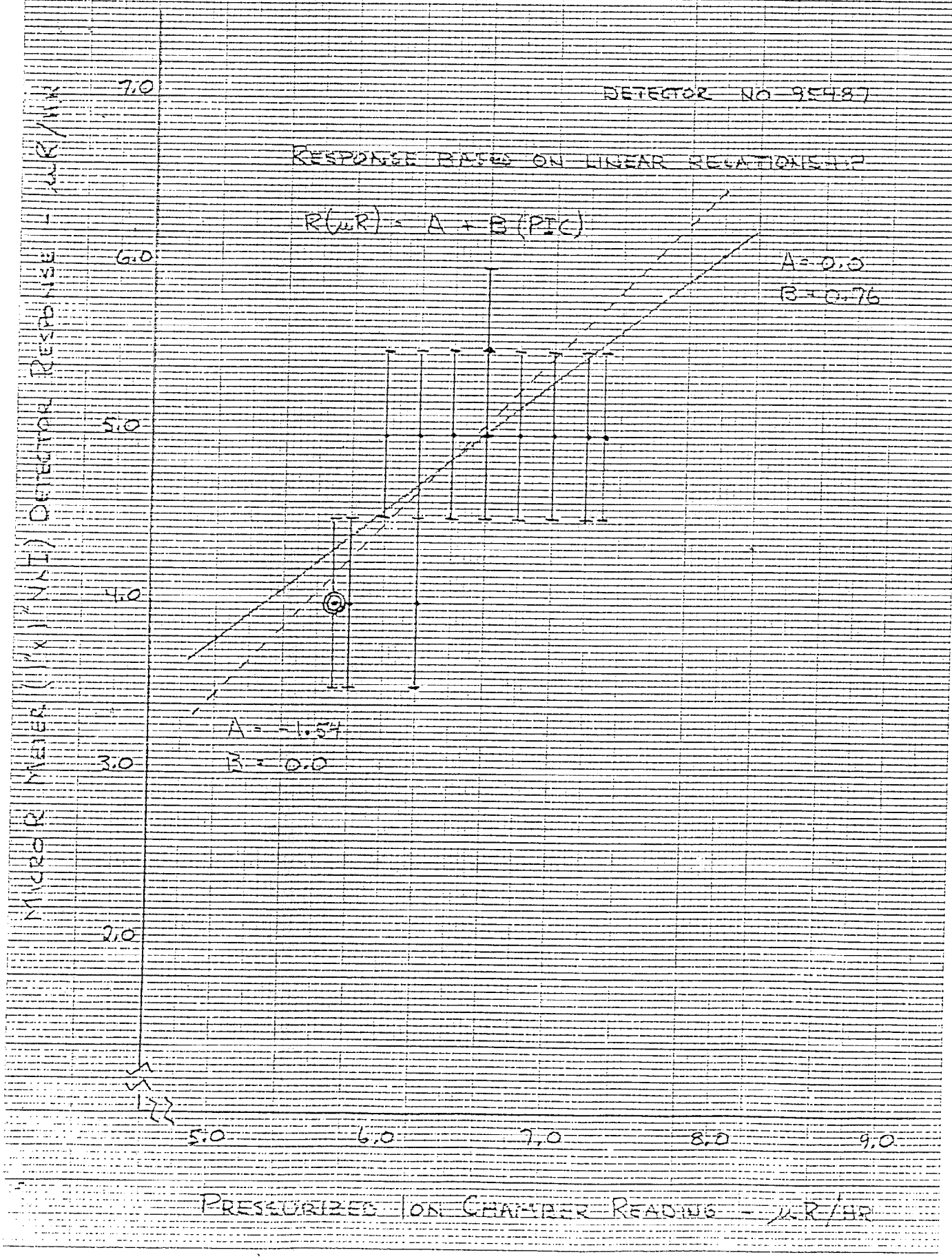
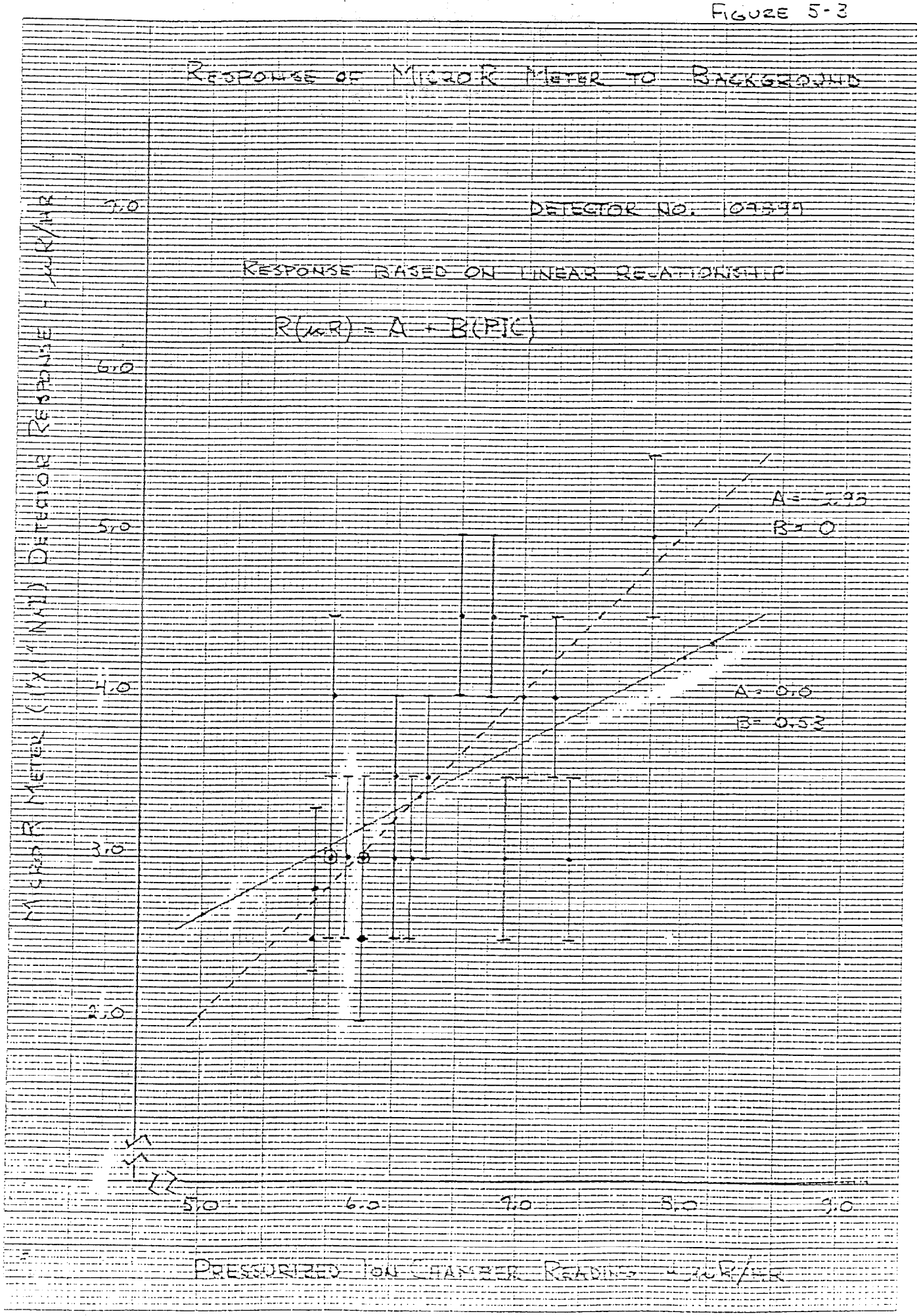


FIGURE 5-3




46 1323
10 X 10 TO ½ INCH, 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

FIGURE 5-4

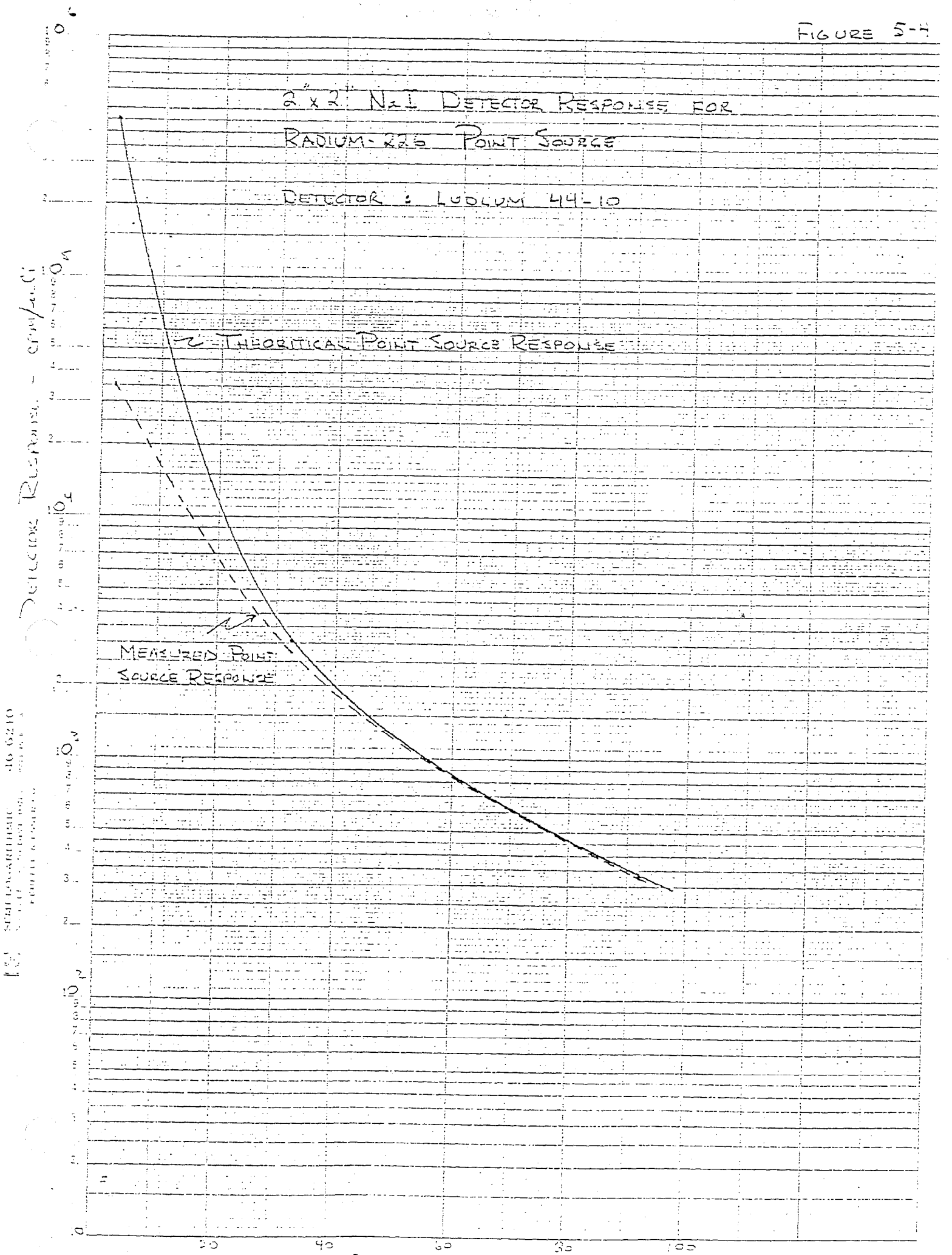
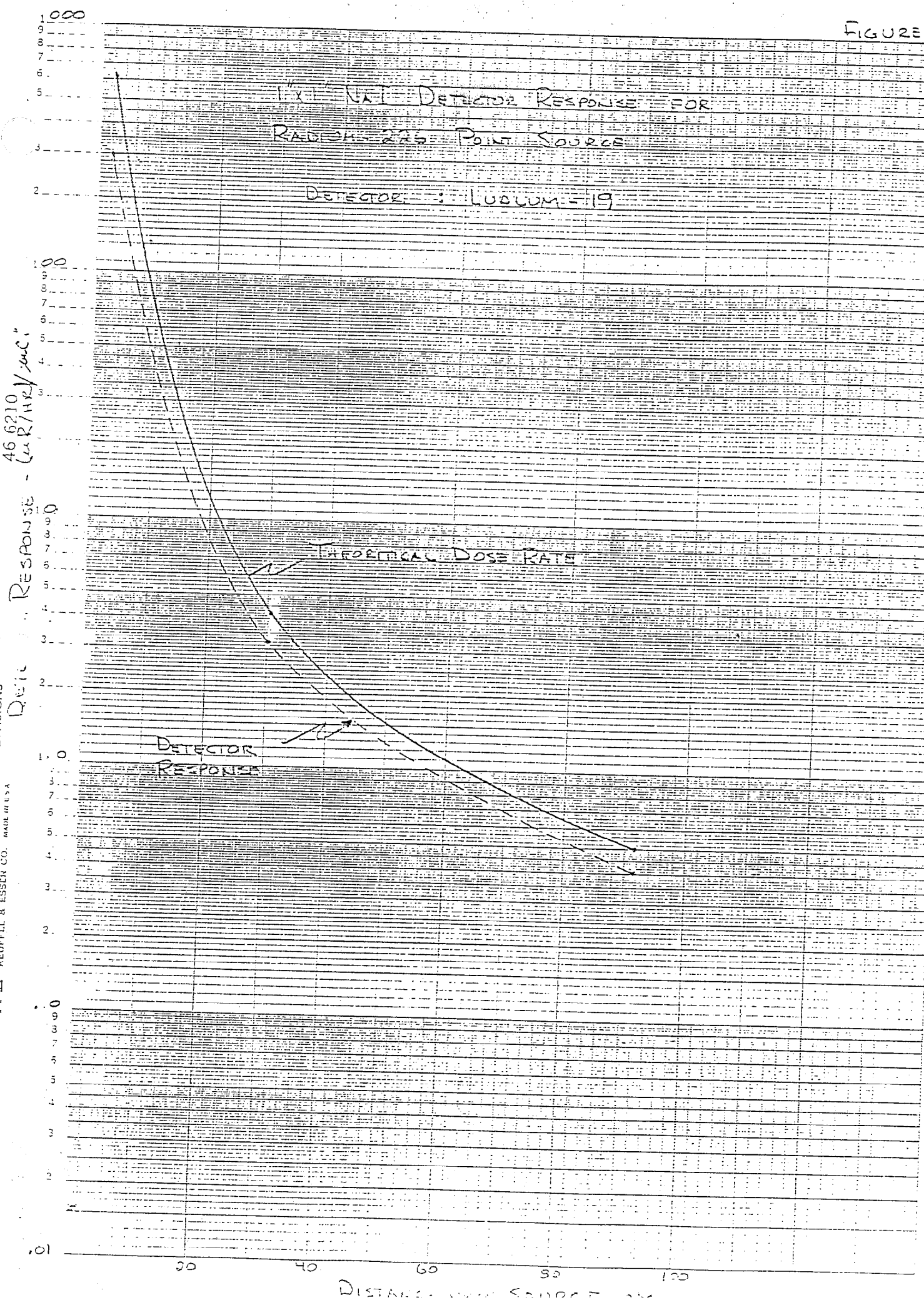

2" x 2" NaI DETECTOR RESPONSE FOR
RADIUM-226 POINT SOURCE
DETECTOR : LUDLUM 44-10
THEORITICAL POINT SOURCE RESPONSE
MEASURED POINT SOURCE RESPONSE
DETECTOR RESPONSE - cpm/μCi
20
40
60
80
100

FIGURE 5-5



1"x1" NaI DETECTOR RESPONSE FOR
RADIUM-226 POINT SOURCE
DETECTOR : LUDLUM-19
THEORETICAL DOSE RATE
DETECTOR RESPONSE
DETECTOR RESPONSE - (μR/HR)/μCi
1000
100
10
1.0
.10
.01
20
40
60
80
100
46 6210
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

volume, which approaches a point with increasing distance from the source until the effective source-detector geometry is point-point (theoretical). When using these curves to estimate the activity of a point source from the meter reading, the curves labeled "response" should be used. For the 2"x2" NaI detector on "contact" with an unshielded point source device, the conversion factor to estimate the activity of the source is:

$$K = 35{,}000 \text{ cpm}/\mu\text{Ci}$$

The μR meter is more effective for measuring dose rates from distributed source activity. Characterization readings from the μ
meter will not be used for assess point source activity levels.

## 6.0 DATA ACQUISITION

The radiological characterization of PSC 26 is based upon in situ measurements of gamma, beta, and alpha emissions, and on gamma dose rate measurements. These in situ measurements were supplemented with sample analysis for isotopic identification and quantification. The background in situ measurements (Section 4) were used to derive instrument response functions (Section 5) that were applied to interpretation of PSC 26 characterization data. The background sample analysis was used to identify the composition and range of naturally occurring radioisotopes and to cross-correlate the in situ measurements.

### 6.1 SURVEY INSTRUMENT PERFORMANCE VERIFICATION

At the beginning of each daily characterization effort, each survey instrument was performance checked using a fixed source of radioactivity. This source check was performed using the following NIST traceable sources:

- 2"×2" NaI detector: 1 μCi and 2 μCi cesium-137
- μR Meter: 1 μCi and 2 μCi cesium-137
- Pancake GM detector: 4,016 dpm strontium-90
- Alpha Scintillator: 16,800 dpm thorium-230

The daily response for each detector was plotted on a control chart prepared for each individual instrument. If the instrument response was within the ±20 percent of the initial baseline, the instrument was acceptable for use. If the response fell outside the ±20 percent band, the instrument was removed from service. The results of the daily source checks are provided in Appendix C for all instruments used during the site characterization.

### 6.2 GAMMA WALKOVER SURVEY RESULTS

PSC 26 was surveyed by scanning 100 percent of the accessible surface area. Prior to initiating the scan survey, the grids established by ABB on Figure 2-1 were numbered sequentially, as shown on Figure 6-1. The scan was performed as described in Section 3 using a 2"×2" NaI

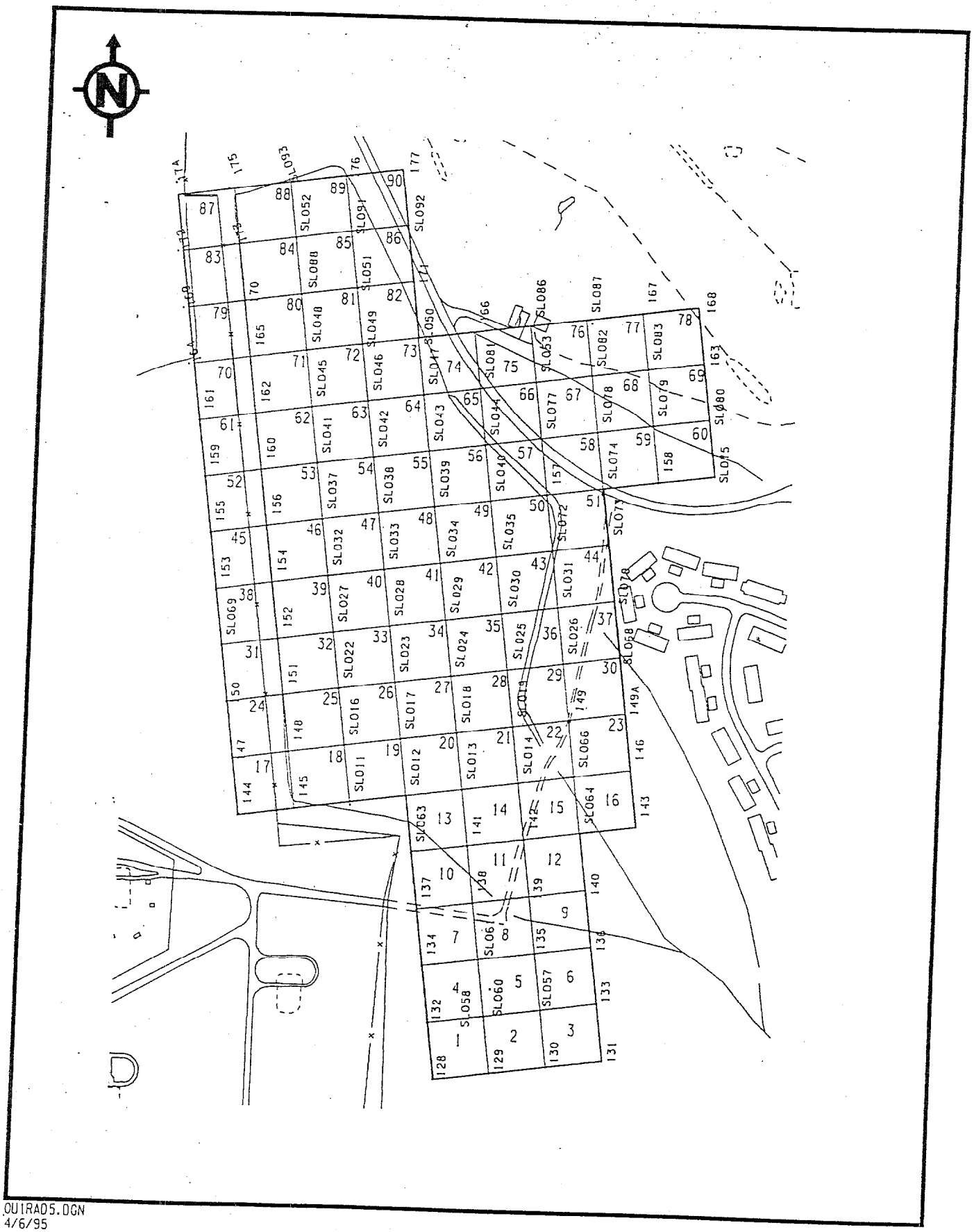


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Figure 6-1
Grid number Sequence and
Grid Point Identification

detector and ratemeter. Local background was noted for each grid and compared with background values recorded offsite during daily source check to insure the grid survey was not starting over a hot spot. As the grid scan progressed, elevated readings, greater than 20 percent of the startpoint background, were noted. If the scan exceeded twice the startpoint background, the location was noted on a survey map for further detailed characterization. The gamma readings of the southeast corner (coordinates 0,0) of each grid were recorded to provide a profile of local background for the site. The results of these grid intersection measurements are provided in Table 6-1. The field survey logs for the grid point surveys are provided in Appendix D. The field survey logs for the walkover surveys are provided in Appendix E. The background dose rates at five grid point locations around the site, shown on Figure 6-2, were measured using the Reuter-Stokes PIC. These measurements are provided for comparison to the μR meter readings. All grid point μR meter measurements were taken with meter No. 95487. The readings taken at each grid intersection point have been corrected using the value discussed in Section 5.1 These corrected dose rates are provided in Table 6-1.

## 6.3 HOT SPOT CHARACTERIZATION

Upon completion of the walkover scan survey described in Section 6.2, each elevated activity location that exceeded twice the startpoint background was further characterized. This characterization consisted of the following measurements:

- gamma emission rate on the ground surface : 2"X2" NaI detector
- beta emission rate on the ground surface : thin-window pancake GM detector
- alpha emission rate on ground surface : alpha scintillation detector
- gamma dose rate on ground surface : μR meter

A map showing locations of hot spots encountered during this survey is shown on Figure 6-3. A summary of the hot spot activity levels is provided in Table 6-2. The x-y coordinates starting as (0,0) are located in the southeast corner of each grid block.

Several hot spot locations were analyzed in more detail to determine if correlations could be made between the various surface measurements and the level of source activity. Two of those locations, hot spots 20-02 and 40-02, were chosen for sample analysis to confirm the isotopic composition of the contaminants. During excavation for the soil samples, electrical components were encountered at depths reported in the field log as 3-4 in. beneath the surface. Using the point-source/detector response relationship described in Section 5 and shown on Figure 5-4, the activity for each of the hot spot devices was estimated as:

Device 20-02 : $S\gamma = 2.25\ \mu Ci$
Device 40-02 : $S\gamma = 2.90\ \mu Ci$

In situ measurements, taken on the surface and at 1 ft and 3 ft above the surface, were used to determine a gamma flux profile to compare with theoretical profiles, calculated using the computer code MICROSHIELD[6]. The ratio of the 1 ft and 3 ft readings to the contact reading for each of the two in situ hot spots is shown in Figure 6-4 for the theoretical flux profile of a point source as a function of distance beneath the soil surface. The measured ratios at 1 ft and 3 ft

# TABLE 6-1
## PSC Grid Intersection Characterization

| Grid No. | Intersection ID | Gamma (CPM) Onsite | Gamma (CPM) Offsite (Background) | Measured Dose Rate (μR/hr) | Corrected Dose Rate (μR/hr) | PIC Dose Rate (μR/hr) | Notes |
|---|---|---|---|---|---|---|---|
| 1 | 128 | 2668 | 2143 | 4.5 | 5.9 | | |
| | 129 | 2947 | 2143 | 4.5 | 5.9 | | |
| 2 | 130 | 2615 | 2143 | 5 | 6.6 | | |
| 3 | 131 | 2423 | 2143 | 4.5 | 5.9 | | |
| 4 | 132 | 2429 | 2143 | 4 | 5.3 | | |
| | SL058 | 2625 | 2143 | 5 | 6.6 | | |
| 5 | SL057 | 3270 | 2143 | 5.5 | 7.3 | 6.6±1 | |
| 6 | 133 | 2616 | 2143 | 4.5 | 5.9 | | |
| 7 | 134 | 2337 | 2143 | 4.5 | 5.9 | | |
| | SL061 | 2879 | 2143 | 5 | 6.6 | | |
| 8 | 135 | 2699 | 2143 | 5 | 6.6 | | |
| 9 | 136 | 2304 | 2143 | 5 | 6.6 | | |
| 10 | 137 | 4127 | 2143 | 5 | 6.6 | | |
| | 138 | 2335 | 2143 | 4.5 | 5.9 | | |
| 11 | 139 | 2526 | 2143 | 5 | 6.6 | | |
| 12 | 140 | 2638 | 2157 | 5 | 6.6 | | |
| 13 | SL063 | 2445 | 2143 | 4 | 5.3 | | |
| | 141 | 2453 | 2143 | 4.5 | 5.9 | | |
| 14 | 142 | 2610 | 2143 | 5 | 6.6 | | |
| 15 | SL064 | 2923 | 2194 | 4 | 5.3 | | |
| 16 | 143 | 2647 | 2143 | 5 | 6.6 | | |
| 17 | 144 | 2546 | 2353 | 4 | 5.3 | | |
| | 145 | 2817 | 2143 | 4 | 5.3 | | Edge of Moat |
| 18 | SL011 | 2922 | 2194 | 5 | 6.6 | | |
| 19 | SL012 | 2704 | 2194 | 5 | 6.6 | | |
| 20 | SL013 | 2591 | 2194 | 4.5 | 5.9 | | |
| 21 | SL014 | 2491 | 2194 | 4 | 5.3 | 6.2±0.8 | |
| 22 | SL066 | 2647 | 2143 | 4.5 | 5.9 | | |
| 23 | 146 | 2552 | 2143 | 4.5 | 5.9 | | |
| 24 | 147 | 2257 | 2353 | 4.5 | 5.9 | | |
| | 148 | 2665 | 2143 | 4 | 5.3 | | Edge of Moat |
| 25 | SL016 | 2961 | 2194 | 4 | 5.3 | | |
| 26 | SL017 | 2851 | 2194 | 5 | 6.6 | | |
| 27 | SL018 | 2721 | 2143 | 5 | 6.6 | | |
| 28 | SL019 | 2477 | 2143 | 4.5 | 5.9 | | |
| 29 | 149 | 3160 | 2157 | 4 | 5.3 | | |
| 30 | Bench Mark | 2858 | 2143 | 5.5 | 7.3 | | |
| 31 | 150 | 1886 | 2353 | 4 | 5.3 | | |
| | 151 | 2585 | 2143 | 3.5 | 4.6 | | Edge of Moat |
| 32 | SL022 | 3019 | 2194 | 5 | 6.6 | 6.4±0.7 | |
| 33 | SL023 | 2903 | 2194 | 5 | 6.6 | | |
| 34 | SL024 | 3015 | 2143 | 5 | 6.6 | | |
| 35 | SL025 | 3006 | 2194 | 5 | 6.6 | | |
| 36 | SL026 | 2494 | 2194 | 5 | 6.6 | | |
| 37 | SL068 | 2883 | 2194 | 5 | 6.6 | | |
| 38 | SL069 | 2413 | 2353 | 4.5 | 5.9 | | |
| | 152 | 2554 | 2143 | 4 | 5.3 | | Edge of Moat |
| 39 | SL027 | 3190 | 2143 | 5 | 6.6 | | |
| 40 | SL028 | 2900 | 2143 | 5 | 6.6 | | |

# TABLE 6-1
## PSC Grid Intersection Characterization

| Grid No. | Intersection ID | Gamma (CPM) Onsite | Gamma (CPM) Offsite (Background) | Measured Dose Rate (µR/hr) | Corrected Dose Rate (µR/hr) | PIC Dose Rate (µR/hr) | Notes |
|---|---|---|---|---|---|---|---|
| 41 | SL029 | 2915 | 2143 | 5 | 6.6 | | |
| 42 | SL030 | 2768 | 2143 | 5 | 6.6 | | |
| 43 | SL031 | 2944 | 2194 | 5 | 6.6 | | |
| 44 | SL070 | 4039 | 2353 | 5.5 | 7.3 | | |
| 45 | 153 | 1981 | 2353 | 4 | 5.3 | | |
| | 154 | 2764 | 2143 | 4 | 5.3 | | Edge of Moat |
| 46 | SL032 | 2653 | 2143 | 5 | 6.6 | | |
| 47 | SL033 | 3360 | 2143 | 6 | 7.9 | | |
| 48 | SL034 | 3002 | 2143 | 5 | 6.6 | | |
| 49 | SL035 | 2767 | 2143 | 5 | 6.6 | | |
| 50 | SL072 | 2924 | 2353 | 4.5 | 5.9 | | Edge of Road |
| 51 | SL073 | 2695 | 2157 | 4.5 | 5.9 | | |
| 52 | 155 | 2413 | 2353 | 4 | 5.3 | | |
| | 156 | 2903 | 2143 | 5 | 6.6 | | Edge of Moat |
| 53 | SL037 | 4172 | 2143 | 8 | 10.6 | | |
| 54 | SL038 | 4197 | 2143 | 8 | 10.6 | | |
| 55 | SL039 | 2985 | 2143 | 5 | 6.6 | | |
| 56 | SL040 | 2498 | 2143 | 5 | 6.6 | | |
| 57 | 157 | 3693 | 2353 | 5.5 | 7.3 | | Edge of Brush |
| 58 | SL074 | 2289 | 2157 | 3.5 | 4.6 | | |
| 59 | 158 | 2682 | 2157 | 5.5 | 7.3 | | |
| 60 | SL075 | 2936 | 2157 | 5 | 6.6 | | |
| 61 | 159 | 1975 | 2353 | 4 | 5.3 | | |
| | 160 | 2622 | 2143 | 4.5 | 5.9 | | Edge of Moat |
| 62 | SI041 | 2602 | 2143 | 5 | 6.6 | | |
| 63 | SI042 | 2995 | 2143 | 5 | 6.6 | | |
| 64 | SI043 | 3075 | 2143 | 5 | 6.6 | 6.0 ±1.0 | |
| 65 | SI044 | 2757 | 2353 | 4.5 | 5.9 | | Edge of Moat |
| 66 | SI077 | 2981 | 2353 | 4.5 | 5.9 | | |
| 67 | SL078 | 2787 | 2157 | 3 | 4.0 | | Edge of Brush |
| 68 | SL079 | 3103 | 2157 | 3 | 4.0 | | Edge of Brush |
| 69 | SL080 | 2922 | 2457 | 5 | 6.6 | | |
| 70 | 161 | 2896 | 2353 | 5 | 6.6 | | |
| | 162 | 2538 | 2143 | 4.5 | 5.9 | | Edge of Moat |
| 71 | SL045 | 3813 | 2143 | 6 | 7.9 | | |
| 72 | SL046 | 2562 | 2143 | 5 | 6.6 | | |
| 73 | SL047 | 2588 | 2194 | 5.5 | 7.3 | | |
| 74 | 166 | 2557 | 2157 | 5 | 6.6 | | Edge of Road |
| | SL081 | 2881 | 2353 | 5 | 6.6 | | |
| 75 | SL086 | 2123 | 2157 | 4 | 5.3 | | |
| | SL053 | 2950 | 2157 | 5 | 6.6 | | |
| 76 | SL087 | 2262 | 2157 | 3 | 4.0 | | |
| | SL082 | 3117 | 2157 | 5.5 | 7.3 | | |
| 77 | 167 | 3085 | 2157 | 5 | 6.6 | | |
| | SL083 | 2965 | 2157 | 4.5 | 5.9 | | |
| 78 | 163 | 2435 | 2157 | 4 | 5.3 | | |

## TABLE 6-1
## PSC Grid Intersection Characterization

| | | Gamma (CPM) | | Measured | Corrected | PIC | |
|---|---|---|---|---|---|---|---|
| Grid No. | Intersection ID | Onsite | Offsite (Background) | Dose Rate (μR/hr) | Dose Rate (μR/hr) | Dose Rate (μR/hr) | Notes |
| | 168 | 2005 | 2157 | 4 | 5.3 | | Edge of Brush |
| 79 | 164 | - | - | - | - | | Under Water |
| | 165 | 1962 | 2143 | 3.5 | 4.6 | | Edge of Moat |
| 80 | SL048 | 2353 | 2194 | 4 | 5.3 | | |
| 81 | SL049 | 2392 | 2194 | 4 | 5.3 | | |
| 82 | SL050 | 2746 | 2194 | 4 | 5.3 | | |
| 83 | 169 | - | - | - | - | | Under Water |
| | 170 | 2002 | 2143 | 3.5 | 4.6 | | Edge of Moat |
| 84 | SL088 | 2218 | 2194 | 4 | 5.3 | | |
| 85 | SL051 | 2205 | 2194 | 3.5 | 4.6 | | |
| 86 | 171 | 2684 | 2157 | 4 | 5.3 | | |
| 87 | 172 | 2123 | 2353 | 4 | 5.3 | | Inside Fence |
| | 174 | 2152 | 2353 | 4 | 5.3 | | |
| | 173 | 2438 | 2143 | 5 | 6.6 | | Edge of Moat |
| | 175 | 2653 | 2143 | 5 | 6.6 | | |
| 88 | SL052 | 2317 | 2194 | 4 | 5.3 | 5.7±.06 | |
| | SL093 | 1649 | 2143 | 3.5 | 4.6 | | |
| 89 | 5L091 | 2187 | 2194 | 4 | 5.3 | | |
| | 176 | 2402 | 2194 | 4 | 5.3 | | |
| 90 | SL092 | 2743 | 2157 | 5 | 6.6 | | |
| | 177 | 1892 | 2157 | 4 | 5.3 | | |

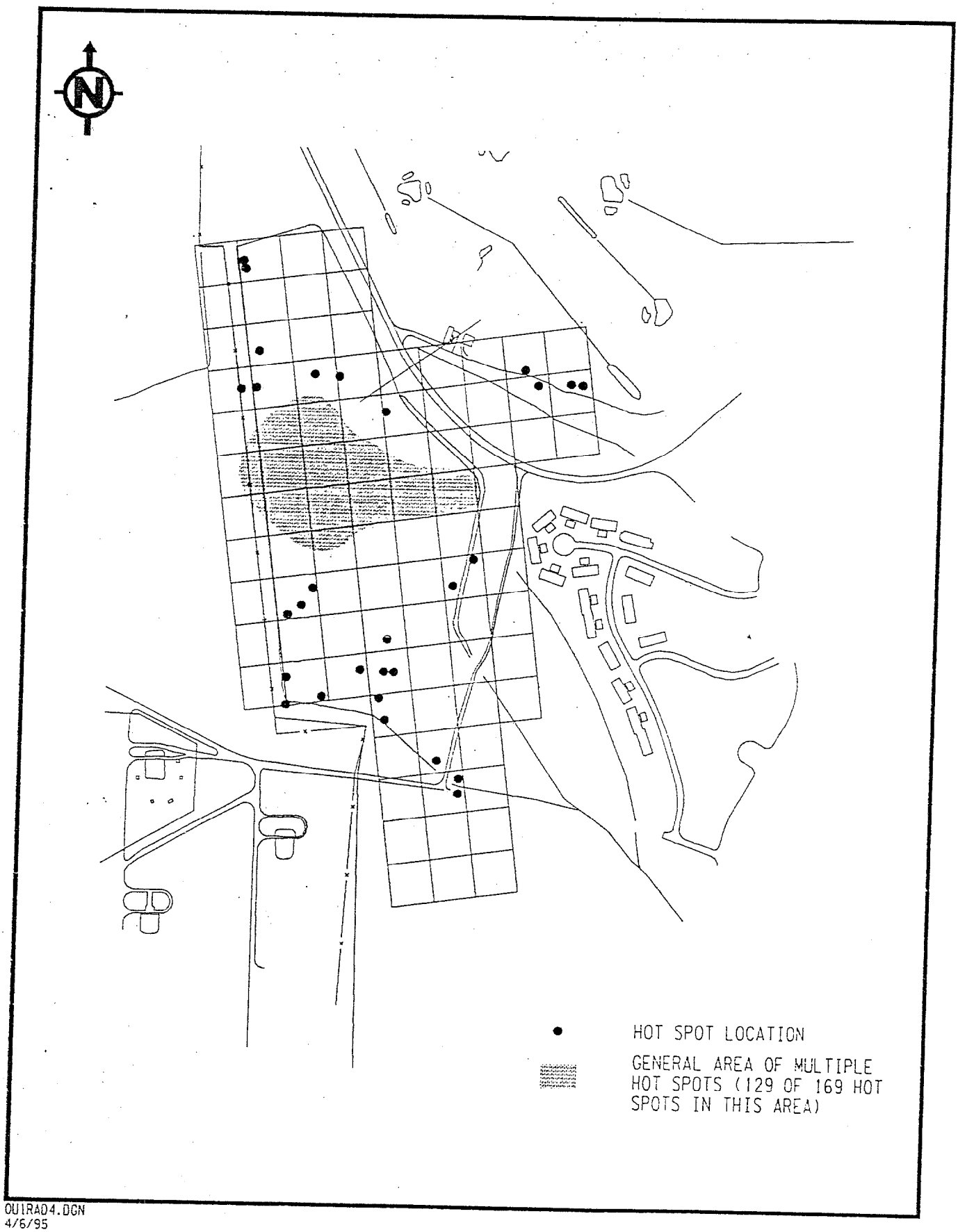


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Figure 6-3
PSC- 26 Hot Spot Locations

Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 08-01 | 135 | -1 | +91 | 10 | 13 | 6100 | 1 | 36 | 43 |
| 11-01 | 139 | -77 | +15 | 18 | 24 | 11615 | 2 | 85 | 79 |
| 13-01 | 141 | -102 | +107 | 18 | 24 | 19378 | 1 | 126 | 79 |
| 13-02 | 141 | -126 | +143 | 18 | 24 | 8320 | 0 | 67 | 79 |
| 18-01 | SL011 | -14 | +26 | 120 | 158 | 61250 | 2 | 466 | 521 |
| 18-01 II | SL011 | -138 | +91 | 10 | 13 | 8200 | 0 | 53 | 43 |
| 18-01 II | SL011 | -137 | +21 | 18 | 24 | 12550 | 0 | 78 | 79 |
| 19-01 | SL012 | -3 | +94 | 32 | 42 | 21193 | 0 | 82 | 139 |
| 20-01 | SL013 | -112 | +99 | 60 | 79 | 38875 | 0 | 195 | 260 |
| 20-02 | SL013 | -72 | +93 | 160 | 211 | 119469 | 0 | 1082 | 697 |
| 25-02 II | SL016 | -143 | +94 | 22 | 29 | 16100 | 1 | 95 | 95 |
| 27-01 | SL018 | -42 | +26 | 50 | 66 | 28634 | 0 | 128 | 218 |
| 32-01 | SL022 | -13 | +101 | 20 | 26 | 11932 | 2 | 81 | 86 |
| 32-02 | SL022 | -42.5 | +58 | 17 | 22 | 8082 | 1 | 89 | 73 |
| 32-03 | SL022 | -90 | +3 | 15 | 20 | 12973 | 4 | 67 | 66 |
| 33-01 | SL023 | -140.5 | +61.5 | 24 | 32 | 14362 | 1 | 224 | 106 |
| 34-01 | SL024 | -62 | +20.5 | 12 | 16 | 10801 | 3 | 106 | 53 |
| 35-01 | SL025 | -12 | +96 | 14 | 18 | 8600 | 0 | 80 | 59 |
| 36-01 II | SL026 | -115 | +39 | 30 | 40 | 28130 | 2 | 223 | 132 |
| 38-02 | 152 | -34 | +144 | 36 | 48 | 22282 | 2 | 139 | 158 |
| 38-01 W | 152 | -53 | +142 | 70 | 92 | 46128 | 4 | 224 | 304 |
| 39-01 | SL027 | -21 | +80 | 22 | 29 | 16897 | 1 | 118 | 96 |
| 39-02 | SL027 | -112.5 | +15 | 14 | 18 | 9510 | 0 | 95 | 59 |
| 39-01 II | SL027 | -140 | +133 | 28 | 37 | 18500 | 0 | 80 | 122 |
| 39-02 II | SL027 | -141 | +131 | 40 | 53 | 27300 | 0 | 195 | 175 |
| 39-03 II | SL027 | -138 | +70 | 90 | 119 | 69380 | 1 | 310 | 393 |
| 40-01 | SL028 | -24 | +128 | 45 | 59 | 33281 | 1 | 233 | 195 |
| 40-02 | SL028 | -38 | +141 | 380 | 502 | 158816 | 9 | 1057 | 1,657 |
| 40-03 | SL028 | -44 | +77 | 60 | 79 | 40627 | 2 | 383 | 261 |
| 40-04 | SL028 | -47 | +67 | 48 | 63 | 36528 | 1 | 305 | 208 |

Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 41-01 | SL029 | -65 | +65 | 18 | 24 | 13004 | 4 | 88 | 79 |
| 42-01 | SL030 | -145.5 | +85 | 16 | 21 | 13789 | 0 | 115 | 69 |
| 43-01 | SL031 | -140 | +60.5 | 30 | 40 | 15950 | 1 | 82 | 132 |
| 43-02 | SL031 | -73 | +111 | 15 | 20 | 8627 | 1 | 61 | 66 |
| 44-01 | SL070 | -9 | +146 | 15 | 20 | 13700 | 1 | 105 | 66 |
| 44-02 | SL070 | -120 | +77 | 14 | 18 | 11000 | 1 | 65 | 59 |
| 45-01 | 154 | -38 | +121 | 25 | 33 | 16200 | 4 | 104 | 109 |
| 46-01 | SL032 | -122 | +10 | 15 | 20 | 18108 | 1 | 83 | 66 |
| 46-02 | SL032 | -96 | +144 | 120 | 158 | 57222 | 3 | 1314 | 521 |
| 46-04 | SL032 | -59 | +124 | 46 | 61 | 31343 | 0 | 439 | 201 |
| 46-02 III | SL032 | -138 | +104 | 18 | 24 | 12270 | 0 | 104 | 79 |
| 46-03 III | SL032 | -141 | +76 | 18 | 24 | 9405 | 4 | 64 | 79 |
| 46-04 III | SL032 | -133 | +50 | 35 | 46 | 11500 | 0 | 77 | 152 |
| 47-02 | SL033 | -1 | +73 | 13 | 17 | 7238 | 7 | 68 | 56 |
| 47-03 | SL033 | -8 | +14 | 30 | 40 | 18035 | 0 | 92 | 132 |
| 47-A1 | SL033 | -33 | +130 | 80 | 106 | 66255 | 4 | 388 | 350 |
| 48-01 | SL034 | -24 | +121 | 26 | 34 | 15257 | 4 | 148 | 113 |
| 48-02 | SL034 | -37 | +82 | 24 | 32 | 17839 | 1 | 105 | 106 |
| 48-03 | SL034 | -42 | +38 | 26 | 34 | 12900 | 2 | 123 | 112 |
| 48-04 | SL034 | -44 | +11 | 50 | 66 | 36430 | 5 | 142 | 218 |
| 48-05 | SL034 | -67 | +113 | 38 | 50 | 23969 | 3 | 180 | 165 |
| 48-06 | SL034 | -98 | +100 | 18 | 24 | 11040 | 2 | 95 | 79 |
| 48-08 | SL034 | -139.5 | +83 | 24 | 32 | 15742 | 4 | 118 | 106 |
| 49-01 | SL035 | -19.5 | +149 | 11 | 15 | 8400 | 0 | 66 | 50 |
| 49-02 | SL035 | -51.5 | +81 | 29 | 38 | 19260 | 1 | 161 | 125 |
| 49-03 | SL035 | -50 | +70 | 20 | 26 | 18950 | 0 | 125 | 86 |
| 49-06 | SL035 | -1 | +51 | 36 | 48 | 24985 | 2 | 174 | 158 |
| 50-01 | SL072 | -149.5 | +80 | 50 | 66 | 35536 | 1 | 180 | 218 |
| 50-02 | SL072 | -124.5 | +145 | 15 | 20 | 11570 | 1 | 70 | 66 |
| 50-03 | SL072 | -100 | +138 | 18 | 24 | 10729 | 3 | 76 | 79 |

Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 50-04 | SL072 | -89 | +139 | 25 | 33 | 19150 | 4 | 102 | 109 |
| 50-05 | SL072 | -68 | +42 | 21 | 28 | 12500 | 0 | 73 | 92 |
| 50-06 | SL072 | -60 | +120.5 | 20 | 26 | 18200 | 3 | 77 | 86 |
| 50-07 | SL072 | -50 | +69 | 34 | 45 | 52100 | 5 | 454 | 149 |
| 50-01 II | SL072 | -65 | +148 | 12 | 16 | 7500 | 4 | 59 | 53 |
| 50-02 II | SL072 | -60 | +147 | 13 | 17 | 11000 | 3 | 107 | 56 |
| 50-03 II | SL072 | -45 | +149 | 25 | 33 | 16200 | 1 | 156 | 109 |
| 50-05 II | SL072 | -30 | +138 | 15 | 20 | 13700 | 1 | 91 | 66 |
| 50-06 II | SL072 | -60 | +108 | 150 | 198 | 91200 | 2 | 590 | 653 |
| 50-07 II | SL072 | -60 | +124 | 50 | 66 | 40000 | 2 | 226 | 218 |
| 50-08 II | SL072 | -10 | +33 | 20 | 26 | 11750 | 1 | 78 | 86 |
| 52-01 | 156 | -22 | +26 | 28 | 37 | 21900 | 0 | 124 | 122 |
| 52-01 W | 156 | -57 | +31 | 280 | 370 | 162630 | 1 | 802 | 1,221 |
| 53-01 | SL037 | -90 | +1 | 110 | 145 | 81950 | 1 | 636 | 479 |
| 53-02 | SL037 | -86 | +73 | 8 | 11 | 11670 | 2 | 45 | 36 |
| 53-03 | SL037 | -80.5 | +77 | 10 | 13 | 8776 | 2 | 50 | 43 |
| 53-04 | SL037 | -106 | +55 | 9 | 12 | 8181 | 1 | 44 | 40 |
| 53-05 | SL037 | -108 | +127 | 23 | 30 | 6702 | 2 | 92 | 99 |
| 53-01 II | SL037 | -8 | +123 | 10 | 13 | 6500 | 2 | 60 | 43 |
| 53-03 II | SL037 | -18 | +137 | 70 | 92 | 47000 | 1 | 389 | 304 |
| 53-04 II | SL037 | -62 | +150 | 35 | 46 | 13800 | 4 | 135 | 152 |
| 54-01 | SL038 | -108 | +99 | 21 | 28 | 10823 | 0 | 107 | 92 |
| 54-02 | SL038 | -113 | +67 | 100 | 132 | 65000 | 4 | 243 | 436 |
| 54-01 II | SL038 | -13 | +106 | 30 | 40 | 1168 | 3 | 193 | 132 |
| 54-02 II | SL038 | -12 | +112 | 20 | 26 | 7191 | 2 | 120 | 86 |
| 54-03 II | SL038 | -18 | +121 | 60 | 79 | 17029 | 2 | 311 | 261 |
| 54-04 II | SL038 | -31 | +86 | 90 | 119 | 41350 | 3 | 660 | 393 |
| 54-05 II | SL038 | -36 | +98 | 20 | 26 | 8000 | 2 | 92 | 86 |
| 54-06 II | SL038 | -44 | +130 | 13 | 17 | 9300 | 2 | 59 | 56 |
| 54-07 II | SL038 | -33 | +129 | 10 | 13 | 8600 | 2 | 61 | 43 |

Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 54-08 II | SL038 | -39 | +109 | 13 | 17 | 9500 | 2 | 62 | 56 |
| 54-09 II | SL038 | -52 | +103 | 90 | 119 | 34500 | 3 | 345 | 393 |
| 54-10 II | SL038 | -48 | +132 | 40 | 53 | 1110 | 2 | 174 | 175 |
| 54-11 II | SL038 | -54 | +135 | 45 | 59 | 13600 | 2 | 321 | 192 |
| 54-12 II | SL038 | -65 | +117 | 40 | 53 | 17400 | 1 | 142 | 175 |
| 54-13 II | SL038 | -64 | +105 | 15 | 20 | 9300 | 2 | 75 | 66 |
| 54-15 II | SL038 | -76 | +114 | 80 | 106 | 35200 | 1 | 413 | 350 |
| 54-16 II | SL038 | -94 | +128 | 26 | 34 | 14500 | 2 | 95 | 112 |
| 54-17 II | SL038 | -80 | +134 | 15 | 20 | 7800 | 2 | 55 | 66 |
| 54-18 II | SL038 | -180 | +149 | 50 | 66 | 33780 | 1 | 225 | 218 |
| 54-19 II | SL038 | -116 | +138 | 24 | 32 | 17000 | 2 | 115 | 106 |
| 54-20 II | SL038 | -136 | +148 | 100 | 132 | 69500 | 1 | 558 | 436 |
| 54-A1 | SL038 | -85 | +11 | 80 | 106 | 60680 | 10 | 437 | 350 |
| 55-02 | SL039 | -36 | +105 | 10 | 13 | 7675 | 1 | 58 | 43 |
| 55-03 | SL039 | -59 | +106 | 33 | 44 | 13821 | 0 | 117 | 145 |
| 55-04 | SL039 | -72 | +104 | 47 | 62 | 23750 | 1 | 104 | 205 |
| 55-05 | SL039 | -122 | +109.5 | 9 | 12 | 7348 | 1 | 46 | 40 |
| 55-06 | SL039 | -137 | +148 | 44 | 58 | 21750 | 2 | 313 | 191 |
| 55-07 | SL039 | -115 | +132 | 20 | 26 | 24200 | 0 | 233 | 86 |
| 55-01 II | SL039 | -149 | +125 | 35 | 46 | 30720 | 0 | 142 | 152 |
| 55-02 II | SL039 | -136 | +143 | 17 | 22 | 10890 | 0 | 87 | 73 |
| 55-03 II | SL039 | -128 | +105 | 50 | 66 | 40000 | 1 | 153 | 218 |
| 55-04 II | SL039 | -125 | +125 | 190 | 251 | 12600 | 1 | 10335 | 828 |
| 56-01 | SL040 | -104.5 | +79 | 46 | 61 | 33431 | 2 | 302 | 201 |
| 60-04 | SL075 | -81 | +140 | 14 | 18 | 8538 | 2 | 80 | 59 |
| 61-01 | 160 | -64 | +92 | 19 | 25 | 15500 | 1 | 145 | 83 |
| 61-02 | 160 | -28.5 | +58.5 | 35 | 46 | 19600 | 0 | 137 | 152 |
| 61-03 | 160 | -33 | +45 | 23 | 30 | 16050 | 4 | 160 | 99 |
| 61-01 W | 160 | -64 | +31 | 100 | 132 | 35436 | 0 | 228 | 436 |
| 62-01 | SL041 | -66.5 | +142.5 | 8 | 11 | 6100 | 0 | 52 | 36 |

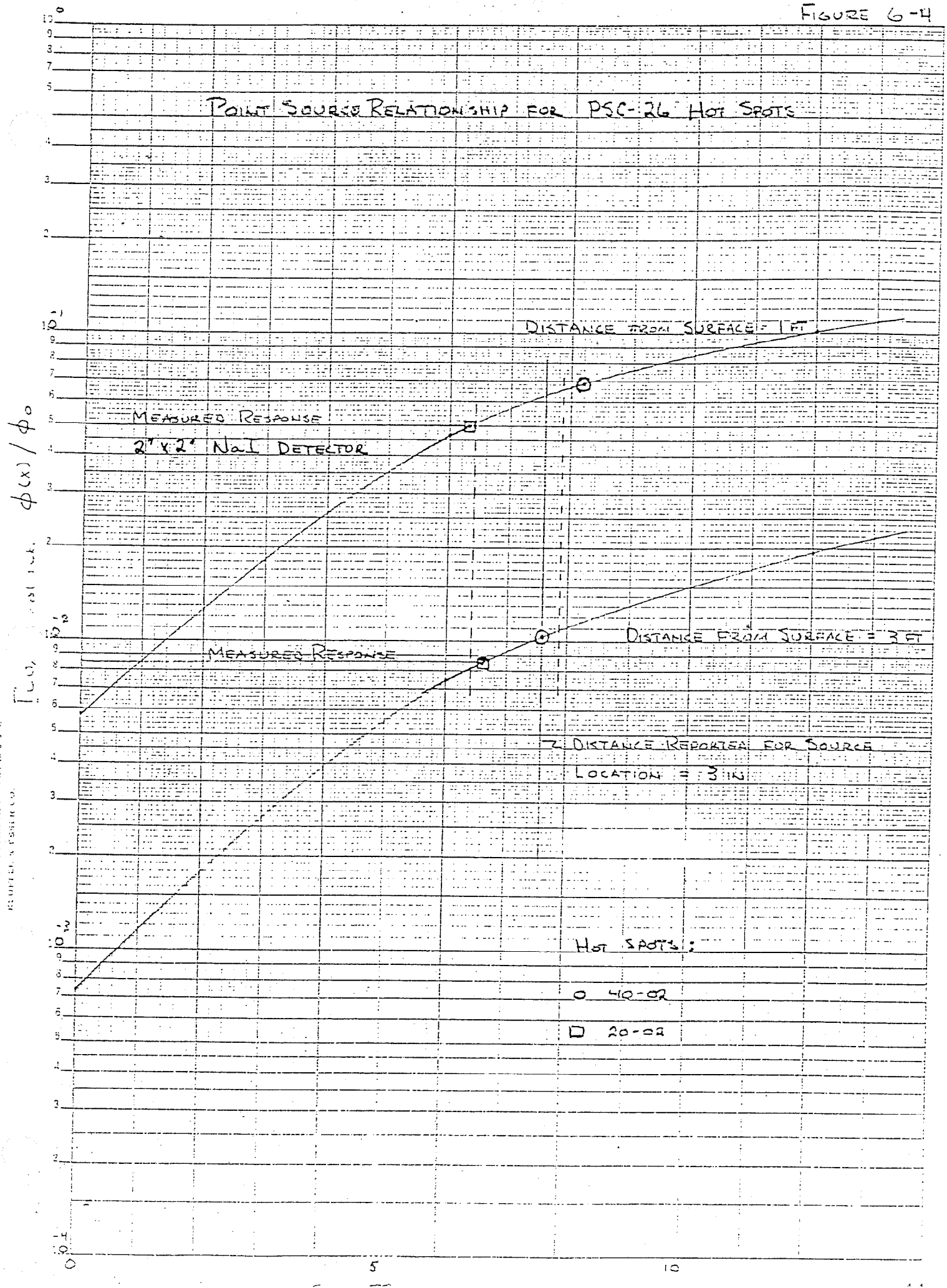
Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 62-02 | SL041 | -101 | +131 | 8 | 11 | 6200 | 0 | 56 | 36 |
| 62-03 | SL041 | -84 | +107 | 20 | 26 | 15400 | 1 | 93 | 86 |
| 62-04 | SL041 | -74 | +69 | 24 | 32 | 17800 | 5 | 87 | 106 |
| 62-05 | SL041 | -52 | +48 | 140 | 185 | 61400 | 2 | 347 | 611 |
| 63-01 | SL042 | -139 | +61 | 17 | 22 | 21500 | 0 | 119 | 73 |
| 63-02 | SL042 | -131 | +36 | 28 | 37 | 72400 | 0 | 164 | 122 |
| 63-03 | SL042 | -134 | +22 | 100 | 132 | 45363 | 0 | 7027 | 436 |
| 63-04 | SL042 | -121 | +1 | 80 | 106 | 54032 | 1 | 387 | 350 |
| 63-05 | SL042 | -137 | +1.5 | 100 | 132 | 65300 | 2 | 369 | 436 |
| 63-06 | SL042 | -79 | +32.5 | 70 | 92 | 46700 | 1 | 410 | 304 |
| 63-07 | SL042 | -120 | +43 | 50 | 66 | 66076 | 1 | 365 | 218 |
| 63-08 | SL042 | -122 | +28 | 16 | 21 | 22470 | 0 | 101 | 70 |
| 63-09 | SL042 | -97 | +0.5 | 60 | 79 | 37376 | 86 | 12240 | 260 |
| 63-10 | SL042 | -91 | +95 | 60 | 79 | 51842 | 0 | 176 | 260 |
| 63-11 | SL042 | -92 | +120 | 23 | 30 | 7800 | 1 | 106 | 99 |
| 63-13 | SL042 | -81 | +64 | 20 | 26 | 7370 | 6 | 89 | 86 |
| 63-14 | SL042 | -86 | +59 | 130 | 172 | 40400 | 4 | 390 | 568 |
| 63-15 | SL042 | -77 | +32 | 22 | 29 | 9500 | 3 | 139 | 96 |
| 63-17 | SL042 | -70 | +14.5 | 32 | 42 | 7500 | 0 | 89 | 139 |
| 63-18 | SL042 | -70 | +5 | 60 | 79 | 17800 | 2 | 389 | 260 |
| 63-19 | SL042 | -52 | +17 | 100 | 132 | 12800 | 18 | 9347 | 436 |
| 63-20 | SL042 | -66 | +20 | 22 | 29 | 15000 | 0 | 54 | 96 |
| 63-22 | SL042 | -65 | +30 | 170 | 224 | 33000 | 3 | 1462 | 739 |
| 63-23 | SL042 | -70 | +30 | 22 | 29 | 13000 | 3 | 117 | 73 |
| 63-24 | SL042 | -68 | +48 | 24 | 32 | 13438 | 0 | 183 | 106 |
| 63-25 | SL042 | -60 | +52 | 10 | 13 | 8500 | 0 | 59 | 43 |
| 63-26 | SL042 | -62 | +76 | 20 | 26 | 8500 | 0 | 72 | 86 |
| 63-28 | SL042 | -54 | +117 | 38 | 50 | 16236 | 2 | 125 | 165 |
| 63-29 | SL042 | -47 | +87 | 26 | 34 | 11462 | 2 | 124 | 112 |
| 36-30 | SL042 | -44 | +95 | 150 | 198 | 78081 | 3 | 1160 | 653 |

Table 6-2
PSC 26 Hot Spot Radiation Data

| BEI Hot Spot No. | ABB Coordinates (ft) | | | Peak Dose Rate (μR/hr) | | Peak Radiation Values (cpm) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Grid No | X | Y | Measured | Corrected | 2"x2" NaI (γ) | ZnS (α) | Pancake GM (β/γ) | |
| | | | | | | | | Measured β/γ | Predicted γ |
| 63-31 | SL042 | -40 | +95 | 70 | 92 | 39320 | 3 | 191 | 304 |
| 64-01 | SL043 | -137 | +59 | 180 | 238 | 98000 | 1 | 578 | 785 |
| 65-01 | SL044 | -147 | +91 | 100 | 132 | 60790 | 1 | 298 | 436 |
| 68-A1 | SL079 | -46 | +126 | 110 | 145 | 97240 | 3 | 288 | 479 |
| 69-01 | SL080 | -12 | +82 | 16 | 21 | 11028 | 3 | 63 | 69 |
| 69-02 | SL080 | -40 | +18 | 24 | 32 | 16196 | 3 | 127 | 106 |
| 69-03 | SL080 | -59 | +80 | 22 | 29 | 13011 | 0 | 70 | 96 |
| 70-01 W | 162 | -52.5 | +51 | 45 | 59 | 24925 | 0 | 165 | 195 |
| 71-01 | SL045 | -53 | +9 | 10 | 13 | 6500 | 2 | 57 | 43 |
| 71-02 | SL045 | -145.5 | +64.5 | 100 | 132 | 103500 | 1 | 555 | 436 |
| 72-01 | SL046 | -143 | +35.5 | 15 | 20 | 8200 | 2 | 65 | 66 |
| 72-02 | SL046 | -93 | +133 | 34 | 45 | 21350 | 2 | 195 | 149 |
| 72-04 | SL046 | -42 | +41 | 30 | 40 | 18530 | 0 | 128 | 132 |
| 72-05 | SL046 | -68 | +73 | 50 | 66 | 31270 | 1 | 191 | 218 |
| 73-01 | SL047 | -138 | +111 | 23 | 30 | 19930 | 0 | 49 | 99 |
| 77-A1 | SL083 | -95 | +2 | 200 | 264 | 157350 | 12 | 1197 | 871 |
| 80-01 | SL048 | -123 | +61.5 | 10 | 13 | 6500 | 0 | 82 | 43 |
| 88-01 | SL052 | -134 | +80 | 40 | 53 | 27600 | 3 | 220 | 175 |
| 88-02 | SL052 | -129 | +81 | 20 | 26 | 13200 | 0 | 55 | 86 |

FIGURE 6-4




K&E SEMI-LOGARITHMIC 46 6010
4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO.

should be in a vertical line of constant soil thickness. Inspection of Figure 6-4 shows this to be very close to theoretical prediction with projected depths for the two sources of

Device 20-02 : $d_s \cong 6.4$ cm (2.5 in.)
Device 40-02 : $d_s \cong 7.9$ cm (3.1 in.)

This is in very good agreement with the field log that reported the devices approximately 3-4 in. beneath the surface.

Figure 6-5 is the theoretical dose rate relationship at various distances above the surface for a point source of radium-226 at various depths beneath the surface in soil. Using these relationships and the soil depths previously determined an estimate of the initial activity in each hot spot results in

Hot Spot 20-02 : $S\gamma = 2.16\ \mu Ci$
Hot Spot 40-02 : $S\gamma = 7.7\ \mu Ci$

The activity in Hot Spot 20-02 is almost identical to the activity in Device 20-02 (2.16 μCi vs. 2.25 μCi). The activity in Hot Spot 40-02 is approximately two and one-half times as great as Device 40-02 (7.7 μCi vs. 2.9 μCi). This would seem to imply that Device 40-02 has degraded, with significant activity deposited in surrounding soil. This is confirmed by soil sample analysis results in Table 6-3 (Section 6.14) showing minimal soil activity associated with Device 20-02, but almost 2,000 pCi/gm in the sample obtained with Device 40-02. (Note: The difference between the in situ gamma dose rates on Figure 6-5 and the values in Table 6-2 are that the Figure 6-5 values have had the background subtracted.)

Using twice background as the criteria for characterizing hot spots, and assuming source activity of 2-3 μCi, Figure 6-5 would imply that the hot spots characterized would be between the surface and a soil depth of approximately 1 ft (30 cm). For example, a 3 μCi source located 1 ft below the surface would read approximately 6 μR/hr above background at the surface.

In Table 6-2, only the measured gamma dose rate has been corrected using the correlations from Section 5. With the exception of hot spots 63-09, 63-19, and 77-A1, all alpha readings are near or at background. This would imply that the sources of activity are not exposed at the ground surface.

The beta emissions from the radium-226 decay chain have associated beta energies that vary from ~ 1 to > 3 MeV. However, the maximum range of beta particles, even at 3 MeV, is approximately 1.0 cm in soil. The majority of the elevated beta readings may, therefore, be from gamma response to the detector.

The gamma response of the Ludlum 44-0 pancake GM detector, as provided from the vendor, is:

$R\gamma = 3.3$ cpm (μR/hr)

FIGURE 6-5

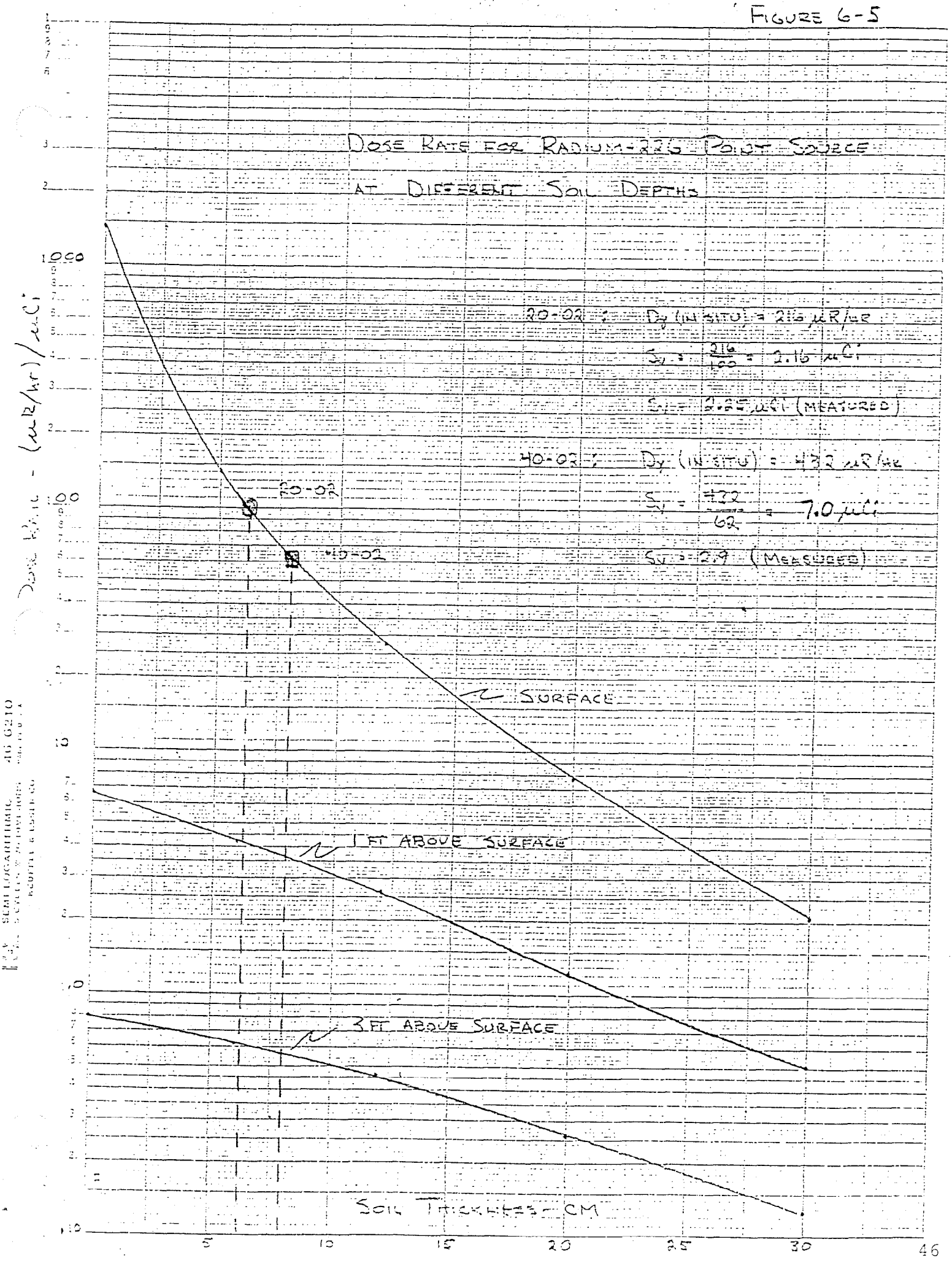

DOSE RATE FOR RADIUM-226 POINT SOURCE
AT DIFFERENT SOIL DEPTHS
20-02 : $D_\gamma$ (IN SITU) = 216 μR/HR
$S_\gamma = \frac{216}{100} = 2.16$ μCi
$S_\gamma$ = 2.25 μCi (MEASURED)
40-02 : $D_\gamma$ (IN SITU) = 432 μR/HR
$S_\gamma = \frac{432}{62} = 7.0$ μCi
$S_\gamma$ = 2.9 (MEASURED)
20-02
40-02
SURFACE
1 FT ABOVE SURFACE
3 FT ABOVE SURFACE
DOSE RATE - (μR/HR)/μCi
SOIL THICKNESS - CM
1000
100
10
1.0
5
10
15
20
25
30

Table 6-3

Soil Sample Isotopic Composition (pCi/gm)

| Isotope | ID | 20-02 | 40-02 | 77-01 |
|---|---|---|---|---|
| Radium-226 | PSC 26 | 15.1 | 1990 | 329 |
| | background | 0.37 - 0.99 | 0.37 - 0.99 | 0.37 - 0.99 |
| | release criteria[1] | 5.4 | 5.4 | 5.4 |
| Thorium-232 | PSC 26 | 0.738 | 0.921 | 0.625 |
| | background | 0.47 - 1.08 | 0.47 - 1.08 | 0.47 - 1.08 |
| | release criteria[1] | 5.5 | 5.5 | 5.5 |
| Cesium-137 | PSC 26 | 0.076 | 0.610 | 0.123 |
| | background | 0.01 - 0.49 | 0.01 - 0.49 | 0.01 - 0.49 |
| Potassium-40 | PSC 26 | 4.96 | 1.64 | 0.336 |
| | background | 0.82 - 5.22 | 0.82 - 5.22 | 0.82 - 5.22 |

[1] The release criteria is defined as 5 pCi/gm above background. The value stated is the minimum value, determined from offsite measurements, plus the criteria value.

Table 6-4

Sediment Sample Isotopic Composition (pCi/gm)

| Sample ID | Radium-226 | Thorium-232 | Cesium-137 | Potassium-40 |
|---|---|---|---|---|
| 24-01 | 1.14 | 1.59 | 0.194 | 6.29 |
| 25-02 | 0.444 | 0.596 | 0.137 | 2.94 |
| 26-01 (dup) | 0.939 | 0.897 | 0.014 | 4.36 |
| 29-01 | 1.10 | 0.977 | 0.003 | 4.78 |
| 27-02 | 0.668 | 0.970 | 0.0034 | 3.94 |
| 28-02 | 0.766 | 1.03 | 0.038 | 3.30 |
| 30-02 | 1.02 | 1.40 | 0.020 | 6.47 |
| 31-01 | 0.721 | 0.714 | 0.005 | 2.69 |
| 32-02 | 0.642 | 0.887 | 0.052 | 1.80 |
| background | 0.37 - 0.99 | 0.47 - 1.08 | 0.01 - 0.49 | 0.82 - 5.22 |

Each beta reading was compared to the corresponding "corrected" μR meter reading, multiplied by the gamma response factor. Besides the three previously noted hot spots with elevated alpha readings, 16 additional hot spots have elevated beta readings that are approximately a factor of two or greater than the expected gamma response of the detector. This would imply that 19 out of a total of 169 hot spots (or approximately 10 percent) are within 1.0 cm of the surface of the ground.

## 6.4 SOIL SAMPLE RESULTS

A total of three soil samples were obtained on PSC 26. These samples were analyzed for radioisotopic content to confirm the identity of the primary contaminant(s). Two of the samples were taken at hot spot locations that yielded electronic devices as discussed in Section 6.3 The results of the radiochemistry analysis is provided in Table 6-3. The location of these sample points is shown on Figure 6-6. The laboratory analysis reports are provided in Appendix G.

## 6.5 SEDIMENT SAMPLE RESULTS

Eight locations in the moat around PSC 26 and in outfall streams around the PSC were identified for sample analysis. Nine samples were taken from these locations, shown on Figure 6-6. The laboratory analysis reports are provided in Appendix H. The isotopic composition is summarized in Table 6-4. At three of the locations, the radium-226 concentrations were slightly in excess of the range of background discussed in Section 4. However, the highest reading (Location 24-01) of 1.14 pCi/gm is still significantly below the remediation criteria of 5 pCi/gm. At two of the locations, thorium-232 concentrations exceeded the range of background. As with the radium-226 results, however, the highest reading (Location 24-01) of 1.50 pCi/gm is below the remediation criteria for thorium of 5 pCi/gm. Note that both radium and thorium maximums occurred at the same location. For combinations of isotopes, the cleanup criteria will be met if the sum of ratios is less than one:

e.g., $\sum_i \frac{Ci}{Li} \leq 1.0$ where Ci = concentration of isotope $i$

Li = limit for isotope $i$

For location 24-01, this summation, based on a limit for both isotopes of 5pCi/gm, is:

$$\sum_i \frac{Ci}{Li} = .228\ (\mathrm{Ra}) + .318\ (\mathrm{Th}) = .546 < 1.0$$

This result is conservative because the natural background has not been included in the value used for the limit.

# 7.0 SUMMARY OF RESULTS

## 7.1 BACKGROUND SUMMARY

The radiological background for the NAS Jacksonville site was determined by making in situ measurements and taking soil samples for isotopic analysis at 20 locations on and around the site.

The results of this study are used for evaluating the effectiveness of required remedial activities to reduce residual activities below the guidelines established for those activities. Table 7-1 provides a summary of the results of the background study..

## 7.2 PORTABLE SURVEY INSTRUMENT RESPONSE

The background studies were used in conjunction with basic shielding theory, to establish response factors for the gamma measuring instruments employed during PSC 26 characterization. For the instruments used to perform in situ quantification of elevated areas of activity, the response factors are summarized in Table 7-2. Following cleanup activities, the 2"x2" NaI detector will be used to determine if residual activity levels are below the guidelines of ≤ 5 pCi/gm above background. The criteria will be assumed satisfied if the response of the meter is:

$R_0 < 4{,}750$ cpm above background

## 7.3 GAMMA WALKOVER SURVEYS

The walkover surveys were intended to locate areas of elevated activity (hot spots) that had potential to exceed release criteria. Areas that exceeded twice the background of the start point of the grid were marked for further characterization. At each grid intersection, the local gamma background was noted. For the 90 grids in PSC-26, the local background varied from 4.0 μR/hr to 10.6 μR/hr (compared to the NAS-JAX site background that varies from 5.7 μR/hr to 7.8 μR/hr).

## 7.4 HOT SPOT CHARACTERIZATION

As a result of the walkover survey, 169 areas were noted that exceeded twice local background. In situ characterization of these hot spots indicated a maximum surface dose rate of 500 μR/hr. A more comprehensive evaluation of the gamma measurements, analysis of point sources excavated and analyzed ex situ, and instrument response functions indicate that the hot spots evaluated were likely distributed between the surface and a depth in the soil of approximately

1 ft. Inspection of alpha readings at the surface indicates that only three of the hot spots are likely exposed at the surface. Beta particles have a relatively short range in soil. For beta emissions from radium-226 and decay daughters, the maximum range in soil is approximately 1 cm. Each of the elevated beta readings was evaluated as possibly being gamma response of the detector. Using the gamma response function provided by the vendor, 19 hot spots were in excess of values based on comparison to measured dose rate. This would imply that 19 out of 169 hot spots (approximately 10 percent) are within 1 cm of the surface.

## 7.5 SOIL SAMPLE RESULTS

Three soil samples were taken from selected hot spot locations on PSC 26. As expected, the samples contained elevated radium-226 concentrations. Hot spot location 40-02 soil was contaminated to 1,990 pCi/gm. This supports the hypothesis that the device excavated at this location was in an advancing stage of decomposition. The in situ evaluation indicated a source activity of 7.7 μCi compared to an ex situ estimated activity with the device of 2.9 μCi (Section 6.3).

## 7.6 SEDIMENT SAMPLE RESULTS

Eight sediment sample locations were selected in the moat surrounding PSC 26 and in outfall locations downstream from the PSC. Several of the samples exhibited radium-226 and thorium-232 levels in excess of the background range observed around the base; however, these levels are still within the criteria for unrestricted release.

# 8.0 REFERENCES


1. USEPA, 40 CFR 192, "Health and Environmental Standards for Uranium and Thorium Mill Tailings," January 5, 1983.

2. NCRP Report No. 94, "Exposure of the Population in the United States and Canade from Natural Background Radiation," National Council on Radiation Protection and Measurements, Bethesda, MD, December 30, 1987.

3. USEPA, Federal Guidance Report No. 12, "External Exposure to Radionuclides in Air, Water, and Soil," EPA 401-R-93-081, United States Environmental Protection Agency, Washington, DC, September 1993.

4. USDOE, C. Yu, et al. "Manual for Implementing Residual Radioactive Material Guidelines Using RESRAD, Version 5.0," ANL/EAD/LS-2 A, Argonne National Laboratory, Argonne, IL, September 1993.

5. USNRC, "Residual Radioactive Contamination from Decommissioning," NUREG/CR-5512, Vol. 1, US Nuclear Regulatory Commission, Washington, DC, October 1992.

Grove Engineering, Inc., MICROSHIELD Users' Manual, Rockville, MD, February 1993.

Table 7-1
Radiological Background - NAS Jacksonville

| | Maximum | Minimum | Average |
|---|---|---|---|
| Dose rate[1] | 7.8 μR/hr | 5.7 μR/hr | 6.4 μR/hr |
| Uranium-238 decay chain (Radium-226) | 0.99 pCi/gm | 0.37 pCi/gm | 0.59 pCi/gm |
| Thorium-232 decay chain | 1.08 pCi/gm | 0.37 pCi/gm | 0.59 pCi/gm |
| Potassium-40 | 5.22 pCi/gm | 0.82 pCi/gm | 2.52-pCi/gm |
| Cesium-137 | 0.49 pCi/gm | 0.01 pCi/gm | 0.17 pCi/gm |

[1] This is equivalent to a variation of 18.4 mRem/hr.

Table 7-2
Instrument Response - Source Conversion (Radium-226)

1. 2 in. x 2 in. NaI Detector - Model 44-10, No. 165
   - Distributed source:

$$K = 950 \frac{cpm}{(pCi / gm)}.$$

   - Point source (on "contact"):

$$K = 35{,}000 \frac{cpm}{\mu Ci}$$

2. μR Meter - Model 19

   - No. 95487 : Dγ = 1.32 * (Meter)

   - No. 109899 : Dγ = 1.89 * (Meter)

# APPENDIX A

# FIELD DATA ACQUISITION FORMS:

# BACKGROUND DATA

## BACKGROUND DATA

Site: NAS - JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 01

Descriptions of Location: RANGER STREET (W) BETWEEN SARATOGA AVENUE AND ENTERPRISE AVENUE ACROSS FROM NAVAL LEGAL SERVICE OFFICE AND COMMAND JUDGE ADVOCATE

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 99136 | Detector 4410 | S/N 165 | | .0687 |
| | (3) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | | .259 |
| | (4) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | | .259 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | .190 |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | .190 |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | | cpm (2) | DOWN cpm (3) | UP cpm (4) | DOWN cpm (5) ** | UP cpm (6) ** | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|---|
| 0101 | * 7uR/HR | 7uR/HR | 3833 | 51 | 30 | 0 | 1 | 6.9 |
| 0102 | 7uR/HR | 7uR/HR | 3849 | 54 | 45 | 4 | 0 | 6.7 |
| 0103 | 8uR/HR | 7uR/HR | 3666 | 38 | 44 | 0 | 0 | 6.5 |
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*REMARKS*

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 6uR/HR

** READINGS TAKEN 11/8/94: LUDLUM 19 (#109899) 3-4 uR/HR

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS- JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: ROBERT PARRISH/ GEUSA SHOWERS Bkg Loc. No.: 02

Descriptions of Location: HIGHWAY 17 SOUTH OF MAIN GATE
EAST SIDE AT MAIN GATE SIGN ON ROAD SHOULDER

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| | (4) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | .19 |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | .19 |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | DOWN cpm (3) | UP cpm (4) | DOWN cpm (5) ** | UP cpm (6) ** | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|
| 0201 | *4uR/HR / 4uR/HR | 5124 | 36 | 36 | 1 | Ø | 6.5 |
| 0202 | 4uR/HR / 4uR/HR | 5098 | 36 | 34 | 4 | Ø | 6.0 |
| 0203 | 4uR/HR / 4uR/HR | 5040 | 32 | 32 | Ø | 3 | 6.5 |
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*REMARKS*

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 = 4uR/HR

** Readings TAKEN 11/08/94 LUDLUM 19 (#109899) 2-3 uR/HR (AVG 2.5)
Recorded by R. Parrish & W. C. May WCM S/W

## BACKGROUND DATA

Site: NAS-JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 03

Descriptions of Location: ORTEGA HILLS DRIVE ; WEST OF ATLANTIC COAST LINE RAILROAD AND SOUTH OF WEDGEWOOD APARTMENT SIGN

*INSTRUMENTS* *EFFICIENCY*

| | | | | | |
|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | |
| | (2) Meter LUDLUM 2221 | S/N 99136 | Detector 44-10 | S/N 165 | .069 |
| | (3) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| | (4) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | .19 |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | .19 |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** | cpm (6)** | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| 0301 | * 5uR/HR 4uR/HR | 2405 | 29 | 33 | 1 | 1 | 6.1 |
| 0302 | 5uR/HR 4uR/HR | 2187 | 36 | 29 | 1 | 0 | 5.6 |
| 0303 | 5uR/HR 4uR/HR | 2424 | 29 | 43 | 0 | 1 | 6.0 |
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*REMARKS*

* NOTE : MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 4uR/HR

** READINGS TAKEN 11/08/94 : LUDLUM 19 (#109899) 2.5-3.0 uR/HR (AVG 3.0)

DATA RECORDED BY R. PARRISH + W.C. May. VCM S/W

## BACKGROUND DATA

Site: NAS- JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: ROBERT PARRISH / GEUSA SHOWERS Bkg Loc. No.: 04

Descriptions of Location: OFF SITE 17 SOUTH TO COLLINS ROAD EAST TO MALAGA ROAD NORTHEAST CORNER LOCATION IN FRONT OF DEAD END SIGN.

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| | (4) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (II) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS** c/6"

| | # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|---|---|
| | 0401 ~~0501~~ | * 6uR/HR | 5uR/HR | 6508 | 41 | 32 | 5 | 2 | 7.9 |
| | 0402 ~~0502~~ | 6uR/HR | 6uR/HR | 6822 | 50 | 36 | 2 | 0 | 7.1 |
| | 0403 ~~0503~~ | 6uR/HR | 5uR/HR | 6742 | 47 | 41 | 1 | 1 | 7.0 |
| | | | | | | | | | |
| | | 5.3 ± .6 | | 6691 ± 163 | 46 ± 4.6 | 36.3 ± 4.5 | 2.7 ± 2.1 | 1.0 ± 1.0 | 7.3 ± .5 |
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*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** READINGS TAKEN 11/7/94 : LUDLUM 19 (#109899) 4-5 μR/HR (AVE = 4.5)

DATA RECORDED BY R PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: ROBERT PARRISH/ GEUSA SHOWERS Bkg Loc. No.: 05

Descriptions of Location: MUSTIN ROAD SOUTH - TO RESTRICTED AREA AT GATE ACCESS ON SOUTH SIDE ROAD

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| | (4) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # ~~[illegible]~~ S/D RSS-111 | S/N 009994 | Cal. Due 11-2-95 | | | |

MEASUREMENTS * C/6"

| # | cpm (1) | | cpm (2) | DOWN cpm (3) | UP cpm (4) | DOWN cpm (5) ** | UP cpm (6) ** | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|---|
| 0501 | * 5uR/HR | 4uR/HR | 4952 | 41 | 32 | 5 | 2 | 7.5 |
| 0502 | 5uR/HR | 4uR/HR | 4733 | 35 | 28 | 1 | 4 | 6.8 |
| 0503 | 5uR/HR | 5uR/HR | 5208 | 41 | 39 | 2 | 0 | 6.2 |
| | | | | | | | | |
| | 4.3±.6 | | 4964 ± 238 | 39 ± 3.5 | 33.0 ± 5.6 | 2.7 ± 2.1 | 2.0 ± 2.0 | 6.8 ± 0.7 |
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REMARKS

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 — 5uR/HR

ROAD ADJACENT TO SURVEY LOCATION — 6.5uR/HR — 7357 CPM

** READINGS TAKEN 11/7/94 : LUDLUM 19 (#109899) : 3.5-5 μR/HR (AVG = 4

DATA RECORDED BY J. SHOWERS, R. PARRISH, E. WALKER S/W

AVERAGE ON GRAVEL ROAD = 6.5 μR/HR

## BACKGROUND DATA

Site: NAS - JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 06

Descriptions of Location: CHILD STREET WEST OF NAVAL HOSPITAL
EDGE OF TREE LINE

INSTRUMENTS

| | | | | | EFFICIENCY |
|---|---|---|---|---|---|
| (1) Meter LUDLUM 19 | S/N 95487 | Detector | | S/N | |
| (2) Meter LUDLUM 2221 | S/N 99136 | Detector 44-10 | | S/N 165 | .070 |
| (3) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | | S/N 116876 | .225 |
| (4) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | | S/N 116876 | .225 |
| ** (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS @ C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7) |
|---|---|---|---|---|---|---|---|
| C601 | * 5uR/HR / 4uR/HR | 2557 | 33 | 25 | 1 | 0 | 6.3 |
| C602 | 5uR/HR / 4uR/HR | 2686 | 38 | 27 | 3 | 2 | 6.1 |
| C603 | 4uR/HR / 4uR/HR | 2697 | 41 | 28 | 0 | 1 | 6.0 |
| | | | | | | | |
| | 4.0 ± 0 | 2647 ± 78 | 37.3 ± 4.6 | 26.7 ± 1.5 | 1.3 ± 1.5 | 1.0 ± 1.0 | 6.1 ± [illegible] |

REMARKS

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 — 4uR/HR

** READINGS TAKEN 11/7/94 : LUDLUM 19 (#109899) 3-5 μR/HR (AVG

DATA TAKEN BY J. SHOWERS, R PARRISH, E. WALKER S/C

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: ROBERT PARRISH / GEUSA SHOWERS Bkg Loc. No.: 07

Descriptions of Location: MUSTIN ROAD NORTH ACROSS FROM FIRE STATION #2

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N ~~99186~~ 99136 new 11-01-94 | Detector 4440 | S/N 165 | | .070 |
| | (3) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| | (4) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS *C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| 0701 | *5uR/HR / 5uR/HR | 3281 | 33 | 39 | 1 | 4 | 7.4 |
| 0702 | 6uR/HR / 5uR/HR | 3149 | 32 | 34 | 5 | 0 | 7.3 |
| 0703 | 6uR/HR / 5uR/HR | 3209 | 38 | 33 | 1 | 2 | 7.0 |
| | | | | | | | |
| | 5.0 ± 0 | 3213 ± 66 | 34.3 ± 3.2 | 34.7 ± 3.8 | 2.3 ± 2.3 | 2.0 ± 2.0 | 7.2 ± .2 |
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REMARKS

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** READINGS TAKEN 11/7/94: LUDLUM 19 (#109899) 3-5 µR/HR (AVG=4)

DATA TAKEN BY J. SHOWERS, R PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 08

Descriptions of Location: MUSTIN ROAD SOUTH TO ADAMS AVENUE / KNIGHT LANE INTERSECTION IN FIELD AT NORTHWEST CORNER ADJACENT TO PARKING LOT ON WEST SIDE

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| (1) Meter | LUDLUM 19 | S/N 109899 | Detector | | S/N | |
| (2) Meter | LUDLUM 2221 | S/N 97830 | Detector 44-10 | | S/N 157 ~~165~~ | .125 |
| (3) Meter | LUDLUM 2221 | S/N 117363 | Detector 44-9 | | S/N 116872 | .247 |
| (4) Meter | LUDLUM 2221 | S/N 117363 | Detector 44-9 | | S/N 116872 | .247 |
| ** (5) Meter | LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** (6) Meter | LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** (7) PIC Model # RSS-111 | | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) DOWN ** | cpm (6) UP ** | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|
| 0801 | * 6uR/HR / 5uR/HR | 5871 | 37 | 33 | 4 | 1 | 6.8 |
| 0802 | 6uR/HR / 5uR/HR | 6011 | 31 | 26 | 3 | 0 | 6.3 |
| 0803 | 6uR/HR / 5uR/HR | 5709 | 30 | 26 | 2 | 2 | 6.5 |
| | | | | | | | |
| | | 5864 ± 151 | 32.7 ± 3.8 | 28.3 ± 4.0 | 3.0 ± 1.0 | 1.0 ± 1.0 | 6.5 ± 0.2 |
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REMARKS

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 – 5uR/HR

** READINGS TAKEN 11/7/94: LUDLUM 19 (#109899) 3-4 uR/HR (AVG = 3.5

DATA TAKEN BY J. SHOWERS, R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 09

Descriptions of Location: INTERSECTION OF SARATOGA AVENUE AND JASON STREET AT YESTERDAY'S CAFE PARKING LOT - NORTHWEST CORNER

INSTRUMENTS

| | | | | | EFFICIENCY |
|---|---|---|---|---|---|
| (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | | |
| (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| (3) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | S/N 116872 | | .247 |
| (4) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | S/N 116872 | | .247 |
| ** (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) ** DOWN | cpm (6) ** UP | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|
| 0901 | * 5uR/HR / 4uR/HR | 4707 | 37 | 31 | 4 | 0 | 6.5 |
| 0902 | 4uR/HR / 4uR/HR | 4439 | 35 | 25 | 0 | 1 | 6.2 |
| 0903 | 4uR/HR / 4uR/HR | 4375 | 31 | 31 | 2 | 1 | 6.0 |
| | | | | | | | |
| | 4±0 | 4507±176 | 34.3±3.1 | 29.0±3.5 | 2.0±2.0 | 0.7±0.6 | 6.2±0.3 |
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REMARKS

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 4uR/HR

** READINGS TAKEN 11/8/94: LUDLUM 19 (# 109899) 2-3 μR/HR

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 10

Descriptions of Location: MUSTIN ROAD NORTH - ACROSS FROM NAVY LODGE (SW)
EAST OF GOLF COURSE / PIPELINE

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 165 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | S/N 116872 | | .247 |
| | (4) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | S/N 116872 | | .247 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * c/6"

| # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) DOWN ** | cpm (6) UP ** | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|---|
| 1001 | * 5uR/HR | 5uR/HR | 6150 | 36 | 29 | 3 | 0 | 7.2 |
| 1002 | 5uR/HR | 5uR/HR | 6211 | 39 | 44 | 3 | 2 | 7.1 |
| 1003 | 6uR/HR | 6uR/HR | 6274 | 44 | 34 | 2 | 0 | 6.3 |
| | | | | | | | | |
| | 5.3 ± .6 | | 6212 ± 62 | 39.7 ± 4.0 | 35.7 ± 7.6 | 2.7 ± 0.6 | 0.7 ± 1.2 | 6.9 ± .5 |
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REMARKS

* NOTE! MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** READINGS TAKEN 11/8/94 : LUDLUM 19 (#109899) 2.5-3.5 uR/HR

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 11

Descriptions of Location: OFF SITE - 120TH STREET WEST TO NORTH FLORIDA ARCH GATE (IN FRONT)

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | | S/N | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | | S/N ~~165~~ 157 | .125 |
| | (3) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | | S/N 116872 | .247 |
| | (4) Meter LUDLUM 2221 | S/N 117363 | Detector 44-9 | | S/N 116872 | .247 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | | S/N 095044 | |
| ** | (7) PIC Model #RSS-111 | S/N009994(IT) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | cpm (3) Down | cpm (4) Up | cpm (5) ** Down | cpm (6) ** Up | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|
| 1101 | * 5uR/HR / 4uR/HR | 5019 | 42 | 35 | 2 | 0 | 7.0 |
| 1102 | 5uR/HR / 5uR/HR | 4627 | 32 | 36 | 4 | 5 | 6.2 |
| 1103 | 5uR/HR / 5uR/HR | 4871 | 45 | 28 | 4 | 2 | 6.0 |
| | | | | | | | |
| | 4.7 ± .6 | 4839 ± 198 | 39.7 ± 6.8 | 33 ± 4.4 | 3.3 ± 1.2 | 2.3 ± 2.5 | 6.4 ± .5 |
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*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** READINGS TAKEN 11/8/94 : LUDLUM 19 (#109899) 2.5 - 3.5 uR/HR

DATA TAKEN BY R. PARRISH & W. C. May WCM S/W

# BACKGROUND DATA

Site: NAS-JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: ROBERT PARRISH/GEUSA SHOWERS Bkg Loc. No.: 12

Descriptions of Location: CHILD ROAD NORTH TO BUILDING 371 @ PARKING AREA (NORTH) NEXT TO BASEBALL COMPLEX

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N ~~99186~~ 99136 | Detector 44-10 | S/N 165 | | .070 |
| | (3) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| | (4) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | DOWN cpm (3) | UP cpm (4) | DOWN cpm (5)** | UP cpm (6)** | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| 1201 | * 7uR/HR 6uR/HR | 3993 | 50 | 28 | 1 | 0 | 8.3 |
| 1202 | 7uR/HR 6uR/HR | 4165 | 56 | 33 | 2 | 0 | 8.5 |
| 1203 | 7uR/HR 6uR/HR | 3932 | 43 | 39 | 3 | 0 | 8.2 |
| | | | | | | | |
| | 6 ± 0 | 4030 ± 121 | 49.7 ± 6.5 | 33.3 ± 5.5 | 2 ± 1 | 0 ± 0 | 8.3 ± .2 |
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*REMARKS*

* NOTE - MEASUREMENTS @ WAIST LEVEL WITH LUDLUM 19 - 6.5 uR/HR

** READINGS TAKEN 11/7/94 : LUDLUM 19 (#109899) 4.5-5.5 uR/HR (AVG=5)

DATA TAKEN BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: ROBERT PARRISH / GEUSA SHOWERS Bkg Loc. No.: 13

Descriptions of Location: OFF SITE HWY. 17 SOUTH TO COLLINS ROAD SOUTH OF U-HAUL BUSINESS

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| | (4) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * c/6"

| # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) ** DOWN | cpm (6) ** UP | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|---|
| 1301 | * SuR/HR | SuR/HR | 5496 | 29 | 43 | 1 | 0 | 7.0 |
| 1302 | SuR/HR | SuR/HR | 5552 | 40 | 39 | 1 | 0 | 6.5 |
| 1303 | SuR/HR | SuR/HR | 5341 | 31 | 28 | 3 | 1 | 6.2 |
| | | | | | | | | |
| | 5.0±0 | | 5463±109 | 33.3±5.9 | 36.7±11.0 | 1.7±1.2 | 0.3±0.6 | 6.6±.4 |
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REMARKS

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - SuR/HR

** DATA TAKEN 11/8/94 : LUDLUM 19 (#109899) 2.5-3.5

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: ROBERT PARRISH/GEUSA SHOWERS Bkg Loc. No.: 014

Descriptions of Location: INTERSECTION OF TATUM / SAPHIER, WEST OF BUILDING 204 PARKING LOT (MANHOLE COVER)

*INSTRUMENTS* *EFFICIENCY*

| | | | | |
|---|---|---|---|---|
| (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | |
| (2) Meter LUDLUM 2221 | S/N ~~99186~~ 99136 | Detector 44-10 | S/N 165 | .070 |
| (3) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | .225 |
| (4) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | .225 |
| (5) Meter Ludlum 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | .192 |
| (6) Meter Ludlum 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | .192 |
| (7) PIC Model # 863-111 | S/N 00994 (27) | Cal. Due 11-2-95 | | |

*MEASUREMENTS* *C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) Down | cpm (6) UP | uR/hr (7) |
|---|---|---|---|---|---|---|---|
| 1401 | *6uR/HR 6uR/HR | 3465 | 29 | 44 | 1 | 1 | 8 |
| 1402 | 6uR/HR 5uR/HR | 3468 | 37 | 34 | 1 | 0 | 7.5 |
| 1403 | 6uR/HR 5uR/HR | 3435 | 27 | 46 | 3 | 1 | 7.0 |
| | 5.3±.6 | 3456±18 | 31.0±5.3 | 41.3±6.4 | 1.7±1.2 | 0.7±0.6 | 7.5±0.5 |

Post-it® Fax Note 7671 | Date 11-21-94 | # of pages ▶ 1

To ED WALKER | From Ballard

Co./Dept Location #14 | Co.

Phone # per your request | Phone #

Fax # | Fax #

*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 – 5uR/HR

Readings taken on 11-9-94: Ludlum mod 19 S/N 10(099): 2.5 T. 3.5 uR/hr [illegible] J

Data Taken by R. Parrish J. Showers E/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 15

Descriptions of Location: 120TH STREET (NORTH FLORIDA ARCHER GATE) WEST TO YUKON ROAD IN MOBILE HOME PARK ON NORTH END

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | | S/N | |
| | (2) Meter LUDLUM 2221 | S/N 99136 | Detector | 44-10 | S/N 165 | .069 |
| | (3) Meter LUDLUM 2221 | S/N 117366 | Detector | 44-9 | S/N 116878 | .259 |
| ** | (4) Meter LUDLUM 2221 | S/N 117366 | Detector | 44-9 | S/N 116878 | .259 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector | 43-65 | S/N 095044 | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector | 43-65 | S/N 095044 | |
| | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due | 11-2-95 | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| 1501 | * 4uR/HR / 4uR/HR | 2386 | 36 | 38 | 3 | 2 | 6.5 |
| 1502 | 4uR/HR / 4uR/HR | 2227 | 33 | 44 | 4 | 3 | 6.0 |
| 1503 | 4uR/HR / 4uR/HR | 2215 | 22 | 29 | 4 | 0 | 6.0 |
| | | | | | | | |
| | 4 ± 0 | 2276 ± 95 | 30.3 ± 7.4 | 37.0 ± 7.6 | 3.7 ± 0.6 | 1.7 ± 1.5 | 6.2 ± .3 |
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*REMARKS*

* NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 – 4uR/HR

** Readings taken 11/08/94: Ludlum 19 (#109899): 2-4 uR/HR (AUG 3)

Data taken by R. Parrysh & W.C. May [illegible] E/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 16

Descriptions of Location: NORTH END OF STATION BOUNDARY LINE ON WEST SIDE OF PATROL ROAD ALONG FENCE LINE (ACROSS FROM WOODED AREA SOUTH OF SEWAGE TREATMENT PLANT)

INSTRUMENTS

| | | | | | EFFICIENCY |
|---|---|---|---|---|---|
| (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | | |
| (2) Meter LUDLUM 2221 | S/N 99136 | Detector 44-10 | S/N 165 | | .069 |
| (3) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | | .259 |
| ** (4) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | | .259 |
| ** (5) Meter LUDLUM 2221 | S/N 102849 | Detector 43-65 | S/N 095044 | | |
| ** (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| (7) PIC Model # RJS-111 | S/N009994 (FT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * C/6"

| # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|---|
| 1601 | 6uR/HR | 5uR/HR | 3181 | 28 | 45 | 1 | 0 | 7.0 |
| 1602 | 6uR/HR | 5uR/HR | 3136 | 28 | 32 | 2 | 2 | 7.0 |
| 1603 | 6uR/HR | 5uR/HR | 3116 | 36 | 47 | 2 | 0 | 7.0 |
| | | | | | | | | |
| | 5 ± 0 | | 3144 ± 33 | 30.7 ± 4.6 | 41.3 ± 8.1 | 1.7 ± 0.6 | 0.7 ± 1.2 | 7.2 ± .4 |
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REMARKS

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** Readings taken 11/08/94: Ludlum 19 (#109899): 2.5-4 uR/HR (Aug 3)

Data taken by R. Parrish + W.C. May vem S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 01 NOV 94

Technicians: ROBERT PARRISH / GEUSA SHOWERS Bkg Loc. No.: 17

Descriptions of Location: MUSTIN ROAD EAST SIDE ACROSS FROM OFFICER HOUSING OUTSIDE FENCED PARK AREA

INSTRUMENTS

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N ~~99186~~ 99136 11/01/94 | Detector 44-10 | S/N 165 | | .070 |
| | (3) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| ** | (4) Meter LUDLUM 2221 | S/N 115123 | Detector 44-9 | S/N 116876 | | .225 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

MEASUREMENTS * c/6"

| # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5) ** DOWN | cpm (6) ** UP | uR/hr (7) ** |
|---|---|---|---|---|---|---|---|---|
| 1701 | 6uR/HR | 5uR/HR | 3314 | 33 | 37 | 0 | 1 | 7.2 |
| 1702 | 6uR/HR | 5uR/HR | 3247 | 42 | 31 | 2 | 4 | 7.0 |
| 1703 | 6uR/HR | 5uR/HR | 3295 | 42 | 35 | 1 | 1 | 7.0 |
| | | | | | | | | |
| | 5 ± 0 | | 3235 ± 35 | 39.0 ± 5.2 | 34.3 ± 3.1 | 1.0 ± 1.0 | 2.0 ± 1.7 | 7.1 ± 0.1 |
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REMARKS

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 5uR/HR

** READINGS TAKEN 11/7/94 : LUDLUM 19 (# 109899) : 3-5 uR/HR (AVG = 4)

DATA TAKEN BY J. SHOWERS, R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: ROBERT PARRISH / GEUSA SHOWERS Bkg Loc. No.: 18

Descriptions of Location: HWY. 17 WEST SIDE OF ROAD NEAR CONCRETE FACTORY

*INSTRUMENTS*

| | | | | | | EFFICIENCY |
|---|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 95487 | Detector | S/N | | |
| | (2) Meter LUDLUM 2221 | S/N 97830 | Detector 44-10 | S/N 157 | | .125 |
| | (3) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| | (4) Meter LUDLUM 2221 | S/N 108881 | Detector 44-9 | S/N 116881 | | .256 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | | |

*MEASUREMENTS # C/6"*

| # | cpm (1) | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| 1801 | 4uR/HR 4uR/HR | 4774 | 36 | 31 | 1 | 1 | 6.1 |
| 1802 | 4uR/HR 4uR/HR | 4760 | 35 | 39 | 2 | 0 | 5.6 |
| 1803 | 4uR/HR 4uR/HR | 4930 | 37 | 40 | 2 | 2 | 5.8 |
| | | | | | | | |
| | 4±0 | 4821 ± 94 | 36.0 ± 1.0 | 36.7 ± 4.9 | 1.7 ± 0.6 | 1.0 ± 1.0 | 5.8 ± .3 |
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*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 - 4uR/HR

** DATA TAKEN 11/8/94 : LUDLUM 19 (#109899) 2.5-3 uR/HR

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 19

Descriptions of Location: ON BIRMINGHAM AVENUE EAST OF MUSTIN ROAD – NORTH SIDE OF NAS JACKSONVILLE R.V. PARK ALONG TREE LINE

*INSTRUMENTS*

| | | | | | EFFICIENCY |
|---|---|---|---|---|---|
| | (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | |
| | (2) Meter LUDLUM 2221 | S/N 99136 | Detector 44-10 | S/N 165 | .069 |
| | (3) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| | (4) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| ** | (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | |
| ** | (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | |
| ** | (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | |

*MEASUREMENTS* *c/6"

| # | cpm (1) | | cpm (2) | cpm (3) DOWN | cpm (4) UP | cpm (5)** DOWN | cpm (6)** UP | uR/hr (7)** |
|---|---|---|---|---|---|---|---|---|
| 1901 | * 5uR/HR | 5uR/HR | 2910 | 31 | 27 | 0 | 1 | 6.2 |
| 1902 | 6uR/HR | 5uR/HR | 2868 | 38 | 28 | 2 | 2 | 6.5 |
| 1903 | 5uR/HR | 5uR/HR | 2781 | 38 | 48 | 3 | 0 | 6.2 |
| | | | | | | | | |
| | 5±0 | | 2686±351 | 35.7±4.0 | 34.3±11.9 | 1.7±1.5 | 1.0±1.0 | 6.3±.2 |
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*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 – 5uR/HR

** DATA TAKEN 11/8/94 : LUDLUM 19 (#109899) 2.5-3.5 uR/HR

DATA RECORDED BY R. PARRISH, E. WALKER S/W

## BACKGROUND DATA

Site: NAS JACKSONVILLE WBS No: 201 Date: 02 NOV 94

Technicians: STEVE HAESE / W. CARL MAY Bkg Loc. No.: 20

Descriptions of Location: FARTHEST POINT NORTHWEST ON STATION BOUNDARY LINE ON NORTH SIDE OF PATROL ROAD ALONG TREE LINE.

*INSTRUMENTS*

| | | | | EFFICIENCY |
|---|---|---|---|---|
| (1) Meter LUDLUM 19 | S/N 109899 | Detector | S/N | |
| (2) Meter LUDLUM 2221 | S/N 99136 | Detector 44-10 | S/N 165 | .069 |
| (3) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| (4) Meter LUDLUM 2221 | S/N 117366 | Detector 44-9 | S/N 116878 | .259 |
| ** (5) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N ~~090~~095044 | |
| ** (6) Meter LUDLUM 2221 | S/N 102049 | Detector 43-65 | S/N 095044 | |
| * (7) PIC Model # RSS-111 | S/N 009994 (IT) | Cal. Due 11-2-95 | | |

*MEASUREMENTS* * C/6"

| # | cpm (1) | cpm (2) | cpm (3) | cpm (4) | cpm (5)** | cpm (6)** | uR/hr (7)** |
|---|---|---|---|---|---|---|---|
| | | | DOWN | UP | DOWN | UP | |
| 1001 | SUR/HR / SUR/HR | 2526 | 30 | 39 | 1 | 0 | 7.0 |
| 2002 | SUR/HR / SUR/HR | 2511 | 29 | 45 | 2 | 1 | 6.5 |
| 2003 | SUR/HR / SUR/HR | 2471 | 30 | 37 | 4 | 1 | 6.5 |
| | | | | | | | |
| | 5 ± 0 | 2503 ± 28 | 29.7 ± 0.6 | 40.3 ± 4.2 | 2.3 ± 1.5 | 0.7 ± 0.6 | 6.7 ± .3 |
| | | | | | | | |
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*REMARKS*

NOTE: MEASUREMENT @ WAIST LEVEL WITH LUDLUM 19 – uR/HR

** DATA TAKEN 11/8/94: LUDLUM 19 (# 109899) 2.5-3.5 uR/HR

DATA RECORDED BY R. PARISH + W.C. May S/W

# APPENDIX B

# LABORATORY ANALYSIS RESULTS:

# BACKGROUND DATA

22507-001-0000-001-01

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

BKG LOCATION #1

| | |
|---|---|
| Sample ID | : JX00001 SFS |
| Lab ID | : 9411095-07 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

RANGER ST (WEST) BETWEEN SARATOGA AVE & ENTERPRISE AVE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.670 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1054 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0645 | +/- 0.0309 | 0.0405 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0737 | 57403 | 2 | N |
| Potassium-40 | | 2.99 | +/- 0.703 | 0.326 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.708 | +/- 0.0931 | 0.0694 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.772 | +/- 0.180 | 0.136 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.782 | +/- 0.0779 | 0.0803 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.708 | +/- 0.0931 | 0.0694 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.776 | +/- 0.0773 | 0.0797 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.51 | +/- 1.43 | 1.23 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0506 | +/- 0.133 | 0.231 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.51 | +/- 1.43 | 1.23 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

0016



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# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00001 SFS

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Seymour

Analytical Report Specialist

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00002 SFS

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Siggins
Analytical Report Specialist

22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #3 

| | |
|---|---|
| Sample ID | : JX00003 SFS |
| Lab ID | : 9411095-08 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

ON ORTEGA HILLS DRIVE WEST OF ATLANTIC COASTLINE RR & SOUTH OF WEDGEWOOD APT. SIGN

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.580 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1056 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.283 | +/- 0.0802 | 0.0457 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0738 | 57403 | 2 | N |
| Potassium-40 | | 1.15 | +/- 0.453 | 0.330 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.467 | +/- 0.120 | 0.0909 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.580 | +/- 0.172 | 0.278 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.529 | +/- 0.0956 | 0.0672 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.467 | +/- 0.120 | 0.0909 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.525 | +/- 0.0948 | 0.0666 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.47 | +/- 1.11 | 1.35 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0907 | +/- 0.145 | 0.251 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.47 | +/- 1.11 | 1.35 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)



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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00003 SFS

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A Sigmon
Analytical Report Specialist



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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #4 

| | |
|---|---|
| Sample ID | : JX00004 SFS |
| Lab ID | : 9411095-16 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

COLLINS ROAD & MALAGA ROAD - NE CORNER IN FRONT OF DEAD END SIGN

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.890 | +/- 0.0200 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1349 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.486 | +/- 0.126 | 0.0450 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1413 | 57404 | 2 | N |
| Potassium-40 | | 5.22 | +/- 1.02 | 0.425 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.773 | +/- 0.182 | 0.0926 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.786 | +/- 0.194 | 0.145 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.780 | +/- 0.126 | 0.0744 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.773 | +/- 0.182 | 0.0926 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.774 | +/- 0.125 | 0.0738 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.73 | +/- 1.43 | 1.68 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | J | 0.329 | +/- 0.174 | 0.296 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.73 | +/- 1.43 | 1.68 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00004 SFS

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Seigan

Analytical Report Specialist

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22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #5 

| | |
|---|---|
| Sample ID | : JX00005 SFS |
| Lab ID | : 9411095-17 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

MUSTIN ROAD AT RESTRICTED GATE ACCESS ON SOUTH SIDE OF ROAD

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| Total Uranium | | 2.00 | +/- 0.0300 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1354 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.109 | +/- 0.0353 | 0.0315 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1416 | 57404 | 2 | N |
| Potassium-40 | | 5.12 | +/- 0.598 | 0.307 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.994 | +/- 0.0882 | 0.0623 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.879 | +/- 0.156 | 0.106 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.796 | +/- 0.0662 | 0.0697 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.994 | +/- 0.0882 | 0.0623 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.789 | +/- 0.0657 | 0.0691 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 2.09 | +/- 0.895 | 1.08 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0913 | +/- 0.173 | 0.294 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 2.09 | +/- 0.895 | 1.08 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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U indicates presence of analyte < DL (Detect Limit)

# GENERAL ENGINEERING LABORATORIES

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| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00005 SFS

| M = Method | Method-Description |
|---|---|

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Analytical Report Specialist

# GENERAL ENGINEERING LABORATORIES

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| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION #6



| | |
|---|---|
| Sample ID | : JX00006 SFS |
| Lab ID | : 9411095-13 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

CHILD STREET, WEST OF NAVAL HOSPITAL - EDGE OF TREELINE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| Total Uranium | U | 0.650 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1343 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.145 | +/- 0.0408 | 0.0407 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1050 | 57404 | 2 | N |
| Potassium-40 | | 1.68 | +/- 0.541 | 0.458 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.681 | +/- 0.103 | 0.0818 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.828 | +/- 0.189 | 0.152 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.910 | +/- 0.0721 | 0.0613 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.681 | +/- 0.103 | 0.0818 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.901 | +/- 0.0714 | 0.0608 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | U | 0.933 | +/- 1.42 | 1.39 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0423 | +/- 0.127 | 0.226 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | U | 0.933 | +/- 1.42 | 1.39 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
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# GENERAL ENGINEERING LABORATORIES

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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00006 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sipes

Analytical Report Specialist

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*9411095-13*

# GENERAL ENGINEERING LABORATORIES

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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BTG LOCATION #7 

Sample ID : JX00007 SFS
Lab ID : 9411095-14
Matrix : Soil
Date Collected : 11/01/94
Date Received : 11/04/94
Priority : Rush
Collector : Client

MUSTIN ROAD, EAST ACROSS FROM FIRE STATION #2

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | | 1.32 | +/- 0.0200 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1345 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.376 | +/- 0.0534 | 0.0389 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1133 | 57404 | 2 | N |
| Potassium-40 | | 2.00 | +/- 0.427 | 0.314 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.529 | +/- 0.108 | 0.0722 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.914 | +/- 0.165 | 0.111 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.861 | +/- 0.0703 | 0.0542 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.529 | +/- 0.108 | 0.0722 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.853 | +/- 0.0696 | 0.0537 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.41 | +/- 1.12 | 1.25 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | -0.00856 | +/- 0.121 | 0.210 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.41 | +/- 1.12 | 1.25 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

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| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00007 SFS

| M = Method | Method-Description |
|---|---|

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Analytical Report Specialist



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*9411095-14*

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #8 

| | |
|---|---|
| Sample ID | : JX00008 SFS |
| Lab ID | : 9411095-03 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

ADAMS AVE & KNIGHT LANE INTERSECTION, NW CORNER OF OPEN FIELD

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.610 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1044 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.107 | +/- 0.0265 | 0.0272 | 0.100 | pCi/g | 1.0 | MDS | 11/09/94 | 1527 | 57403 | 2 | N |
| Potassium-40 | | 2.08 | +/- 0.352 | 0.226 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.502 | +/- 0.0629 | 0.0508 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.532 | +/- 0.0951 | 0.0787 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.610 | +/- 0.0499 | 0.0395 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.502 | +/- 0.0629 | 0.0508 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.605 | +/- 0.0495 | 0.0392 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.89 | +/- 0.647 | 0.714 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.108 | +/- 0.0257 | 0.153 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.89 | +/- 0.647 | 0.714 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

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# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00008 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigmon

Analytical Report Specialist

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# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #9 

| | |
|---|---|
| Sample ID | : JX00009 SFS |
| Lab ID | : 9411095-04 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

SARATOGA AVE & JASON ST INTERSECTION - NW CORNER OF YESTERDAY'S CAFE PARKING LOT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| dlological | | | | | | | | | | | | | |
| tal Uranium | U | 0.390 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1047 | 56721 | 1 | N |
| *amma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0841 | +/- 0.0298 | 0.0249 | 0.100 | pCi/g | 1.0 | MDS | 11/09/94 | 1536 | 57403 | 2 | N |
| Potassium-40 | J | 0.824 | +/- 0.350 | 0.267 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.367 | +/- 0.0880 | 0.0489 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.350 | +/- 0.104 | 0.0933 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.369 | +/- 0.0595 | 0.0353 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.367 | +/- 0.0880 | 0.0489 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.366 | +/- 0.0590 | 0.0350 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.11 | +/- 0.387 | 0.327 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | J | 0.124 | +/- 0.0933 | 0.119 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.11 | +/- 0.387 | 0.327 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00009 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigmon

Analytical Report Specialist

22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION #10



| | |
|---|---|
| Sample ID | : JX00010 SFS |
| Lab ID | : 9411095-05 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

MUSTIN ROAD ACROSS FROM NAVY LODGE (SW), EAST OF PIPELINE AND GOLF COURSE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 'ological | | | | | | | | | | | | | |
| ' Uranium | U | 0.810 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1049 | 56721 | 1 | N |
| *.ma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.268 | +/- 0.0440 | 0.0335 | 0.100 | pCi/g | 1.0 | MDS | 11/09/94 | 2126 | 57403 | 2 | N |
| Potassium-40 | | 3.77 | +/- 0.559 | 0.283 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.583 | +/- 0.0842 | 0.0555 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.836 | +/- 0.129 | 0.0859 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.927 | +/- 0.0601 | 0.0497 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.583 | +/- 0.0842 | 0.0555 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.920 | +/- 0.0596 | 0.0493 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.71 | +/- 0.734 | 0.930 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.132 | +/- 0.173 | 0.194 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.71 | +/- 0.734 | 0.930 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00010 SFS

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct y questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A Sign

Analytical Report Specialist



P.O. Box 30712 • Charleston, SC 29417 • (803) 556-8171 • Fax (803) 766-1178

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# GENERAL ENGINEERING LABORATORIES

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| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION #11



| | |
|---|---|
| Sample ID | : JX00011 SFS |
| Lab ID | : 9411095-06 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

120TH ST IN FRONT OF NORTH FLORIDA ARCH GATE #21

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.650 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1052 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.262 | +/- 0.0566 | 0.0302 | 0.100 | pCi/g | 1.0 | MDS | 11/09/94 | 2143 | 57403 | 2 | N |
| Potassium-40 | | 1.87 | +/- 0.375 | 0.727 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.536 | +/- 0.106 | 0.0563 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.568 | +/- 0.137 | 0.0952 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.579 | +/- 0.0866 | 0.0406 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.536 | +/- 0.106 | 0.0563 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.574 | +/- 0.0859 | 0.0403 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.19 | +/- 0.489 | 0.389 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0522 | +/- 0.0889 | 0.152 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.19 | +/- 0.489 | 0.389 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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U indicates presence of analyte < DL (Detect Limit)

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00011 SFS

M = Method

Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon

Analytical Report Specialist



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| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION #12



| | |
|---|---|
| Sample ID | : JX00012 SFS |
| Lab ID | : 9411095-19 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

PARKING AREA NORTH OF BLDG 371, NEAR BALL FIELDS

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| Total Uranium | | 1.62 | +/- 0.0300 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1400 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.101 | +/- 0.0394 | 0.0482 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1421 | 57404 | 2 | N |
| Potassium-40 | | 3.81 | +/- 0.604 | 0.368 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.830 | +/- 0.125 | 0.0742 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | | 1.14 | +/- 0.193 | 0.123 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 1.09 | +/- 0.0737 | 0.0563 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.830 | +/- 0.125 | 0.0742 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 1.08 | +/- 0.0731 | 0.0558 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.69 | +/- 1.38 | 1.38 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.160 | +/- 0.125 | 0.226 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.69 | +/- 1.38 | 1.38 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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U indicates presence of analyte < DL (Detect Limit)

# GENERAL ENGINEERING LABORATORIES

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00012 SFS

| M = Method | Method-Description |
|---|---|

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Analytical Report Specialist

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| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BHG LOCATION #13



| | |
|---|---|
| Sample ID | : JX00013 SFS |
| Lab ID | : 9411095-23 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

HIGHWAY 17 & COLLINS ROAD, SOUTH OF U-HAUL

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| Total Uranium | | 1.26 | +/- 0.0300 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1104 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.167 | +/- 0.0437 | 0.0376 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0953 | 57403 | 2 | N |
| Potassium-40 | | 2.11 | +/- 0.567 | 0.324 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.532 | +/- 0.0981 | 0.0649 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.703 | +/- 0.167 | 0.112 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.752 | +/- 0.0601 | 0.0480 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.532 | +/- 0.0981 | 0.0649 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.746 | +/- 0.0596 | 0.0476 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.31 | +/- 1.30 | 1.01 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.000331 | +/- 0.106 | 0.189 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.31 | +/- 1.30 | 1.01 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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# GENERAL ENGINEERING LABORATORIES

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| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00013 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigmon

Analytical Report Specialist

22567-001-0006-001-01

# GENERAL ENGINEERING LABORATORIES

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| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION #14



| | |
|---|---|
| Sample ID | : JX00014 SFS |
| Lab ID | : 9411095-15 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

TATUM & SAPHIER, WEST OF BLDG 204, PARKING LOT NEAR MANHOLE COVER

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| Total Uranium | U | 0.810 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1347 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0540 | +/- 0.0232 | 0.0420 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1410 | 57404 | 2 | N |
| Potassium-40 | | 3.97 | +/- 0.553 | 0.312 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.614 | +/- 0.111 | 0.0690 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.856 | +/- 0.167 | 0.139 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.881 | +/- 0.0887 | 0.0831 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.614 | +/- 0.111 | 0.0690 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.873 | +/- 0.0879 | 0.0823 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.40 | +/- 1.14 | 1.25 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.103 | +/- 0.127 | 0.224 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.40 | +/- 1.14 | 1.25 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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# GENERAL ENGINEERING LABORATORIES

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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00014 SFS

| M = Method | Method-Description |
|---|---|

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Analytical Report Specialist

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# GENERAL ENGINEERING LABORATORIES

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| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

BKG LOCATION # 15



| | |
|---|---|
| Sample ID | : JX00015 SFS |
| Lab ID | : 9411095-10 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

FAR NORTH END OF YUKON ROAD, IN MOBILE HOME PARK

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.410 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1100 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.362 | +/- 0.0534 | 0.0337 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0743 | 57403 | 2 | N |
| Potassium-40 | | 2.20 | +/- 0.550 | 0.304 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.395 | +/- 0.119 | 0.0694 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.480 | +/- 0.142 | 0.102 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.472 | +/- 0.0499 | 0.0499 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.395 | +/- 0.119 | 0.0694 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.469 | +/- 0.0495 | 0.0495 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.56 | +/- 0.849 | 1.06 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0934 | +/- 0.137 | 0.185 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.56 | +/- 0.849 | 1.06 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)



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|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00015 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigmon

Analytical Report Specialist

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #16 

| | |
|---|---|
| Sample ID | : JX00016 SFS |
| Lab ID | : 9411095-11 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

PERIMETER RD AT NW CORNER OF BEND SOUTH OF WASTEWATER TREATMENT AREA

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | | 1.18 | +/- 0.0200 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1102 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0845 | +/- 0.0283 | 0.0264 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0745 | 57403 | 2 | N |
| Potassium-40 | | 2.03 | +/- 0.415 | 0.781 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.690 | +/- 0.142 | 0.0588 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.956 | +/- 0.203 | 0.0966 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.956 | +/- 0.133 | 0.0417 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.690 | +/- 0.142 | 0.0588 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.948 | +/- 0.132 | 0.0414 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.06 | +/- 0.486 | 0.440 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | J | 0.223 | +/- 0.162 | 0.158 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.06 | +/- 0.486 | 0.440 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00016 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Elgin

Analytical Report Specialist

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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #17 

| | |
|---|---|
| Sample ID | : JX00017 SFS |
| Lab ID | : 9411095-20 |
| Matrix | : Soil |
| Date Collected | : 11/01/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

MUSTIN ROAD, EAST ACROSS FROM OFFICER HOUSING, NEAR PARK AREA

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.680 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1402 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.111 | +/- 0.0363 | 0.0371 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1424 | 57404 | 2 | N |
| Potassium-40 | | 2.75 | +/- 0.511 | 0.925 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.578 | +/- 0.118 | 0.0642 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.791 | +/- 0.191 | 0.0996 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.740 | +/- 0.110 | 0.0569 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.578 | +/- 0.118 | 0.0642 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.734 | +/- 0.109 | 0.0563 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.42 | +/- 0.547 | 0.442 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0454 | +/- 0.0980 | 0.168 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.42 | +/- 0.547 | 0.442 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00017 SFS

| M = Method | Method-Description |
|---|---|

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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #18 

| | |
|---|---|
| Sample ID | : JX00018 SFS |
| Lab ID | : 9411095-22 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

HIGHWAY 17 WEST SIDE OF ROAD NEAR CONCRETE PLANT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | | 1.08 | +/- 0.0200 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1406 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | U | 0.00999 | +/- 0.0205 | 0.0386 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1611 | 57404 | 2 | N |
| Potassium-40 | | 1.42 | +/- 0.382 | 0.255 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.511 | +/- 0.0970 | 0.0671 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.782 | +/- 0.142 | 0.126 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.683 | +/- 0.0609 | 0.0513 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.511 | +/- 0.0970 | 0.0671 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.678 | +/- 0.0604 | 0.0509 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.55 | +/- 1.26 | 1.13 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.128 | +/- 0.159 | 0.191 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.55 | +/- 1.26 | 1.13 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00018 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigler
Analytical Report Specialist

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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #19 

| | |
|---|---|
| Sample ID | : JX00019 SFS |
| Lab ID | : 9411095-09 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

BIRMINGHAM AVE EAST OF MUSTI ST. NORTH SIDE NEAR RV PARK ENTRANCE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.600 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1058 | 56721 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.205 | +/- 0.0272 | 0.0257 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 0741 | 57403 | 2 | N |
| Potassium-40 | | 1.56 | +/- 0.413 | 0.247 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.449 | +/- 0.0590 | 0.0501 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.519 | +/- 0.0968 | 0.0738 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.557 | +/- 0.0488 | 0.0408 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.449 | +/- 0.0590 | 0.0501 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.553 | +/- 0.0484 | 0.0405 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 2.23 | +/- 0.753 | 0.669 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | J | 0.190 | +/- 0.143 | 0.157 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 2.23 | +/- 0.753 | 0.669 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00019 SFS

| M = Method | Method-Description |
|---|---|

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Analytical Report Specialist



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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 BKG LOCATION #20 

| | |
|---|---|
| Sample ID | : JX00020 SFS |
| Lab ID | : 9411095-12 |
| Matrix | : Soil |
| Date Collected | : 11/02/94 |
| Date Received | : 11/04/94 |
| Priority | : Rush |
| Collector | : Client |

PERIMETER ROAD ON NORTH SID AT FIRST BEND IN ROAD AFTER ENTRY GATE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Radiological | | | | | | | | | | | | | |
| Total Uranium | U | 0.850 | +/- 0.0100 | 1.00 | 1.00 | ug/g | 1.0 | DGS | 11/09/94 | 1321 | 56798 | 1 | N |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.161 | +/- 0.0274 | 0.0245 | 0.100 | pCi/g | 1.0 | MDS | 11/10/94 | 1047 | 57404 | 2 | N |
| Potassium-40 | | 2.28 | +/- 0.385 | 0.272 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.484 | +/- 0.0674 | 0.0543 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.736 | +/- 0.110 | 0.0877 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.803 | +/- 0.0560 | 0.0452 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.484 | +/- 0.0674 | 0.0543 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.796 | +/- 0.0555 | 0.0449 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 2.18 | +/- 0.861 | 0.799 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0543 | +/- 0.137 | 0.168 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 2.18 | +/- 0.861 | 0.799 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | EPI -A-023 |
| M 2 | HASL 300 |

Notes:
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| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00020 SFS

| M = Method | Method-Description |
|---|---|

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Barbara A. Sigmon

Analytical Report Specialist

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9411095-12*

# APPENDIX C

# SURVEY METER SOURCE CHECK LOG

Attachment 7.2

2/w 4-5-95

## SOURCE CHECK LOG

Meter - Model 19 Serial No. 109899

Detector - Model NA (uR Meter) Serial No. MA

Calibrated 10-20-94 Due ~~4-20-94~~ WCM 4-20-95

Source Nuclide Cs 137 Serial No. 06-94 1388

Activity 1 uci RF = 140 Units 2.22 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 | 4 uR | 150 | 146 | | ok |
| 0740 | | | | | P |
| 11-2-94 | 4uR | 150 | 146 | | ok |
| 0730 | | | | | P |
| 11-3-94 | | 145 | 141 | | ✓ |
| 0730 | 4 uR | | | | P |
| 11-4-94 | | | | | ✓ |
| 0730 | 4 uR/hr | 145 ur/h | 145 | | P |
| 11-7-94 | | | | | ✓ |
| 0730 | 4 ur/h | 145 ur/h | 144 ur/h | | P |
| 11-8-94 | | | | | ✓ |
| 0730 | 4 ur/h | 135 ur/h | 130 ur/hr | | P |
| 11-9-94 | | | | | ✓ |
| 0640 | 2 ur/hr | 130 ur/h | 128 ur/hr | | P |
| 11-10-94 | | | | | ✓ |
| 0630 | 2 ur/hr | 135 ur/hr | 133 ur/hr | | P |
| 11-14-94 | | | | | ✓ |
| 0630 | 2 ur/hr | 140 ur/h | 138 ur/hr | | P |
| 11-15-94 | | | | | ✓ |
| 0630 | 2 ur/hr | 140 ur/hr | 138 ur/h | | P |
| 11-16-94 | | | | | ✓ |
| 0630 | 2 ur/h | 135 | 133 | | P |

Attachment 7.2

2/40 4-5-95

## SOURCE CHECK LOG

Meter - Model ~~220~~ #19 Serial No. 109899

Detector - Model nn Serial No. nA

Calibrated 10-20-94 Due 4-20-94

Source Nuclide Cs137 Serial No. 06-94 # 1388

Activity 1 uci Units 2.22 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-17-94 | ur/hr | ur/hr | | | ✓ |
| 0630 | 2 | 140 | 138 | | P |
| 11-21-94 | | | | | ✓ |
| 0630 11-22-94 | 2 | 145 | 143 | | P |
| 11-22-94 | | | | | no |
| 0630 | 2 | 120 | 119 | | P |
| 11-23-94 | | | — | | no |
| 0630 | 3 | 100 | | | P |
| 12-05-94 | | | | New Source work up 2 uci 12-94 # 3609 | ✓ |
| 1300 | 4 | | | 4.44 E6 dpm | P |
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Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 19 **Serial No.** 109899

**Detector - Model** NA **Serial No.** NA

**Calibrated** 10-20-94 **Due** ~~4-20-94~~ WGM 4-20-95

**Source Nuclide** Cs/137 **Serial No.** ~~8~~ 12-94 # 1388

**Activity** 2 uci **Units** 4.44 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-5-94 | uR/Hr | uR/Hr | uR/Hr | New Source work up | — |
| 1300 | 4 | 328 | 324 | All mR/HR | P |
| 12-6-94 | | | | | ✓ |
| 0630 | 4 | 330 | 326 | | P |
| 12-7-94 | | | | | — |
| 0630 | 4 | 330 | 330 | | P |
| 12-8-94 | | | | | ✓ |
| 0600 | 4 | 330 | 330 | | P |
| 12-12-94 | | | | | ✓ |
| 0600 | 4 | 330 | 330 | | P |
| 12-13-94 | | | | | ✓ |
| 0600 | 4 | 330 | 330 | | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 4 | 330 | 330 | | P |
| 12-15-94 | | | | | ✓ |
| 0700 | 4 | 330 | 330 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 4 | 330 | 330 | | P |
| 12-20-94 | 4 | 340 | 340 | | WGM |
| 0600 | | | | | ✓ |
| 12-21-9 | 4 | 340 ~~400~~ WGM | 340 ~~400~~ WGM | | WGM |
| 0600 | | | | | ✓ |

Attachment 7.2

E/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 19 **Serial No.** 109899

**Detector - Model** NA **Serial No.** NA

**Calibrated** 10-20-94 **Due** 4-20-95

**Source Nuclide** Cs 137 **Serial No.** 12-94 # 1388

**Activity** 2 uci **Units** 4.44 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-22-94 | 4uR/hr | 320 | 320 | | [illegible] |
| 0600 | | | | | ✓ |
| 12-27-94 | | | | | P |
| 0600 | 4 | 330 | 330 | | ✓ |
| 12-28-94 | | | | | ✓ |
| 0600 | 4 | 340 | 340 | | P |
| 1-3-95 | | | | | ✓ |
| | 4 | 340 | 340 | | P |
| L/E 12-29-94 | | | | | ✓ |
| | 4 | 340 | 340 | | P |
| 1-4-95 | | | | | ✓ |
| | 4 | 340 | 340 | | P |
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Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 19 Serial No. 95487

Detector - Model NA (uR METER) Serial No. NA

Calibrated 10-20-94 Due ~~4-20-94~~ 4-20-95

Source Nuclide Cs 137 Serial No. 06-94 1388

Activity 1uci RF = 235 Units 2.22 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 | | | | | OK |
| 0730 | 4 uR/hr | 240 uR/hr | 235 uR/hr | | RP |
| 11-2-94 | | | | | OK |
| 0730 | 4 uR/hr | 240 uR/hr | 235 uR/hr | | RP |
| 11-3-94 | | | | | ✓ |
| 1000 | 4 uR/hr | 250 uR/h | 245 ur/h | | RP |
| 11-4-94 | | | | | ✓ |
| 0730 | 4 ur/h | 240 ur/h | 240 ur/h | | P |
| 11-7-94 | | | | | ✓ |
| 0730 | 4 ur/h | 250 ur/h | 250 ur/h | | P |
| 11-8-94 | | | | | ✓ |
| 0730 | 4 ur/hr | 230 urhr | 230/ ur/hr | | P |
| 11-9-94 | | | | | — |
| 0640 | 4 ur/h | 235 ur/hr | 231 | | P |
| 11-10-94 | | | | | ✓ |
| 0630 | 2 ur | 235 ur/hr | 233 ur/h | | P |
| 11-14-94 | | | | | ✓ |
| 0630 | 2 ur/hr | 240 ur/hr | 238 ur/hr | | P |
| 11-15-94 | | | | | — |
| 0630 | 2 ur/hr | 240 ur/hr | 238 ur/h | | P |
| 11-16-94 | | | | | ✓ |
| 0630 | 4 ur/hr | 245 | 240 | | P |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 19 **Serial No.** 95487

**Detector - Model** **Serial No.**

**Calibrated** 10-20-94 **Due** ~~4-2-94~~ NEW 4-20-95

**Source Nuclide** Cs137 **Serial No.** 06-94-1388

**Activity** 1uci **Units** 2.22 E6 D.P.M.

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-17-94 | uR/HR | uR/HR | | | ✓ |
| 0630 | 4 | 250 | 246 | | P |
| 11-21-94 | | | | | ✓ |
| 0630 ~~11-22-94~~ | 4 | 240 | 236 | | P |
| 11-22-94 | | | | | ✓ |
| 0630 | 4 | 260 | 255 | | P |
| 11-23-94 | | | | | ✓ |
| 0630 | 8 | 260 | 252 | | P |
| 11-28-94 | | | | | ✓ |
| 0620 | 4 | 260 | 256 | | P |
| 11-29-94 | | | | | ✓ |
| 0630 | 4 | 260 | 254 | | P |
| 11-30-94 | | | | | ✓ |
| 0630 | 4 | 250 | 245 | | P |
| 12-1-94 | | | | | ✓ |
| 0630 | 4 | 250 | 245 | | P |
| 12-5-94 | | | | | ✓ |
| 0630 | 4 | 260 | 255 | | P |
| 12-6-94 | | 260 / 500 | 257 / 597 | old source / New Source | ✓ |
| 0630 | 3 | | | | P |
| 12-7-94 | | | | | ✓ |
| 0630 | 4 | 500 | 500 | New Source | P |

Attachment 7.2

E/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** L-19 **Serial No.** 95487

**Detector - Model** nn **Serial No.** nn

**Calibrated** 10-20-94 **Due** ~~4-2-95 wem~~ 4-20-95

**Source Nuclide** Cs137 **Serial No.** 012-94- #1388

**Activity** 2uci **Units** 4.44 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-8-94 | | | | | — |
| 0600 | 4 | 500 | 500 | MR/HR | P |
| 12-12-94 | | | | | ✓ |
| 0600 | 4 | 500 | 500 | | P |
| 12-13-94 | | | | | ✓ |
| 0600 | 4 | 500 | 500 | | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 4 | 500 | 500 | | P |
| 12-15-94 | | | | | ✓ |
| 0700 | 4 | 500 | 500 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 4 | 500 | 500 | | P |
| 12-20-94 | | | | | wem |
| 0600 | 4 | 650 | 650 | | ✓ |
| 12-21-94 | | | | | wem |
| 0600 | 4 | 620 | 620 | | ✓ |
| 12-22-94 | | | | | ~~wem~~ |
| 0600 | 4 | 600 | 600 | | ✓ |
| 12-27-94 | | | | | ✓ |
| 0600 | 4 | 600 | 600 | | P |
| 12-28-94 | | | | | ✓ |
| 0600 | 4 | 600 | 600 | | P |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** Ludlum -19 **Serial No.** 95487

**Detector - Model** NA **Serial No.** NA

**Calibrated** 10-20-94 **Due** 4-20-95

**Source Nuclide** Cs137 **Serial No.** 012-94 #1388

**Activity** 2 uci **Units** 4.44 E 6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 1-3-94 95 | | | | | ✓ |
| 0600 | 4 | 600 | 600 | | P |
| 12-29-94 | | | | | ✓ |
| 0600 | 4 | 600 | 600 | | P |
| 1-4-95 | | | | | ✓ |
| 0600 | 4 | 600 | 600 | | P |
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4/E

Attachment 7.2 2/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. ~~97830~~ 97830

Detector - Model 44-10 (2"x2" NaI) Serial No. 157

Calibrated 10-20-94 Due 4-20-95

Source Nuclide Cs 137 Serial No. 06-94 1388

Activity 14 ci Units 2.22 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 0730 | 4100 | 282266 ~~157176~~ | 0.1253 | | RP ✓ |
| 0730 11-2 94 | 4031 | 280942 | 0.1247 | | ✓ RP |
| 11-3-94 1000 | 3927 | 274781 | 0.122 | | ✓ RP |
| 11-4-94 0730 | 3916 | 276326 | 0.122 | | ✓ RP |
| ~~10-5~~ 11-7-94 0730 | 4244 | 284881 | 0.124 | | ✓ P |
| 11-8-94 0730 | 4161 | 277660 | 0.123 | | ✓ P |
| 11-9-94 0650 | 4154 | 278611 | 0.123 | | ✓ P |
| 11-10-94 0640 | 4257 | 276517 | 0.122 | | ✓ P |
| 11-14-94 0640 | 3585 | 279441 | 0.124 | | ✓ P |
| 11-15-94 0640 | 3864 | 278065 | 0.123 | | ✓ P |
| 11-16-94 0640 | 3318 | 274485 ~~33183~~ | 0.122 | | ✓ P |

Attachment 7.2

2/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. 97830

Detector - Model 44-10 Serial No. ~~765~~ 157

Calibrated 10-20-94 Due 4-20-95

Source Nuclide Cs137 Serial No. 06-94-1388

Activity 1 uci Units 2.22 $E^6$

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-17-94 0600 | 3662 | 278441 | 0.123 | | ✓ P |
| 11-~~16~~ 21-94 0640 | 3686 | 281863 | 0.125 | | — P |
| 11-22-94 0700 | 4082 | 277238 | 0.123 | | ✓ P |
| 11-23-94 0640 | 4099 | 278022 | 0.123 | | ✓ P |
| 11-28-94 0630 | 4073 | 275280 | 0.122 | | ✓ P |
| 11-29-94 0630 | 3957 | 275237 | 0.122 | | ✓ P |
| 11-30-94 0630 | 3831 | 269144 | 0.12 | | ✓ P |
| 12-1-94 0630 | 4051 | 273538 | 0.121 | | ✓ [illegible] |
| 12-5-94 0630 | 3902 | 269174 | 0.12 | | — ✓ |
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Attachment 7.2

2/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 97830

**Detector - Model** 44-10 **Serial No.** ~~165~~ 157

**Calibrated** 10-20-94 **Due** ~~4-20-94~~ ~~420~~ 04-20-95

**Source Nuclide** Cs 137 **Serial No.** 12-94 #3609

**Activity** 2 uCi **Units** 4.44 e6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-5-94 | | | | Work done using New Source | ✓ |
| 1350 | 3902 | 526008 | 0.118 | | P |
| 12-6-94 | 3941 | | | | ✓ |
| 0630 | ~~2160~~ P | 541981 | 0.121 | | P |
| 12-7-94 | | | | | ✓ |
| 0630 | 4006 | 547198 | 0.122 | | P |
| 12-8-94 | | | | | ✓ |
| 0600 | 4172 | 548034 | 0.122 | | P |
| 12-12-94 | | 541585 | | | ✓ |
| 0600 | 4110 | ~~5413~~ | 0.121 | | P |
| 12-13-94 | | | | | ✓ |
| 0600 | 3903 | 533927 | 0.111 | | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 3939 | 539509 | 0.112 | | P |
| 12-15-94 | | | | | ✓ |
| 0700 | 4005 | 536728 | 0.1199 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 3983 | 526736 | 0.11 | | P |
| 12-20-94 | | | | | ✓ |
| 0600 | 3733 | 538503 | 12.04 % | | P |
| 12-21-94 | | | | | ✓ |
| 0600 | 4172 | 538245 | 12.0 % | | P |

Attachment 7.2

2/w 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 97830

**Detector - Model** 44-10 **Serial No.** 157

**Calibrated** **Due**

**Source Nuclide** **Serial No.**

**Activity** 2 uC: **Units** 4.44 E 6 DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-22-94 | | | % | | ✓ |
| 0600 | 3873 | 542916 | 12.1 % | | P |
| 12-27-94 | | | % | | ✓ |
| 0600 | 40850 | 545866 | 12.2 % | | P |
| 12-28-94 | | | % | | ✓ |
| 0600 | 3565 | 544232 | 12.1 % | | See |
| 12-29-94 | | | | | |
| 600 | 3919.8 | 54028 | 12 % | | P |
| 1-3-95 | | | | | |
| 0600 | 3735.1 | 541800 | 12.11 % | | P |
| 1-4-95 | | | | | |
| 0600 | 4303.4 | 531864 | 11.88 % | | P |
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Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 99136

**Detector - Model** 44-10 (2"x2" NaI) **Serial No.** 165

**Calibrated** 10-20-94 **Due** 4-20-95

**Source Nuclide** Cs 137 **Serial No.** 06-94 1388

**Activity** 1uci **Units** 2.22 E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 0730 | 2200 | 157176 | 0.0698 | | ✓ |
| 11-2-94 0730 | 1949 | 154524 | 0.0687 | | ✓ |
| 11-3-94 0930 | 2157 | 155150 | 0.0689 | | ✓ |
| 11-4-94 0800 | 2078 | 151172 | 0.0671 | | ✓ |
| 11-7-94 0730 | 1653 | 148478 | 0.066 | | ✓ |
| 11-8-94 0730 | 1702 | 155416 | 0.069 | | ✓ |
| 11-9-94 0640 | 1675 | 156524 | .0697 | | ✓ |
| 11-10-94 0640 | 2034 | 153141 | .068 | | ✓ |
| 11-14-94 0640 | 1981 | 156977 | 0.0698 | | ✓ |
| 11-15-94 0640 | 2091 | 155479 | 0.069 | | ✓ |
| 11-16-94 0640 | 1846 | 155414 | 0.069 | | ✓ |

Attachment 7.2

2/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. 99134

Detector - Model 44-10 Serial No. 165

Calibrated 10-20-94 Due 4-20-95

Source Nuclide Cs137 Serial No. 6-94-1388

Activity 1 uci Units 2.22 E6

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-17-94 | | | | | ✓ |
| 0640 | 2158 | 156086 | 0.069 | | P |
| 11-21-94 | | | | | ✓ |
| 0630 | 2112 | 151985 | 0.0675 | | P |
| 11-22-94 | | | | | ✓ |
| 0630 | 2334 | 154671 | 1068 | | P |
| 11-23-94 | | | | | ✓ |
| 0630 | 2282 | 154840 | 0.687 | | P |
| 11-28-94 | | | | | ✓ |
| 0630 | 2194 | 155160 | 0.69 | | P |
| 11-29-94 | | | | | ✓ |
| 0630 | 2143 | 153439 | 0.068 | | P |
| 11-30-94 | | | | | ✓ |
| 0630 | 2157 | 153885 | 0.068 | | P |
| 12-1-94 | | | | | ✓ |
| 0630 | 2353 | 154254 | 0.068 | | P |
| 12-5-94 | | | | | ✓ |
| 0630 | 2251 | 159536 | 0.071 | | P |
| 12-6-94 | | | | | ✓ |
| 0630 | 2160 | 154466 | 0.068 | | P |
| | | | | | |
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Attachment 7.2

2/ω 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. 99134

Detector - Model 44-10 Serial No. 165

Calibrated 10-20-94 Due ~~12-94 #3609~~ P 10-20-94

Source Nuclide Cs137 Serial No. 12-94 #3609

Activity 2uci Units 4.44E6 dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-6-94 | | 293415 | | New Source work w/ | ✓ |
| P 1530 | 2160 | ~~294~~ RP | 0.0656 | | P |
| 12-7-94 | | | | | ✓ |
| 12-7-94 | 2215 | 309769 | 0.069 | | P |
| 12-8-94 | | | | | ✓ |
| 0600 | 2230 | 313060 | 0.07 | | P |
| 12-12-94 | | | 0.0687 | | ✓ |
| 0600 | 2147 | 307310 | ~~0.687~~ | | P |
| 12-13-94 | | | 0.07 | | ✓ |
| 0600 | 2395 | 313260 | ~~7.0~~ P | | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 2323 | 311700 | .0696 | | P |
| 12-15-94 | | | | | ✓ |
| 0700 | 2174 | 314280 | .0703 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 2219 | 304137 | .0679 | | ~~Dea~~ |
| 12-20-94 | | | | | ✓ |
| 0600 | 21778 | 310278 | .0693 | | P |
| 12-21-94 | | | % | | ✓ |
| 0600 | 24602 | 316763 | 7.07 | | P |
| 12-22-94 | | | % | | ✓ |
| 0600 | 2089 | 311647 | 6.97 | | P |

Attachment 7.2 Σ/ω 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 99136

**Detector - Model** 44-10 **Serial No.** 165

**Calibrated** **Due**

**Source Nuclide** **Serial No.**

**Activity** **Units**

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-27-94 | | | % | | ✓ |
| 0600 | 2239.5 | 309231 | 6.91 | | P |
| 12-28-94 | | | % | | ✓ |
| 0600 | 2545 | 305507 | 6.82 | | P |
| 12-29-94 | | | | | ✓ |
| 0600 | 3285 | 310340 | 6.99% | | P |
| 1-3-95 | | | | | ✓ |
| 0600 | 2172.8 | 310418 | 6.94% | | P |
| 1-4-95 | | | | | ✓ |
| 0600 | 2681.6 | 304459 | 6.8% | | P |
| | | | | | |
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Attachment 7.2

E/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 102049

**Detector - Model** 4365 (ALPHA SCINTILLATOR) **Serial No.** 095044 (064)

**Calibrated** 10-20-94 **Due** 4-20-95

**Source Nuclide** Th 230 **Serial No.** 94 Th 4703169

**Activity** 16,800 RF = 0.1931 **Units** dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-3-94 1440 | 1.8 | 3244 | 0.1931 | | ✓ RP |
| 11-4-94 0800 | 1.8 | 3289 | 0.1954 | | ✓ P |
| 11-7-94 0730 | 0.8 | 3249 | 0.1933 | | ✓ P |
| 11-8-94 0730 | 1.1 | 3196 | 0.190 | | ✓ P |
| 11-9-94 0730 | Ø | 3229 | 0.192 | | ✓ P |
| 11-16-94 0715 | 2.1 | 3153 | 0.188 | | ✓ P |
| 11-17-94 0650 | 1.1 | 3224 | 0.192 | | ✓ P |
| 11-21-94 | 1.1 | 3076 | 0.188 ~~102049~~ P | | ✓ Sen |
| 11-22-94 | 1.7 | 3064 | 0.182 | | ✓ Sen |
| 11-30-94 0700 | 0.7 | 3012 | 0.179 | | ✓ P |
| 12-05-94 | 1.4 | 2877 | 0.171 | | ✓ Sen |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

| | | | |
|---|---|---|---|
| **Meter - Model** | LUDLUM 2221 | **Serial No.** | 102049 |
| **Detector - Model** | 43-65 | **Serial No.** | 095044 (014) |
| **Calibrated** | 10-20-94 | **Due** | 04-20-95 |
| **Source Nuclide** | Th 230 | **Serial No.** | 94 Th 4703169 |
| **Activity** | 16,800 | **Units** | D.P.M. |

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-01-94 0630 | 0.7 | 3086 | 0.184 | | ✓ dew |
| 12-05-94 0630 | 1.4 | 2877 | 0.171 | | ✓ P |
| 12-6-94 0630 | 1.0 | 3071 | 0.183 | | ✓ P |
| 12-7-94 0630 | 0.1 | 2864 | 0.170 | | ✓ P |
| 12-8-94 0600 | 0.6 | 2913 | 0.170 | | ✓ P |
| 12-12-94 0600 | 0.6 | 2900 | 0.170 | | ✓ P |
| 12-13-94 0600 | 0.7 | 2941 | 0.175 | | ✓ P |
| 12-14-94 0600 | 0.6 | 2902 | 0.172 | | ✓ Lee |
| 12-15-94 0700 | 0.3 | 2858 | 0.170 | | ✓ P |
| 12-19-94 0600 | 0.5 | 3360 | 0.20 | | ✓ P |
| 12-20-94 0600 | 1.4 | 3275 ~~2998~~ | 19.5 % | | ✓ P |

12-20-94

Attachment 7.2

E/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** LUDLUM 2221 **Serial No.** 102049

**Detector - Model** 43-65 **Serial No.** 095044 (064)

**Calibrated** 10-20-94 **Due** 04-20-95

**Source Nuclide** Th 230 **Serial No.** 94 Th 4703169

**Activity** 16,800 **Units** DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-21-94 | 0.7 | 3200 | 0.191 | | nm |
| 0600 | | | | | ✓ |
| 12-22-94 | 0.5 | 3274 | % 19.5 | | ✓ |
| 0600 | | | | | P |
| 12-27-94 | 0.6 | 3318 | % 19.75 | | ✓ |
| 0600 | | | | | P |
| 12-28-94 | 0.4 | 3304 | % 19.66 | | ✓ |
| 0600 | | | | | P |
| 12-29-94 | 0.3 | 3247 | 19.4 % | | ✓ |
| 0600 | | | | | P |
| 1-3-~~94~~ 95 | 0.1 | 3304 | 19.66 % | | ✓ |
| 0600 | | | | | P |
| 01-04-95 | 0.7 | 3032 | 18.04 % | | ✓ |
| 0600 | | | | | P |
| | | | | | |
| | | | | | |
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Attachment 7.2 S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 117363

**Detector - Model** 449 (PANCAKE GM) **Serial No.** 116872

**Calibrated** 10-21-94 **Due** 10-21-95

**Source Nuclide** Sr 90 **Serial No.** 2235-91

**Activity** 4016 0.275 μCi **Units** dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 | | | | | OK |
| 0730 | 40 | 1033 | 0.247 | | PP |
| 11-2-94 | | | | | OK |
| 0730 | 30 | 1155 | 0.28 | | PP |
| 11-3-94 | | | | | [illegible] |
| 0900 | 25 | 1121 | 0.2729 | | ✓ |
| 11-4-94 | | | | | [illegible] |
| 0830 | 33 | 1049 | 0.253 | | ✓ |
| 10-4-94 | | | | * See chart 2 of 2 | ✓ |
| 1200 | 31.2 | 1105.4 | 0.275 | | PP |
| 11-7-94 | | | | | ✓ |
| 0730 | 30 | 1107 | 0.268 | | P |
| ~~12~~ 12-13-94 | | | | | ✓ |
| 1000 | 30 | 1159 | 0.28 | Returned to service | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 31 | 1099 | due 1-13-95 26.57 | | P |
| 12-15-94 | | | 0.287 | | ✓ |
| 0700 | 29.3 | 1164 | ~~0.287~~ 1-29-5 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 34.1 | 1121 | 0.27 | | P |
| 12-20-94 | 24.6 | 1120 | 0.273 | | [illegible] |
| 0600 | | | | | ✓ |

Attachment 7.2 E/W 4-5-95

## SOURCE CHECK LOG

Meter - Model LUDLUM 2221 Serial No. 117363

Detector - Model 44-9 Serial No. 116872

Calibrated 10-21-94 Due 10-21-95

Source Nuclide Sr 90 Serial No. 2235-91

Activity 4016 Units DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-21-94 0600 | 31.0 | 1144 | 0.277 | | WM ✓ |
| 12-22-94 0600 | 31.0 | 1187 | 0.288 | | [illegible] ✓ |
| 27 DEC 94 0600 | 29.0 | 1091 | 0.264 | | [illegible] ✓ |
| 28 DEC 94 0600 | 36.9 | 1129 | 0.272 | | WM ✓ |
| 29 DEC 94 0600 | 32.8 | 1088 | 0.263 | | WM ✓ |
| 03 JAN 95 0600 | 28.9 | 1076 | 0.261 | | ✓ [illegible] |
| 04 JAN 95 0600 | 35.4 | 1105 | 0.264 | | [illegible] ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Attachment 7.2 S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** 2221 **Serial No.** 117366

**Detector - Model** 44-9 (PANCAKE GM) **Serial No.** 116878

**Calibrated** 10-21-94 **Due** 10-21-95

**Source Nuclide** Sr90 **Serial No.** 2235-91

**Activity** 4016 **Units** dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 0730 | 40 | 1033 | 0.247 | | ✓ PP |
| 11-2-94 0730 | 28 | 1072 | 0.259 | | ✓ PP |
| 11-3-94 0900 | 27.5 | 1104 | 0.268 | | ✓ PP |
| 11-4-94 0830 | 29 | 1188 | 0.288 | | ✓ PP |
| 11-4-94 1200 | 35.7 | 1067.65 | 0.266 | * see chart 2052 | ✓ PP |
| 11-7-94 0730 | 27 | 1027 | 0.25 | | ✓ PP |
| 11-21-94 0600 | 34 | 1031 | 0.248 | | ✓ P |
| 11-22-94 0600 | 32 | 1174 | 0.28 | | ✓ P |
| 11-23-94 0600 | 35 | 1095 | 0.26 | | ✓ P |
| 11-29-94 0600 | 33 | 1037 | 0.25 | | ✓ P |
| 11-30-94 0600 | 32 | 1085 | 0.262 | | ✓ [illegible] |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** Ludlum 2221 **Serial No.** 117366

**Detector - Model** 44-9 **Serial No.** 116878

**Calibrated** 10-21-94 **Due** 10-21-95

**Source Nuclide** Sr 90 **Serial No.** 2235-91

**Activity** 401C **Units** D.P.M.

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-01-94 0600 | 29 | 1071 | 0.26 | | ✓ |
| 12-5-94 0630 | 31 | 1111 | 0.27 | | ✓ P |
| 12-6-94 0630 | 31 | 1134 | 0.28 | | ✓ P |
| 12-7-94 0630 | 32.8 | 1079 | 0.26 | | ✓ P |
| 12-8-94 0600 | 31.9 | 1088 | 0.26 | | ✓ P |
| 12-12-94 0600 | 36 | 1149 | 0.277 | | ✓ P |
| 12-13-94 0600 | 30.5 | 1031 | 24.9% | | ✓ P |
| 12-14-94 0600 | 31 | 1099 | 26.5% | | ✓ P |
| 12-15-94 0700 | 29.3 | 1041 | 0.252 | | ✓ P |
| 12-19-94 0600 | 29.0 | 1048 | 0.254 | | ✓ P |
| 12-20-94 0600 | 32.8 | 1129 | 0.273 | | [illegible] ✓ |

Attachment 7.2 2/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** LUDLUM 2221 **Serial No.** 117366

**Detector - Model** 44-9 **Serial No.** 116878

**Calibrated** 10-21-94 **Due** 10-21-95

**Source Nuclide** Sr 90 **Serial No.** 2235-91

**Activity** 4016 **Units** DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 21DEC94 0600 | 32.0 | 1060 | 0.256 | | ✓ [illegible] |
| 22DEC94 0600 | 29.6 | 1249 | 0.304 | | [illegible] ✓ |
| 27 DEC 94 0600 | 28.5 | 1115 | 0.271 | | [illegible] ✓ |
| 28Dec94 0600 | 31.1 | 1037 | 0.250 | | [illegible] ✓ |
| 29Dec94 0600 | 28.3 | 1076 | 0.261 | | [illegible] ✓ |
| 03 JAN 95 0600 | 27.9 | 1076 | 0.262 | | ✓ [illegible] |
| 04 JAN 95 0600 | 29.2 | 1061 ~~1022~~ [illegible] 1-4-95 | 0.257 | | [illegible] ✓ |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

Meter - Model Lud 2221 Serial No. 108881

Detector - Model Lud 44-9 (Pancake GM) Serial No. 116881

Calibrated 10-21-94 Due 10-21-95

Source Nuclide Sr-90 Serial No. 2235-91

Activity ~~4,410~~ 4016 Units dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| ~~09 10-1-94~~ | 25 | | 0.247 | 20H - RF ~~0.226~~ | ok |
| 0730 | | 1017 | ~~0.225~~ | RF = .247 | |
| 11-2-94 | | | | | ok |
| 0800 | 33 | 1122 | 0.2469 | | |
| 11-2-94 | | | | | ✓ |
| 1154 | 29 | 1159 | 0.256 | | |
| 11-3-94 | | | | | ✓ |
| 1000 | 28.9 | 1151 | 0.279 | | |
| 11-4-94 | | | | | ✓ |
| 0830 | 30 | 1195 | 0.29 | | |
| 11-4-94 | | | | * See Chart 2 of 2 | ✓ |
| 1200 | 33.4 | 1089.4 | 0.270 | | |
| 11-7-94 | | | | | ✓ |
| 0730 | 43 | 1102 | 0.264 | | |
| 11-21-94 | | | | | |
| 0600 | 32 | 1082 | 0.261 | | |
| 11-22-94 | | | | | |
| 0600 | 33 | 1066 | 0.26 | | |
| 11-29-94 | | | | | ✓ |
| 0600 | 29 | 1054 | 0.26 | | |
| 11-30-94 | | | | | ✓ |
| 0600 | 32 | 1119 | 0.271 | | |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

| | | | |
|---|---|---|---|
| Meter - Model | LUDLUM 2221 | Serial No. | 108881 |
| Detector - Model | LUD 44-9 | Serial No. | 116881 |
| Calibrated | 10-21-94 | Due | 10-21-95 |
| Source Nuclide | Sr-90 | Serial No. | 2235-91 |
| Activity | 4016 | Units | D.P.M. |

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-01-94 | — | — | — | | MG |
| 0630 | | | | OOS | P |
| 12-1-94 | | | | | ✓ |
| 1015 | 23 | 1028 | 0.290 | | P |
| 12-5-94 | | | | | ✓ |
| 0630 | 30 | 1157 | 0.28 | | P |
| 12-6-94 | | | | | ✓ |
| 0630 | 31 | 1132 | 0.27 | | P |
| 12-7-94 | | | | | ✓ |
| 0630 | 27.8 | 1099 | 0.26 | | P |
| 12-8-94 | | | | | ✓ |
| 0600 | 36.5 | 1121 | 0.27 | | P |
| 12-12-94 | | | | | ✓ |
| 0600 | 32 | 1174 | 0.28 | | P |
| 12-13-94 | | | | | ✓ |
| ~~0600~~ 10 | 31 | 1120 | 0.27 | | P |
| 12-14-94 | | | | | ✓ |
| 0600 | 30 | 1160 | 0.280 | | P |
| 12-15-94 | | | | | ✓ |
| 0600 | 29.8 | 1022 | 0.247 | | P |
| 12-19-94 | | | | | ✓ |
| 0600 | 31.9 | 1129 | 0.27 | | MG |

Attachment 7.2

2/W 4-5-95

## SOURCE CHECK LOG

**Meter - Model** LUDLUM 2221 **Serial No.** 108881

**Detector - Model** LUDLUM 44-9 **Serial No.** 116881

**Calibrated** 10-21-94 **Due** 10-21-95

**Source Nuclide** Sr 90 **Serial No.** ~~2234~~ 2235-91

**Activity** 4016 **Units** DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-20-94 0600 | 32.7 | 1117 | 0.269 | | WOM ✓ |
| 12-21-94 0600 | 29.9 | 1118 | 0.271 | | WOM ✓ |
| 12-22-94 0600 | 31.2 | 1243 | 0.302 | | [illegible] ✓ |
| 27 DEC 94 0600 | 29.0 | 1037 | 0.251 | | [illegible] ✓ |
| 28Dec94 0600 | 34.9 | 1170 | 0.283 | | WOM ✓ |
| 29Dec94 0600 | 30.9 | 1183 | 0.287 | | WOM ✓ |
| 03 JAN 95 0600 | 37.3 | 1110 | 0.270 | | [illegible] ✓ |
| 04 JAN 95 0600 | 32.4 | 1091 | 0.264 | | [illegible] ✓ |
| | | | | | |
| | | | | | |
| | | | | | |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. 115123

Detector - Model 44-9 (PANCAKE GM) Serial No. 116876

Calibrated 10-21-94 Due 10-21-95

Source Nuclide Sr 90 Serial No. 2236-91

Activity 41016 Units dpm

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-1-94 | | | | | OK |
| 0730 | 30 | 1026 | 22.5 % | 21.0 | PP |
| 11-2-94 | | | | | not |
| 073 | 35 | 1131 | 27.29 % | | PP |
| 11-3-94 | | | | | ✓ |
| 0900 | 40 | 1087 | 0.241 | | P |
| 11-4-94 | | | | | – |
| 0830 | 32 | 1035 | 0.257 | | P |
| 11-4-94 | | | | * see graph | ✓ |
| 1200 | 31.7 | 1044.8 | 0.260 | 2 of 2 | P |
| 11-7-94 | | | | | ✓ |
| 0730 | 33 | 1045 | 0.252 | | P |
| 11-16-94 | | | | | ✓ |
| 0700 | 28 | 1075 | 0.26 | | P |
| 11-17-94 | | | | | ✓ |
| 0650 | 33.6 | 1040 | 0.25 | | P |
| 11-21-94 | | | | | ✓ |
| 0600 | 30 | 1092 | 0.264 | | P |
| 11-22-94 | | | | | ✓ |
| 0600 | 30 | 1041 | 0.25 | | P |
| 11-23-94 | | | | | ✓ |
| 0600 | 30 | 1095 | 0.264 | | P |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

Meter - Model 2221 Serial No. 115123

Detector - Model 44-9 Serial No. 116876

Calibrated 10-21-94 Due 10-21-95

Source Nuclide Sr 90 Serial No. 2236-91

Activity 4016 Units DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 11-28-94 0600 | 30 | 1049 ~~1112~~ | 0.253 | | ✓ P |
| 11-29-94 0600 | 31 | 1060 | 0.256 | | ✓ [illegible] |
| 11-30-94 0600 | 33 | 1070 | 0.258 | | ✓ [illegible] |
| | | | | | |
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Attachment 7.2 S/W 4-5-95

## SOURCE CHECK LOG

| | | | |
|---|---|---|---|
| **Meter - Model** | LUDLUM 2221 | **Serial No.** | 115123 |
| **Detector - Model** | 44-9 | **Serial No.** | 116876 |
| **Calibrated** | 10-21-94 | **Due** | 10-21-95 |
| **Source Nuclide** | Sr 90 | **Serial No.** | 2236-91 |
| **Activity** | 4016 | **Units** | D.P.M. |

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-01-94 0700 | 28.0 | 1058 | 0.256 | | ✓ Lee |
| 12-5-94 0630 | 33.3 | 1061 | 0.256 | | ✓ P |
| 12-6-94 0630 | 29 | 1051 | 0.254 | | ✓ P |
| 12-7-94 0630 | 28.6 | 1005 | 0.24 | | ✓ P |
| 12-8-94 0600 | 29.0 | 1058 | 0.256 | | ✓ P |
| 12-12-94 0600 | 28.1 | 1041 | 0.25 | | ✓ P |
| 12-13-94 0600 | 30.9 | 1003 | 24.2 % | | ✓ P |
| 12-14-94 0600 | 30.7 | 1112 | 26.9 % | | ✓ P |
| 12-15-94 0700 | 32.5 | 1069 | 25.8 % | | ✓ P |
| 12-19-94 0600 | 29.3 | 1005 | 24.3 % | | ✓ Lee |
| 12-20-94 0600 | 24.5 | 1099 | 0.267 | | WON ✓ |

Attachment 7.2

S/W 4-5-95

## SOURCE CHECK LOG

Meter - Model LUDLUM 2221 Serial No. 115123

Detector - Model 44-9 Serial No. 116876

Calibrated 10-21-94 Due 10-21-95

Source Nuclide Sr 90 Serial No. 2236-91

Activity 4016 Units DPM

| Date/ Time | Background (cpm, mR/hr) | Source Check (cpm, mR/hr) | Response Factor (RF) | Comments | OK/By |
|---|---|---|---|---|---|
| 12-21-94 0600 | 30.6 | 1108 | 0.268 | | [illegible] ✓ |
| 12-22-94 0600 | 27.2 | 1179 | 0.286 | | [illegible] ✓ |
| 27 DEC 94 0600 | 30.4 | 1039 | 0.251 | | [illegible] ✓ |
| 28 Dec 94 0600 | 32.4 | 1001 | 0.241 | | [illegible] ✓ |
| 29 Dec 94 0600 | 31.5 | 1101 | 0.266 | | [illegible] ✓ |
| 03 JAN 95 0600 | 28.9 | 1041 | 0.252 | | ✓ [illegible] |
| 04 JAN 95 0600 | 30.1 | 1029 | 0.249 | | [illegible] ✓ |
| | | | | | |
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Sheet1

S/W 4-5-95

ate: 1-5-95

| Meter Designation | | Meter Number | Background | Efficiency % | MDA(DPM) |
|---|---|---|---|---|---|
| A | | 109899 | 4 (340) | NA | – |
| B | NaI | 95487 | 4 (600) | NA | – |
| C | " | 97830 | 37.61 | | |
| ✓ D | " | 99136 | 2096.5 | 6.87 | |
| E | | 94954 | 28.517 | | |
| ✓ F | β | 117363 | 32.4 ( | | |
| G | α | 97826 | | | |
| H | α | 117348 | .9 | | |
| ✓ I | α | 102049 | 0.1 ( | 19.66 | |
| ✓ J | β | 115123 | 31 ( | 24.75 | |
| K | | 108881 | 26.4 | | |
| L | | 117366 | 29.5 | 27.19 | |
| ✓ M | α | 2929 | 0.1 (5941) | 35.36 | 0.566 |
| ✓ N | β | 2929 | 416 (1685) | 40.91 | 10.15 |
| O | | | | | |

| METER No | BACKGROUND | PROBE | EFF % | DATE 1-9-95 |
|---|---|---|---|---|
| 09899 μr | 4 | | NA | |
| 95487 μr NaI | 4 | | NA | |
| 97830 | 3501.7 | 531.913 | 11.9 | |
| 99136 | 2060.3 | 310676 | 6.95 | |
| 94954 | 2869.4 | 344573 | 7.69 | |
| 11.7363 | 29.4 | 1056 | 25.57 | |
| 9.7826 α | .005 | — | — | |
| 11.7348 | 1.0 | | 18.57 | |
| 10.2049 β⁻ | 0.2 | 19.4 | 19.4 | |
| 11.5123 | 28.1 | 1036 | 25.1 | |
| 10.8881 | 26.8 | 1030 | 24.97 | |
| 11.7366 | 32.3 | 1035 | 24.97 | |
| 29.29 α | 0.3 | 593.4 | 35.22 | |
| 29.29 β⁻ | 37.1 | 1689 | 41.13 | |
| | | | S/W. | 4-6-95 |

| METER No | BACKGROUND | PROBE | EFF % | DATE 1-10-95 |
|---|---|---|---|---|
| 09899 μr | 4 | | NA | |
| 9.5487 μr NaI | 4 | | NA | |
| 97830 | 38.39.8 | 530910 | 11.87 | |
| 99136 | 2135.4 | 305222.3 | 6.83 | |
| 9.4954 | 2922.3 | 343968 | 7.68 | |
| 11.7363 | 30.8 | 108.8 | 26.31 | |
| 9.7826 α | .005 | — | — | |
| 11.7348 | .9 | 312.3 | 18.6 | |
| 102049 β⁻ | .6 | | 19.66 | |
| 11.5123 | 29.6 | 103.8 | 25.1 | |
| 108881 | 27.8 | 114.9 | 27.9 | |
| 11.7366 | 28.5 | 109.2 | 26.4 | |
| 29.29 α | .1 | 589.2 | 35.1 | MDA 0.57 |
| 29.29 β⁻ | 41.8 | 1796 | 43.67 | MDA 9.36 |
| | | | S/W | 4-6-95 |

Sheet1

S/W 4-5-95

| Date: 11.Jan.95 | | | | |
|---|---|---|---|---|
| | | | | |
| Meter Designation | Meter Number | Background | Efficiency | MDA |
| A | 109899 | 4mR/hr | | |
| B | 95487 | 4mR/hr | | |
| C | 97830 | 4291 | 12.1% | |
| D | 99136 | 2099 | 6.93% | |
| E | 94954 | 3024 | 7.86% | |
| F | 117363 | 31.6 | 27.5% | |
| G | 97826 | | | |
| H | 117348 | 0.8 | 18.6% | |
| I | 102049 | 0.7 | 19.6% | |
| J | 115123 | 28.2 | 24.8% | |
| K | 108881 | 27.6 | 27.5% | |
| L | 117366 | 30.1 | 26.4% | |
| M | α 2929 | 0.1 | 35% | .057 |
| N | β 2929 | 41.2 | 42.2% | |
| O | | | | |

Sheet1

S/W 4-5-95

| Date: 01-12-95 | | | | |
|---|---|---|---|---|
| | | | | |
| Meter Designation | Meter Number | Background | Efficiency | MDA |
| A | 109899 | 4uR/HR | | |
| B | 95487 | 4uR/HR | | |
| C | 97830 | 3833 | 12.0 % | |
| D | 99136 | 2364 | 6.99 % | |
| E | 94954 | 2874 | 7.96 % | |
| F | 117363 | 31.2 | 27.3 % | |
| G | 97826 | 2776 | 7.72 % | |
| H | 117348 | 6.8 | 19.1 % | |
| I | 102049 | 0.3 | 20.1 % | |
| J | 115123 | 28.8 | 25.8 % | |
| K | 108881 | 29.2 | 26.7 % | |
| L | 117366 | 29.6 | 26.6 % | |
| M | 2929 | 0.1 | 35 % | .057 |
| N | 2929 | 40.8 | 41.7 % | |
| O | | | | |

# APPENDIX D

# GRID INTERSECT RADIATION DATA

# AND

# SELECT GRID INTERSECT PIC RADIATION DATA

# FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 23 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC #26

Surveyor(s): R. PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| LUD | 99136 2221 | 44-10 | 165 | 2194 | .069 |
| LUD M19 | 95487 | N/A | N/A | 8 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

PIC RSS-111 SN# 00994

*MEASUREMENTS*

| Grid Point or Location | ~~μr~~ ~~Beta~~ β cpm | PIC ~~Alpha~~ ~~cpm~~ ~~dpm~~ | Gamma μR/hr | * PIC Corrections ~~Beta~~ ~~β~~ dpm ~~GPM~~ | GAMMA DPM ~~Alpha~~ ~~dpm~~ ~~N/A~~ | GAMMA DPM BKG CORR |
|---|---|---|---|---|---|---|
| SLO 26 | 2494 | | 5 | | 36,145 | 4,347 |
| SLO 31 | 2944 | | 5 | | 42,667 | 10,469 |
| SLO 68 | 2883 | | 5 | | 41,783 | 9,985 |
| 176 | 2402 | | 4 | | 34,812 | 3,014 |
| SLO 91 | 2187 | | 4 | | 31,696 | 0 |
| SLO 52 | 2317 | 6 uR/uR | 4 | 5.7 ± 0.6 uR/HR | 33,580 | 1,782 |
| SLO 88 | 2218 | | 4 | | 32,145 | 347 |
| SLO 48 | 2353 | | 4 | | 34,101 | 2,304 |
| SLO 51 | 2205 | | 3.5 | | 31,957 | 159 |
| SLO 49 | 2392 | | 4 | | 34,667 | 2,869 |
| SLO 50 | 2746 | | 4 | | 39,797 | 8,000 |
| SLO 47 | 2588 | | 5.5 | | 37,507 | 5,710 |
| SLO 64 | 2923 | | 4 | | 42,362 | 10,565 |
| SLO 14 | 2491 | 6-7 uR/HR | 4 | 6.2 ± 0.8 uR/HR | 36,101 | 4,304 |
| SLO 13 | 2591 | | 5 | | 37,551 | 5,753 |
| SLO 12 | 2704 | | 5 | | 39,188 | 7,391 |

REMARKS * PIC Readings taken on NOV 09, 1994

DHP 12/5/94

# FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 23 Nov 94 Time: 0730 – 1700

Site (WBS): NAS JACKSONVILLE Location: PSC #26

Surveyor(s): R. PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| Lvo 2221 | 99136 | 44-10 | 165 | 2194 | .069 |
| Lvo 1119 | 95487 | N/A | N/A | 8 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

PIC RSS-111 S/N # 00994

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ cpm | PIC ~~Alpha cpm~~ | Gamma µR/hr | * PIC Corrections ~~Beta dpm~~ | GAMMA DPM ~~Alpha dpm~~ | GAMMA DPM BKG. CORR |
|---|---|---|---|---|---|---|
| SLO 11 | 2922 | | 5 | | 42,348 | 10,550 |
| SLO 22 | 3019 | 7 uR/hr | 5 | 6.4 ± 0.7 ur/hr | 43,754 | 11,956 |
| SLO 16 | 2961 | | 4 | | 42,913 | 11,115 |
| SLO 23 | 2903 | | 5 | | 42,072 | 10,347 |
| SLO 17 | 2851 | | 5 | | 41,319 | 9,521 |
| SLO 25 | 3006 | | 5 | | 43,565 | 11,768 |
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12/5/94

REMARKS * PIC Readings taken on Nov 29, 1994

FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 28 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC # 2.6

Surveyor(s): _____

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| LUD 2221 | 99136 | 44-10 | 165 | 2143 | .068 |
| LUD 2.14 | 95487 | N/A | N/A | 4 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

PIC RSS-111 S/N # 00994

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ γ cpm | PIC ~~Alpha~~ cpm | Gamma μR/hr | * PIC Corrections ~~Beta~~ RP ~~dpm~~ | Gamma DPM ~~Alpha~~ dpm ~~N/A~~ | Gamma DPM Bkg. Corr. |
|---|---|---|---|---|---|---|
| SLO 24 | 3015 | | 5 | | 44,338 | 12,823 |
| SLO 29 | 2915 | | 5 | | 42,868 | 11,353 |
| SLO 34 | 3002 | | 5 | | 44,147 | 12,632 |
| SLO 33 | 3360 | | 6 | | 49,412 | 17,897 |
| SLO 28 | 2900 | | 5 | | 42,647 | 11,132 |
| SLO 27 | 3190 | | 5 | | 46,912 | 15,397 |
| SLO 32 | 2653 | | 5 | | 39,015 | 7,500 |
| SLO 37 | 4172 | | 8 | | 61,353 | 29,838 |
| SLO 41 | 2602 | | 5 | | 38,265 | 6,750 |
| SLO 38 | 4197 | | 8 | | 61,721 | 30,205 |
| SLO 39 | 2985 | | 5 | | 43,897 | 12,382 |
| SLO 40 | 2498 | | 5 | | 36,735 | 5,220 |
| SLO 43 | 3075 | 6.5 uR/hr | 5 | 6±1.0 uv/Hr | 45,221 | 13,705 |
| SLO 42 | 2995 | | 5 | | 44,044 | 12,529 |
| 142 | 2610 | | 5 | | 38,382 | 6,867 |
| 139 | 2526 | | 5 | | 37,147 | 5,632 |

EMARKS * PIC Readings taken on Nov 09, 1994

12/5/94

# FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 28 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC #26

Surveyor(s): R PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| LUD 2221 | 99136 | 4410 | 165 | 2143 | .068 |
| LUD M19 | 95487 | N/A | N/A | 4 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ cpm | Dic ~~Alpha cpm~~ | Gamma µR/hr | Beta dpm | GAMMA DPM ~~Alpha dpm~~ | GAMMA DPM BKG CORR |
|---|---|---|---|---|---|---|
| SLO 45 | 3813 | | 6 | | 56,074 | 24,558 |
| SLO 46 | 2562 | | 5 | | 37,676 | 6,161 |
| SLO 19 | 2477 | | 4.5 | | 36,426 | 4,911 |
| SLO 18 | 2721 | | 5 | | 40,015 | 8,500 |
| SLO 30 | 2768 | | 5 | | 40,706 | 9,191 |
| SLO 35 | 2767 | | 5 | | 40,691 | 9,176 |
| 175 | 2653 | | 5 | | 39,015 | 7,500 |
| 173 18'W | 2438 | | 5 | | 35,853 | 4,338 |
| 170 18'W | 2002 | | 3.5 | | 29,441 | 0 |
| 165 18'W | 1962 | | 3.5 | | 28,853 | 0 |
| 162 18'W | 2538 | | 4.5 | | 37,324 | 5,808 |
| 160 18'W | 2622 | | 4.5 | | 38,559 | 7,044 |
| 156 18'W | 2903 | | 5 | | 42,691 | 11,176 |
| 154 18'W | 2764 | | 4 | | 40,647 | 9,132 |
| 152 18'W | 2554 | | 4 | | 37,559 | 6,044 |
| 151 18'W | 2585 | | 3.5 | | 38,015 | 6,500 |

REMARKS _____

12/5/94

# FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 28 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC-#26

Surveyor(s): R. PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| Luo 2221 | 99136 | 44.0 | 165 | 2143 | .068 |
| Luo M19 | 95487 | N/A | N/A | 4 | N/A |
| N/A | — | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

PIC RSS-111 SN# 00994

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ γ cpm | PIC ~~Alpha cpm~~ | Gamma μR/hr | * PIC Corrections μR/HR ~~Beta dpm~~ | GAMMA DPM ~~Alpha dpm~~ | GAMMA DPM BKG. CORRE |
|---|---|---|---|---|---|---|
| 148 18'W | 2665 | | 4 | | 39,191 | 7,676 |
| 145 18'W | 2817 | | 4 | | 41,426 | 9,911 |
| SLO 63 | 2445 | | 4 | | 35,956 | 4,441 |
| 137 | 4127 | | 5 | | 60,691 | 29,176 |
| SLO 93 | 1649 | | 3.5 | | 24,250 | 0 |
| 129 | 2947 | | 4.5 | | 43,338 | 11,823 |
| 128 | 2668 | | 4.5 | | 39,235 | 7,720 |
| 130 | 2615 | | 5 | | 38,456 | 6,941 |
| 131 | 2423 | | 4.5 | | 35,632 | 4,117 |
| 133 | 2616 | | 4.5 | | 38,471 | 6,955 |
| 135 | 2699 | | 5 | | 39,691 | 8,176 |
| 136 | 2304 | | 5 | | 33,882 | 2,367 |
| SLO 57 | 3270 | 7uR/hr | 5.5 | 6.6 ± 1.0 | 48,088 | 16,573 |
| SLO 61 | 2879 | | 5 | | 42,338 | 10,823 |
| SLO 58 | 2625 | | 5 | | 38,603 | 7,088 |
| 132 | 2429 | | 4 | | 35,721 | 4,205 |

MARKS * PIC Readings taken on NOV 09, 1994

RUH 12/5/94

FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 28 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC #26

Surveyor(s): R PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| Lud 2221 | 99136 | 4440 | 165 | 2143 | 068 |
| Lud M19 | 95487 | N/A | N/A | 4 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ cpm | P.I.C ~~Alpha~~ ~~dpm~~ | Gamma µR/hr | ~~Beta~~ ~~dpm~~ | GAMMA DPM ~~Alpha~~ ~~dpm~~ | GAMMA DPM BKG CORR |
|---|---|---|---|---|---|---|
| 134 | 2337 | | 4.5 | | 34,368 | 2,852 |
| 138 | 2335 | | 4.5 | | 34,338 | 2,823 |
| 141 | 2453 | | 4.5 | | 36,073 | 4,558 |
| SLO 66 | 2647 | | 4.5 | | 38,926 | 7,411 |
| 146 | 2552 | | 4.5 | | 37,529 | 6,014 |
| 143 | 2647 | | 5 | | 38,926 | 7,411 |
| BENCH MARK | 2858 | | 5.5 | | 42,029 | 10,514 |
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12/5/94

*EMARKS* _____

FIELD DATA ACQUISITION FORM



# BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 29 NOV 94 Time: 0730–1700

Site (WBS): NAS JACKSONVILLE Location: PSC # 26

Surveyor(s): R. PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| LUD 2221 | 99136 | 44-10 | 165 | 2157 | .068 |
| LUD M19 | 95487 | N/A | N/A | 4 | N/A |
| N/A | --- | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ cpm | ~~Alpha cpm~~ PIC | Gamma µR/hr | Beta dpm | GAMMA DPM ~~Alpha dpm~~ N/A | GAMMA DPM BKG CORRE |
|---|---|---|---|---|---|---|
| 140 | 2638 | | 5 | | 38,794 | 7,073 |
| 149 | 3160 | | 4 | | 46,471 | 14,750 |
| SLO 74 | 2289 | | 3.5 | | 33,662 | 1,941 |
| SLO 53 | 2950 | | 5 | | 43,382 | 11,661 |
| 166 35'W | 2557 | | 5 | | 37,603 | 5,88[illegible] |
| 163 | 2435 | | 4 | | 35,809 | 4,088 |
| SLO 92 | 2743 | | 5 | | 40,338 | 8,617 |
| 177 | 1892 | | 4 | | 27,824 | 0 |
| 167 | 3085 | | 5 | | 45,368 | 13,647 |
| SLO 87 | 2262 | | 3 | | 32,265 | 1,544 |
| 168 W50' | 2005 | | 4 | | 29,485 | 0 |
| 17 10'E | 2684 | | 4 | | 39,471 | 7,750 |
| SLO 86 | 2123 | | 4 | | 31,221 | 0 |
| 158 | 2682 | | 5.5 | | 39,441 | 7,720 |
| SLO 75 | 2926 | | 5 | | 43,029 | 11,308 |
| SLO 80 | 2922 | | 5 | | 42,971 | 11,250 |

12/5/94

*REMARKS* _____

FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 29 NOV 94 Time: 0730-1700

Site (WBS): NAS JACKSONVILLE Location: PSC # 26

Surveyor(s): R. PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| Lud 2221 | 99136 | 4410 | 165 | 2157 | .068 |
| Lud MLS | 95487 | N/A | N/A | 4 | N/A |
| N/A | — | | | | — |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ β cpm | ~~Alpha cpm~~ PIC | Gamma µR/hr | ~~Beta dpm~~ | ~~Alpha dpm~~ GAMMA DPM | GAMMA DPM BKG CORRE |
|---|---|---|---|---|---|---|
| SLO 83 | 2965 | | 4.5 | | 43,603 | 11882 |
| SLO 79 10'N | 3103 | | 3 | | 45,632 | 13911 |
| SLO 78 8'W | 2787 | | 3 | | 40,985 | 9264 |
| SLO 82 | 3117 | | 5.5 | | 45,838 | 14117 |
| SLO 73 | 2695 | | 4.5 | | 39,632 | 7911 |
| ~~S-175~~ | ~~2656~~ | | ~~5~~ | | | |
| ~~173~~ | ~~2438~~ | | ~~5~~ | | | |
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DWF 12/5/94

REMARKS _____

FIELD DATA ACQUISITION FORM



## BETA-GAMMA DOSE RATE SURVEY

Survey No.: _____ Date: 30 NOV 94 Time: 0730-1000

Site (WBS): NAS JACKSONVILLE Location: PSC #26

Surveyor(s): R PARRISH, S. HAESE

*INSTRUMENTS*

| Scaler/ Ratemeter | Serial No. | Detector | Serial No. | Background cpm | Efficiency |
|---|---|---|---|---|---|
| LUD 2221 | 99136 | 4440 | 165 | 2353 | .068 |
| LUD M19 | 95487 | N/A | N/A | 4 | N/A |
| N/A | | | | | |

cpm = 1 mRad/hr

cpm = 1 uR/hr

cpm = 1 mR/hr

*MEASUREMENTS*

| Grid Point or Location | ~~Beta~~ β cpm | ~~Alpha~~ PIC cpm | Gamma µR/hr | ~~Beta~~ dpm | ~~Alpha~~ dpm | GAMMA DPM | GAMMA DPM BKG CORRECT |
|---|---|---|---|---|---|---|---|
| SLO 72 20'E | 2924 | | 4.5 | | 43,000 | | 8397 |
| 157 15'E | 3693 | | 5.5 | | 54,309 | | 19,705 |
| SLO 77 | 2981 | | 4.5 | | 43,838 | | 9,235 |
| SLO 44 10'W | 2757 | | 4.5 | | 40,544 | | 5,941 |
| 174 | 2152 | | 4 | | 31,647 | | 0 |
| 172 25'E | 2123 | | 4 | | 31,220 | | 0 |
| SLO 81 | 2881 | | 5 | | 42,368 | | 7764 |
| SLO 70 | 4039 | | 5.5 | | 59,397 | | 24,794 |
| 144 | 2546 | | 4 | | 37,441 | | 2838 |
| 147 | 2257 | | 4.5 | | 33,191 | | 0 |
| 150 | 1886 | | 4 | | 27,735 | | 0 |
| 153 | 1981 | | 4 | | 29,132 | | 0 |
| 159 | 1975 | | 4 | | 29,044 | | 0 |
| 161 | 2896 | | 5 | | 42,588 | | 7985 |
| SLO 69 | 2413 | | 4.5 | | 35,485 | | 882 |
| 155 | 2240 | | 4 | | 32,941 | | 0 |

REMARKS NOTE: # 164-169 SUBMERGED IN WATER

DH 12/5/94

# APPENDIX E

# GAMMA WALKOVER DATA

# NAVY RAC PROJECT FIELD LOGBOOK

SITE ID PSC 26, 13

FACILITY ID JACKSONVILLE

LOGBOOK NO. JX-WG-001

DATA TYPE

DATES

FROM:

TO:

SEQUENTIAL PAGES

FROM: 001

TO: 100

T0186

October 14, 1994 2:54pm

INSTRUMENTS-(APPENDIX A)

A Ludlum model 19 micro-R meter, S/N 109899

B Ludlum model 19 micro-R meter, S/N 095487

C Ludlum model 2221 S/N 097830, Sodium iodide det. # 157

D Ludlum model 2221 S/N 099136, Sodium iodide det. # 165

E Ludlum model 2221 S/N 094954, Sodium iodide det. # 118370

F Ludlum model 2221 S/N 117363, Sodium iodide det. # 118371

G Ludlum model 2221 S/N 097826, Alpha 43-65 # 089767

H Ludlum model 2221 S/N 117348, Alpha 43-65 # 089765

I Ludlum model 2221 S/N 102049, Alpha 43-65 # 090753

J Ludlum model 2221 S/N 115123, Beta/gamma 44-9 # 116876

K Ludlum model 2221 S/N 108881, Beta/gamma 44-9 # 116881

L Ludlum model 2221 S/N 117366, Beta/gamma 44-9 # 11678

M Ludlum model 2929 dual scaler # 234 Alpha/Beta/Gamma

N Ludlum model 12, probe 43-37 # 043302

O PIC model RSS-111, S/N 009994 IT

P. Ludlum model 2221 S/N 97826, Sodium iodide det # 118371

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 Page 1 of 3

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 03 NOV 94 | 01 | GRID #21 | STEVE HAESE |
| 03 NOV 94 | 02 | GRID #21 | STEVE HAESE |
| 04 NOV 94 | 03 | GRID #28 | STEVE HAESE |
| 04 NOV 94 | 04 | GRID #28 | STEVE HAESE |
| 04 NOV 94 | 05 | GRID #27 | STEVE HAESE |
| 04 NOV 94 | 06 | GRID #27 | STEVE HAESE |
| 07 NOV 94 | 07 | GRID #26 | STEVE HAESE |
| 07 NOV 94 | 08 | GRID #26 | STEVE HAESE |
| 07 NOV 94 | 09 | GRID #25 PART I | STEVE HAESE |
| 07 NOV 94 | 10 | GRID #25 PART I | STEVE HAESE |
| 07 NOV 94 | 11 | GRID #33 | STEVE HAESE |
| 07 NOV 94 | 12 | GRID #33 | STEVE HAESE |
| 07 NOV 94 | 13 | GRID #32 PART I | STEVE HAESE |
| 07 NOV 94 | 14 | GRID #32 PART I | STEVE HAESE |
| 08 NOV 94 | 15 | GRID #19 | STEVE HAESE |
| 08 NOV 94 | 16 | GRID #19 | STEVE HAESE |
| 08 NOV 94 | 17 | GRID #20 | STEVE HAESE |
| 08 NOV 94 | 18 | GRID #20 | STEVE HAESE |
| 08 NOV 94 | 19 | GRID #35 | STEVE HAESE |
| 08 NOV 94 | 20 | GRID #35 | STEVE HAESE |
| 08 NOV 94 | 21 | GRID #13 PART I | STEVE HAESE |
| 08 NOV 94 | 22 | GRID #13 PART I | STEVE HAESE |
| 08 NOV 94 | 23 | GRID #14 | STEVE HAESE |
| 08 NOV 94 | 24 | GRID #14 | STEVE HAESE |
| 08 NOV 94 | 25 | GRID #11 PART I | STEVE HAESE |
| 08 NOV 94 | 26 | GRID #11 PART I | STEVE HAESE |
| 08 NOV 94 | 27 | GRID #29 PART I | STEVE HAESE |
| 09 NOV 94 | 28 | GRID #12 | STEVE HAESE |
| 09 NOV 94 | 29 | GRID #36 | STEVE HAESE |
| 09 NOV 94 | 30 | GRID #43 PART I | STEVE HAESE |
| 09 NOV 94 | 31 | GRID #34 | STEVE HAESE |
| 09 NOV 94 | 32 | GRID #22 PART I | STEVE HAESE |
| 09 NOV 94 | 33 | GRID #50 PART I | STEVE HAESE |
| 09 NOV 94 | 34 | GRID #57 PART I | STEVE HAESE |

11/12/95

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 0 NOV 94 | 35 | GRID #42 | STEVE HAESE |
| 10 NOV 94 | 36 | GRID #49 | STEVE HAESE |
| 10 NOV 94 | 37 | GRID #48 | STEVE HAESE |
| 10 NOV 94 | 38 | GRID #41 | STEVE HAESE |
| 14 NOV 94 | 39 | GRID #40 | STEVE HAESE |
| 14 NOV 94 | 40 | GRID #47 | STEVE HAESE |
| 14 NOV 94 | 41 | GRID #54 | STEVE HAESE |
| 14 NOV 94 | 42 | GRID #56 | STEVE HAESE |
| 14 NOV 94 | 43 | GRID #62 Part I | STEVE HAESE |
| 14 NOV 94 | 44 | GRID #65 Part I | STEVE HAESE |
| 15 NOV 94 | 45 | GRID #39 Part I | STEVE HAESE |
| 15 NOV 94 | 46 | GRID #53 Part I | STEVE HAESE |
| 15 NOV 94 | 47 | GRID #55 | STEVE HAESE |
| 15 NOV 94 | 48 | GRID #63 | STEVE HAESE |
| 15 NOV 94 | 49 | GRID #64 | STEVE HAESE |
| 16 NOV 94 | 50 | GRID # 17 | STEVE HAESE |
| 16 NOV 94 | 51 | GRID # 24 | STEVE HAESE |
| 16 NOV 94 | 52 | GRID #31 | STEVE HAESE |
| 16 NOV 94 | 53 | GRID #38 | STEVE HAESE |
| 16 NOV 94 | 54 | GRID # 45 | STEVE HAESE |
| 16 NOV 94 | 55 | GRID # 52 | STEVE HAESE |
| 16 NOV 94 | 56 | GRID # 61 | STEVE HAESE |
| 17 NOV 94 | 57 | GRID # 51 | W. C. MAY |
| 17 NOV 94 | 58 | GRID # 37 | W.C. MAY |
| 17 NOV 94 | 59 | GRID # 44 | W.C. MAY |
| 17 NOV 94 | 60 | GRID # 46 Part I | W.C. May |
| 21 NOV 94 | 61 | GRID # 73 | W. C. May |
| 21 NOV 94 | 62 28NOV94 | GRID # 74 | W. C. May |
| 28 NOV 94 | ~~72~~ 63 | GRID # 72 | W. C. May |
| 28 NOV 94 | ~~74~~ 64 | GRID # 71 | W. C. May |
| 29 NOV 94 | 65 | GRID # 70 | W. C. May |
| 29 NOV 94 | 66 | GRID # 81 | W.C. May |
| 29 NOV 94 | 67 | GRID # 82 Part I | W. C. May |
| 29 NOV 94 | 68 | GRID # 87 | W. C. May |

1/11/95

Checked by D. D. Shar 1-11-95

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 30NOV94 | #69 | GRID #30 | W.C. May |
| 30NOV94 | #70 | GRID #69 | W.C. May |
| 30NOV94 | #71 | GRID #77 | W.C. May |
| 30NOV94 | #72 | GRID #78 | W.C. May |
| 30NOV94 | #73 | GRID #80 PART I | W.C. May |
| 01Dec94 | WCM 01DEC94 ~~#86~~ ERROR #74 | GRID #86 PART I | W.C. May |
| 01Dec94 | WCM ~~#85~~ ERROR 01DEC94 #75 | GRID #85 | W.C. May |
| 14Dec94 | #76 | GRID #66 PART I | G. Showers |
| 13DEC94 | #77 | GRID #90 PART I | W.C. May |
| 12Dec94 | #78 | GRID #16 | W.C. May |
| 12Dec94 | #79 | GRID #23 | W.C. May |
| 13Dec94 | #80 | GRID #76 PART I | W.C. May |
| 13Dec94 | #81 | GRID #75 PART I | W.C. May |
| 15 DEC 94 | 82 | GRID #67 PART I | STEVE HAESE |
| 15 DEC 94 | 83 | GRID #68 PART I ~~PART II~~ WCM 21NOV94 | STEVE HAESE |
| 15 DEC 94 | 84 | GRID #69 | STEVE HAESE |
| 19 DEC 94 | 85 | GRID #67 | STEVE HAESE |
| 19 DEC 94 | 86 | GRID #75 | STEVE HAESE |
| 19 DEC 94 | 87 | GRID #60 | STEVE HAESE |
| 19 DEC 94 | 88 | GRID #68 PART II | STEVE HAESE |
| 19 DEC 94 | 89 | GRID #76 PART II | STEVE HAESE |
| 19 DEC 94 | 90 | GRID #59 | STEVE HAESE |
| 20Dec94 | #91 | GRID #89 | W.C. May |
| 20Dec94 | #92 | GRID #57 PART II | W.C. May |
| 20Dec94 | #93 | GRID #58 | W.C. May |
| 20Dec94 | #94 20DEC94 | GRID #66 PART II | W.C. May |
| 20Dec94 | ~~#90~~ WCM #95 | GRID #90 PART II | W.C. May |
| 22Dec94 | #96 | GRID #46 PART II | W.C. May |
| 22Dec94 | #97 | GRID #53 PART II | W.C. May |
| 22DEC94 | #98 | GRID #62 PART II | W.C. May |
| 22Dec94 | #99 | GRID #65 PART II | W.C. May |
| 22Dec94 | #100 | GRID #82 PART II | W.C. May |
| 22Dec94 | #101 | GRID #80 PART II | W.C. May |
| 22Dec94 | #102 | GRID #86 PART II | W.C. May |

[signature] 1/12/95

Checked by [signature] 1-11-95

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 Page 4 of 6

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| [illegible] Dec 94 | #103 | GRID #62 2 of 2 | L.D. Showers |
| 22 Dec. 94 | #104 | GRID #63 | L.D. Showers |
| 27 Dec 94 | #105 | GRID #63 - ADDENDUM | L.D. Showers |
| 27 Dec. 94 | #106 | GRID #84 | L.D. Showers |
| 27 Dec 94 | #107 | GRID #88 | L.D. Showers |
| 27 Dec 94 | #108 | GRID #71 | [illegible] |
| 27 Dec 94 | #109 | GRID #54 | L.D. Showers |
| 27 Dec 94 | #110 | GRID #54 - ADDENDUM | L.D. Showers |
| 27 Dec 94 | #111 | GRID 55 PART II | L.D. Showers |
| 27 Dec 94 | #112 | GRID 53 PART II | L.D. Showers |
| 27 Dec 94 | #113 | GRID 42 PART II | L.D. Showers |
| 27 Dec 94 | #114 | GRID 41 PART II | L.D. Showers |
| 27 Dec 94 | #115 | GRID 34 PART II | L.D. Showers |
| 28 Dec 94 | #116 | GRID 33 PART II | L.D. Showers |
| 28 Dec 94 | #117 | GRID 18 PART I | L.D. Showers |
| 28 Dec 94 | #118 | GRID 25 PART II | L.D. Showers |
| 28 Dec 94 | #119 | GRID 19 PART II | L.D. Showers |
| 28 Dec 94 | #120 | GRID 14 PART II | L.D. Showers |
| 28 Dec 94 | #121 | GRID 15 | L.D. Showers |
| 28 Dec 94 | #122 | GRID 13 PART II | L.D. Showers |
| 28 Dec 94 | #123 | GRID 75 PART III | L.D. Showers |
| 28 Dec 94 | #124 | GRID 74 PART III | L.D. Showers |
| 28 Dec 94 | #125 | GRID 74 PART II | L.D. Showers |
| 28 Dec 94 | #126 | GRID 67 PART III | L.D. Showers |
| 29 DEC 94 | #127 | GRID 8 PART I | STEVE HAESE |
| 29 DEC 94 | #128 | GRID 9 | STEVE HAESE |
| 29 DEC 94 | #129 | GRID 10 PART I | STEVE HAESE |
| 29 DEC 94 | #130 | GRID 11 PART II | STEVE HAESE |
| 29 DEC 94 | #131 | GRID 12 | STEVE HAESE |
| 29 Dec 94 | #132 | GRID #8 PART II | W.C. May |
| 29 Dec 94 | #133 | GRID #10 PART II | W.C. May |
| 29 Dec 94 | #134 | GRID #11 PART III | W.C. May |
| 29 Dec 94 | #135 | GRID #13 PART III | W.C. May |
| 29 Dec 94 | #136 | GRID #18 PART II | W.C. May |
| 29 Dec 94 | #137 | GRID #22 PART II | W.C. May |

DCS 1/12/95

Checked by L.D. Showers 1-11-95

FM_0017

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 Page 5 of 6

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 29Dec94 | # 138 | GRID # 25 PART III | W.C. May |
| 29Dec94 | # 139 | GRID # 29 PART II | W.C. May |
| 29Dec94 | # 140 | GRID # 32 PART II | W.C. May |
| 29Dec94 | # 141 | GRID # 36 PART II | W.C. May |
| 29Dec94 | # 142 | GRID # 39 Part | W.C. May |
| 29Dec94 | # 143 | GRID # 43 PART II | W.C. May |
| 29Dec94 | # 144 | GRID # 46 PART II | W.C. May |
| 29Dec94 | # 145 | GRID # 50 PART II | W.C. May |
| 29Dec94 | # 146 | GRID # 57 PART III | W.C. May |
| 03Jan95 | # 147 | GRID # 09 PART II | W.C. May |
| 03Jan95 | # 148 | GRID # 16 PART ~~III~~ | W.C. May |
| 03Jan95 | # 149 | GRID # 15 PART II | W.C. May |
| 03Jan95 | # 150 | GRID # 83 PART II | W.C. May |
| 03Jan95 | # 151 | GRID # 87 PART II | W.C. May |
| 03Jan95 | # 152 | GRID # 88 PART II | J.D. Stowers |

Date 1/12/95

Checked by J.D. Stowers 1-11-95

FM_0017

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-001 Page 6 of 6

| ate | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 11-95 | #153 | PSC-13-A | J.D. Shawes |
| 1-11-95 | #154 | PSC-13-B | J.D. Shawes |
| 1-11-95 | #155 | PSC-13-C | J.D. Shawes |
| 1-11-95 | #156 | PSC-13-D | J.D. Shawes |
| 1-11-95 | #157 | PSC-13-E | J.D. Shawes |
| 1-11-95 | #158 | PSC-13-F | J.D. Shawes |
| 1-11-95 | #159 | PSC-13 | J.D. Shawes |
| 1-11-95 | #160 | PSC-13 | J.D. Shawes |
| 1-11-95 | #161 | PSC-13 | J.D. Shawes |
| 1-11-95 | #162 | PSC-13 | J.D. Shawes |
| 1-11-95 | #163 | PSC-13 | J.D. Shawes |
| 1-12-95 | #164 | PSC-26A | R Parrish |
| 1-12-95 | #165 | PSC-13 hole #1 | R Parrish |
| 1-12-95 | #166 | PSC-13 hole #2 | R Parrish |
| 1-16-95 | #167 | PSC-13 hole #3 | R Parrish |
| 1-16-95 | #168 | PSC-13 hole #4 | R Parrish |
| 1-16-95 | #169 | PSC-13 hole #5 | R Parrish |
| 16-95 | #170 | PSC-13 hole #6 | R Parrish |
| 1-16-95 | #171 | PSC-13 hole #7 | R Parrish |
| 1-16-95 | #172 | PSC-13 hole #8 | R Parrish |
| 1-16-95 | #173 | PSC-13 hole #9 | R Parrish |
| 1-17-95 | #174 | PSC-13 hole #10 | R Parrish |
| 1-17-95 | #175 | PSC-13 hole #11 | R Parrish |
| 1-17-95 | #176 | PSC-13 hole #12 | R Parrish |
| 1-31-95 | #177 | PSC-26 GRID #58 PART III | [illegible] |
| 1-31-95 | #178 | PSC-26 GRID #51 PART III | [illegible] |
| 2-6-95 | #179 | PSC-13-C DRUM AREA | [illegible] |
| 28 Feb 95 | #180 | PSC26 grid 34 Part III | R Parrish |
| 2 March 95 | #181 | PSC26A grid 77+68 | R Parrish |
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DOJ 1/12/95 Log of Checked by J. D. Shawes 1-11-95

FM_0017

FIELD DATA ACQUISITION FORM



# WALKOVER GAMMA SCAN DATA SHEET

GRID #21 (Page 1 of 2)

Date: 03 NOV 94

Technician: S. HAESE / J. SHOWERS
*See INSTRUMENT Sheet.

Scaler: LUDLUM 2221 M14

Detector: 44 10

S/N: 99136 / 165 - D
95487 / M14

Conversion: N/A

Bkg: ~~2157~~ WM 03NOV94 N/A

* EACH SQUARE = 6' WIDE X 10' HIGH

DWR 1/12/95

Coordinates ~~E → W~~ W-E WOM 03NOV94

Coordinates ~~N → S~~ M

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5uR/HR 2600 / 2650 | -D / -D | 6uR/HR 2650 / 2600 | -D / -D | 6uR/HR 2600 / 2700 | -D / -D | 6uR/HR 2600 / 2650 | -D / -D | 5uR/HR 2700 / 2650 | -D / -D | 5uR/HR 2650 / 2700 | -D / -D | SLO 14 |
| | | | | | | | | | | | | | 5uR/HR 2650 |
| | | | | | | | | | GROUNDWATER MONITORING WELL (MW 27 4-14) | | GROUNDWATER MONITORING WELL (MW 28 25,30) | | |
| | | | | | | | | | | | | | 5uR/HR 2600 |
| | | | | | | | | | | | | | SLO 14 |
| | 2550 / 2600 | -D / -D | 2650 / 2600 | -D / -D | 2650 / 2600 | -D / -D | 2600 / 2650 | -D / -D | 2550 / 2650 | -D / -D | 2650 / 2600 | -D / -D | 2600 / 2650 | -D / -D |

marks:

* NOTE: #'S ON E/W COORDINATES CORRESPOND TO AVERAGE BACKGROUNDS ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID #21 (Page 2 of 2)

Date: 03 NOV 94

Technician: S. HAESE / J. SHOWERS
* SEE INSTRUMENT SHEET

Scaler: LUDLUM 2221 M19

Detector: 4410

S/N: 99136/165 - D
95487/M19

Conversion: N/A

Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH

1/12/95

Coordinates ~~E — W~~ W - E wcm 03NOV94

| | 5uR/HR | 6uR/HR | 6uR/HR | 5uR/HR | 6uR/HR | 6uR/HR | 5uR/HR |
|---|---|---|---|---|---|---|---|
| | 2600 -D / 2650 -D / SLO18 | 2600 -D / 2600 -D | 2650 -D / 2600 -D | 2600 -D / 2550 -D | 2550 -D / 2600 -D | 2650 -D / 2600 -D | 2600 -D / 2650 -D |
| Coordinates N ⟷ S | | | | | | | |
| | 5uR/HR 2600 | | | | | | |
| | SLO 13 | 2650 -D / 2600 -D | 2600 -D / 2650 -D | 2650 -D / 2550 -D | 2600 -D / 2600 -D | 2550 -D / 2650 -D | 2600 -D / 2550 -D |

marks:

- NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID # 28 (Page 1 of 2)

Date: 04 NOV 94

Technician: S.HAESE / J.SHOWERS
04NOV94 WC.MAY / G.SHOWERS

Scaler: LUDLUM 2221
19

Detector: ~~99830~~ 44-10
04NOV94

S/N: ~~99830~~ / 157 - C
97830
99136 / 165 - D
95487 / M-19
*SEE INSTRUMENT SHEET

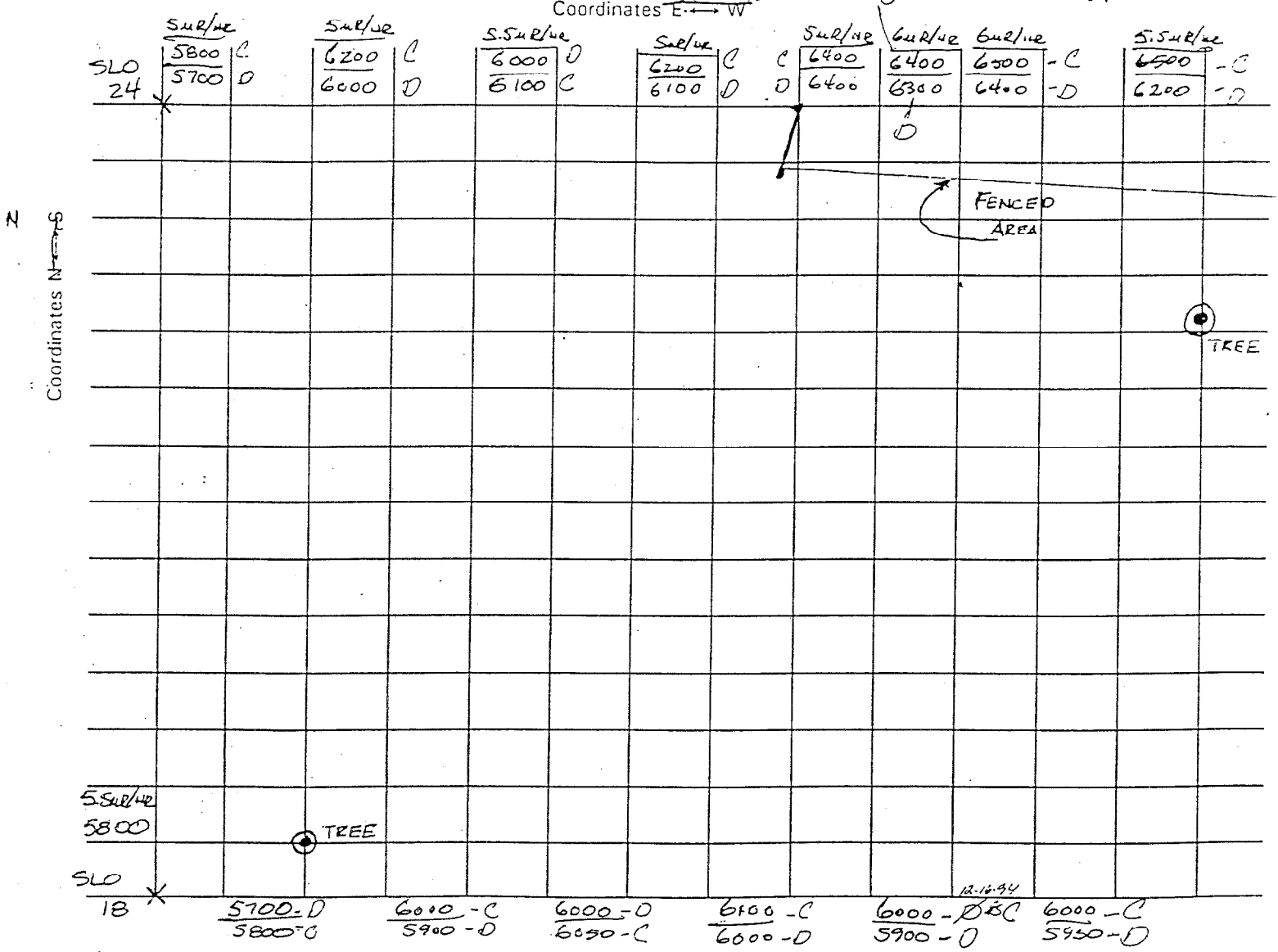
Conversion: N/A

Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

1/12/95

Coordinates ~~E ⟷ W~~ W E WM 04NOV94




Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID #28 (PAGE 2 of 2)

Date: 04 NOV 94

Technician: SHAESE / J. SHOWERS
WCMAY / G. SHOWERS

Scaler: LUDLUM 2221/M 19

Detector: 4410

04 NOV 94 97830
S/N: ~~99830~~ /157 - C
99136 /165 - D
95487 /M-19

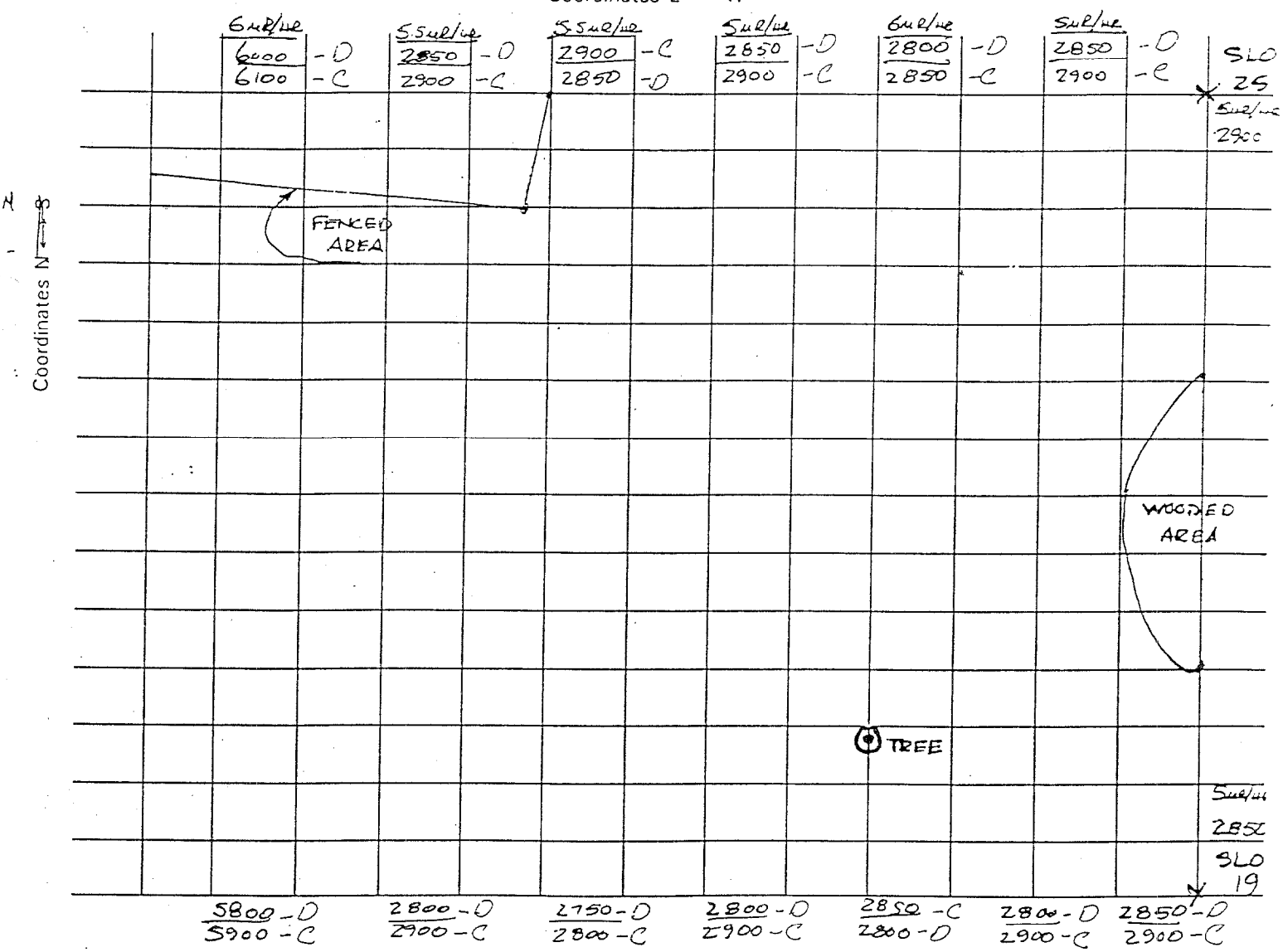
Conversion: N/A

Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH

DJH 1/12/95

Coordinates ~~E → W~~ W E wcmn / 04 NOV 94




marks:

* NOTE - NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID #27 (PAGE 1 of 2) Date: 04 NOV 94 Technician: S.HAESE / J. SHOWERS
W.C.MAY / G.SHOWERS

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: 99136 / 165-D
04 NOV 94 95407 / M19
~~99830~~ 97830 / 157-C

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E ⟷ W~~ W to E 04 NOV 94

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLO 23 | 5uR/HR 2750 | -D 2800 | -C | 6uR/HR ~~2800~~ 2750 | -C -D | 5uR/HR 2800 2750 | -C -D | 5uR/HR 2700 2800 | -D -C | 5uR/HR 2750 2700 | -C -D | 6uR/HR 2700 2800 | -D -C | 6uR/HR 2800 2750 | -C -D |
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| | | | | | | | | | | | | | | SAMPLE AREA |
| 5uR/HR 2750 | | | | GROUNDWATER MONITORING WELL | | | | GROUNDWATER MONITORING WELL | | | | | | |
| SLO 17 | | | | | | | | | | | | | | |
| | 2700 2750 | -D -C | | 2750 2700 | -C -D | 2800 2850 | -D -C | 2700 2800 | -D -C | 2850 2750 | -C -D | 2750 2750 | -D -C | |

Coordinates N ⟷ S

narks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECTS AVERAGE BACKGROUNDS ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID #27 (PAGE 2 of 2) Date: 04 NOV 94 Technician: S. HAESE / J. SHOWERS
W. CMAY / G SHOWERS

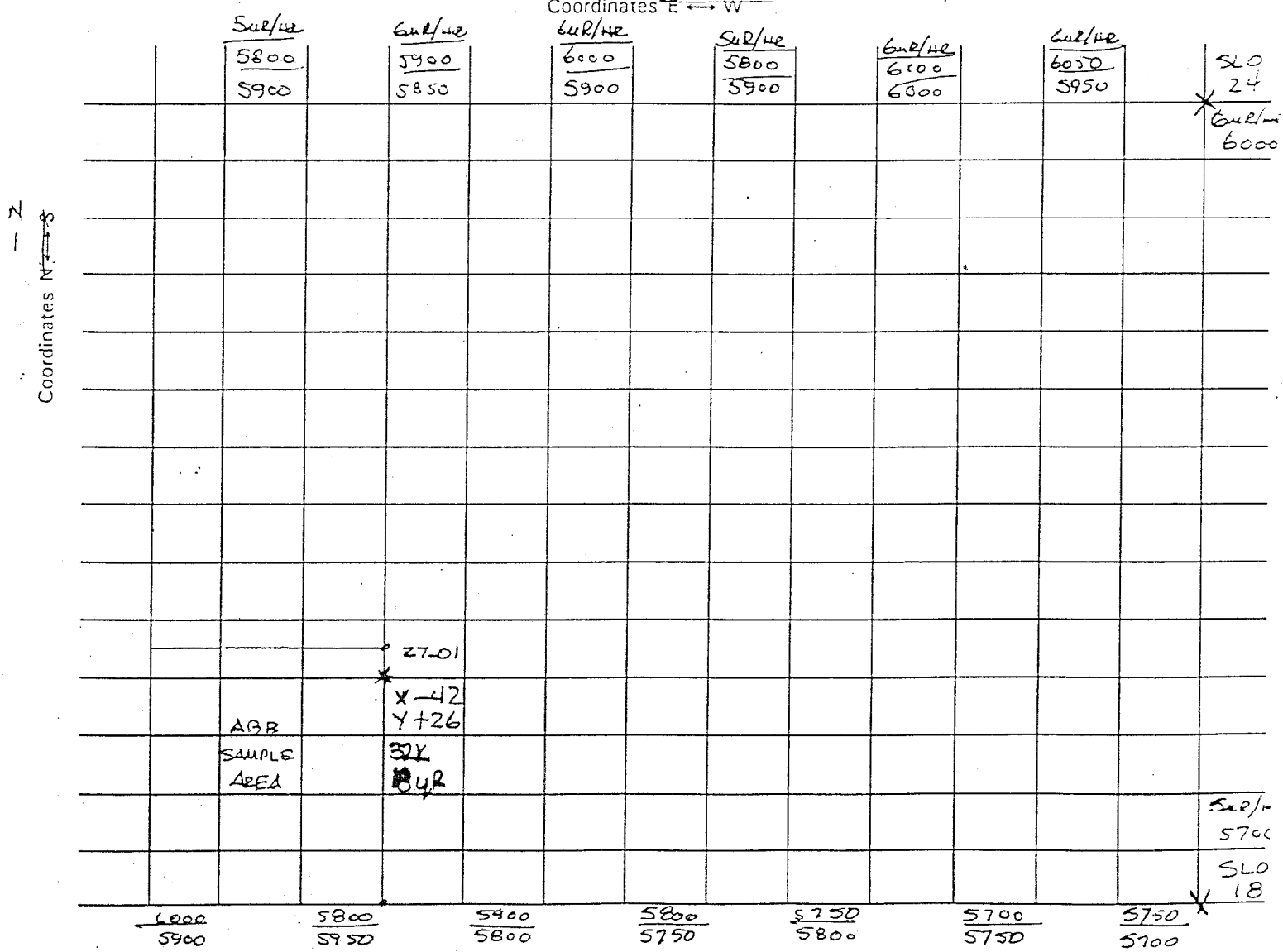
Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: 99136 / 165-D
97830 ~~99030~~ / 157-C
95487 / M19
04NOV94

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH

DWH 1/12/95

Coordinates ~~E ⟷ W~~ W-E was 04NOV94




Remarks: * NOTE! HOT SPOT 27-01 LUD 97830/157 – 30,000 C.P.M / 25uR/HR
LUD 99136/165 – 23,200 C.P.M / 18uR/HR

* NOTE! NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

# WALKOVER GAMMA SCAN DATA SHEET

GRID #26 (PAGE 1 of 2) Date: 07 NOV 94 Technician: S.HAESE / G.SHOWERS / W.C.MAY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: ~~99830~~ 97830 / 157 - C 99136 / 165 - D * 95487 / M19

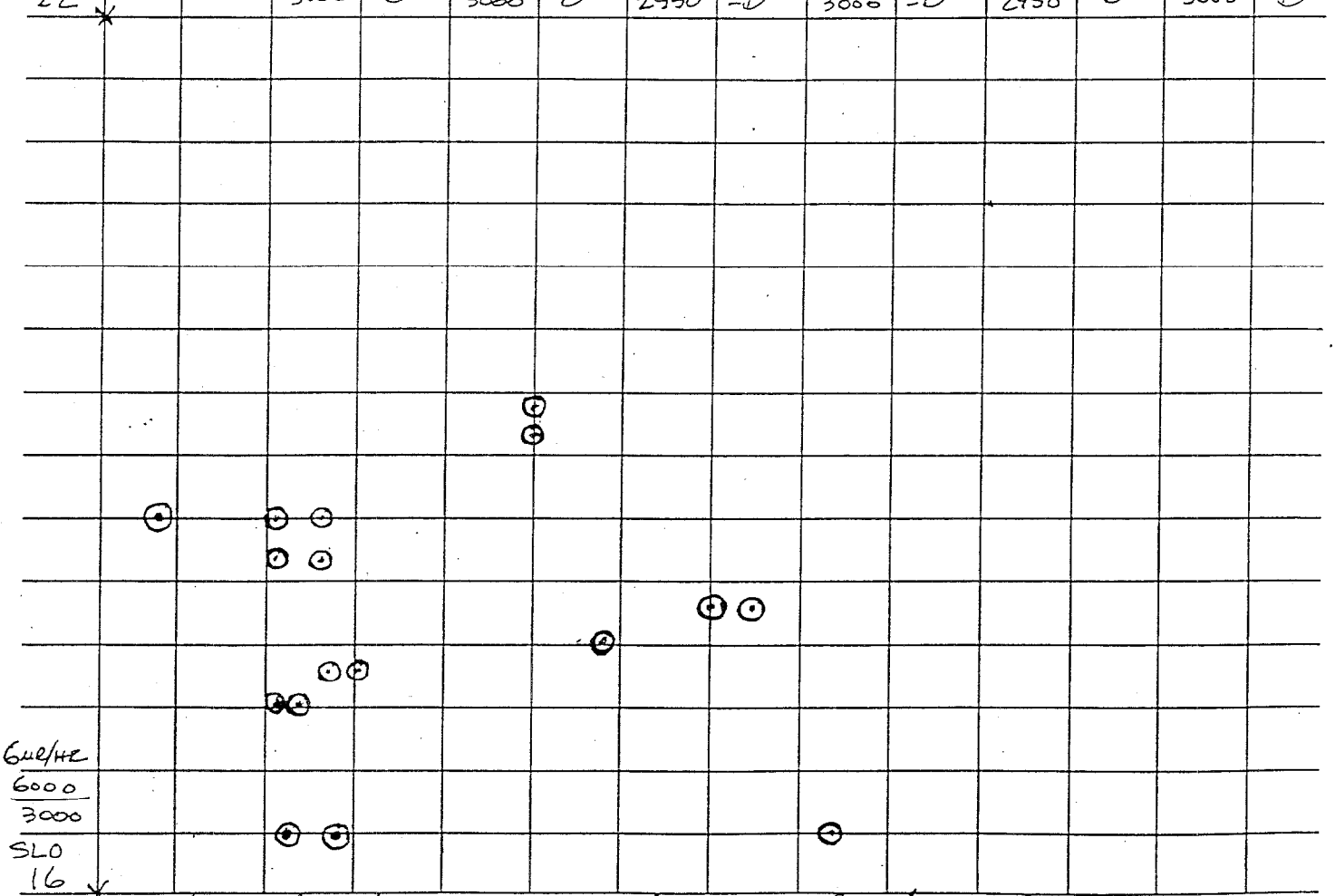
Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E ⟷ W~~ W-E WCM / 07NOV94

| | 5.5 µR/HR | | 6 µR/HR | | 5 µR/HR | | 6 µR/HR | | 5.5 µR/HR | | 5.5 µR/HR | | 6 µR/HR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLO 22 | 6300 / 3150 | -C / -D | 6300 / 3100 | -C / -D | 6300 / 3000 | -C / -D | 6250 / 2950 | -C / -D | 6200 / 3000 | -C / -D | 6300 / 2950 | -C / -D | 6300 / 3000 | -C / -D |

Coordinates N ⟷ S



| | 6 µR/HR | | 6 µR/HR | | 6 µR/HR | | 6 µR/HR | | 6 µR/HR | | 6 µR/HR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLO 16 | 6000 / 3000 | | 6000 / 2950 | -C / -D | 6100 / 3000 | -C / -D | 6000 / 2900 | -C / -D | 5950 / 2900 | -C / -D | 6000 / 3000 | -C / -D |
| | | | | | | | | | | | 6000 / 3050 | -C / -D |

marks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECTS AVERAGE BACKGROUNDS ON GRID

µR/HR
LUD 2221 S/N 97830
LUD 2221 S/N 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #26 (PAGE 2 of 2) Date: 07 NOV 94 Technician: S. HAESE / G. SHOWERS / W.C. MAY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: 07NOV94 97830 ~~99830~~ / 157 -C
99136 / 165 -D
95487 / M19

Conversion: N/A Bkg: N/A

11/12/95

EACH SQUARE = 6' WIDE x 10' HIGH

Coordinates ~~E → W~~ W E 07NOV94

Coordinates N → S

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.5uR/HR 6200 / 3000 -C -D | | 5uR/HR 6250 / 3000 -C -D | | 5.5uR/HR 6300 / 2950 -C -D | | 6uR/HR 6200 / 3000 -C -D | | 5.5uR/HR 6300 / 2950 -C -D | | 6uR/HR 6200 / 3000 -C -D | SLO 23 |
| | | | | | | | | | | | | | 6uR/HR 6200 / 3000 |
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| | | | | | | | | | | | | | 6uR/HR 6000 / 3000 |
| | | | | | | | | | | | | | SLO 17 |
| | 6000 -C / 2900 -D | | 6300 -C / 3000 -D | | 5900 -C / 2900 -D | | 6100 -C / 3050 -D | | 6000 -C / 3100 -D | | 5900 -C / 2950 -D | | 6000 -C / 3000 -D |

marks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

uR/HR
LUD 2221 S/N 99830
LUD 2221 S/N 99136

# WALKOVER GAMMA SCAN DATA SHEET

Grid #25 (Page 1 of 2)

Date: 07 Nov 94

Technician: SHAESE / G. SHOWERS
07NOV94 W.C. MAY

Scaler: Ludlum 2221 M19

Detector: 4410

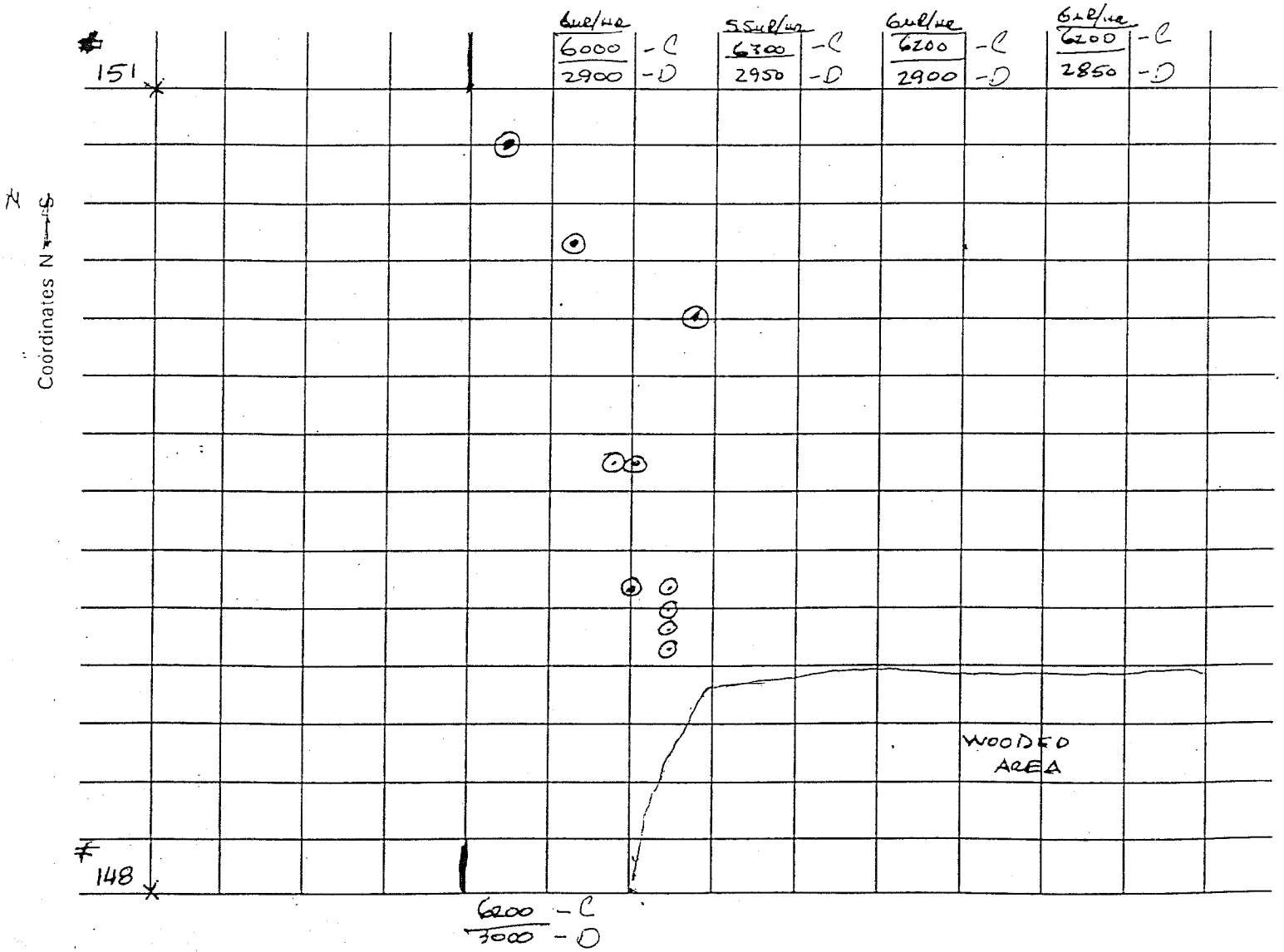
S/N: ~~99830~~ 97830 / 157 - C
99136 / 165 - D
M19 / 95487

Conversion: N/A

Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH

Coordinates ~~E ⟷ W~~ N E WCM 07NOV94




Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

uR/HR
LUD 2221 S/N 99830
LUD 2221 S/N 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #25 (PAGE 26 of 2) Date: 07 NOV 94 Technician: S. HAESE / G. SHOWERS

07 NOV 94 W.C. MAY

Scaler: LUDLUM 2221 MIS Detector: 4416 S/N: ~~99830~~ 97830 / 157 - C

99136 / 165 - D

95487 / MIS

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Dobl 1/12/95

Coordinates ~~E-W~~ W E WCM 07 NOV 94

N S Coordinates-N

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6uR/HR 6000 / 2900 | -C -D | 5.5uR/HR 6200 / 3000 | -C -D | 6uR/HR 6100 / 2950 | -C -D | 5.5uR/HR 6600 / 2950 | -C -D | 6uR/HR 6200 / 3000 | -C -D | 5.5uR/HR 6100 / 2900 | -C -D | SLO |
| | | | | | | | | | | | | | | 5.5uR/ 6100 / 3000 |
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| | | | WOODED AREA | | | | | | | | | | | 5.5uR/ 6100 / 3000 |
| | | | | | | | | | | | | | | SLO |
| | | | | | | | | 6100 -C / 2900 -D | | 6000 -C / 3000 -D | | 6100 -C / 3000 -D | | |

Remarks:

*-NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

MR/HR

LUD 2221 99830-S/N

LUD 2221 99136-S/N

# WALKOVER GAMMA SCAN DATA SHEET

GRID #33 (PAGE 1 of 2) Date: 07 NOV 94 Technician: J. SHOWERS, G. SHOWERS, C. MAY

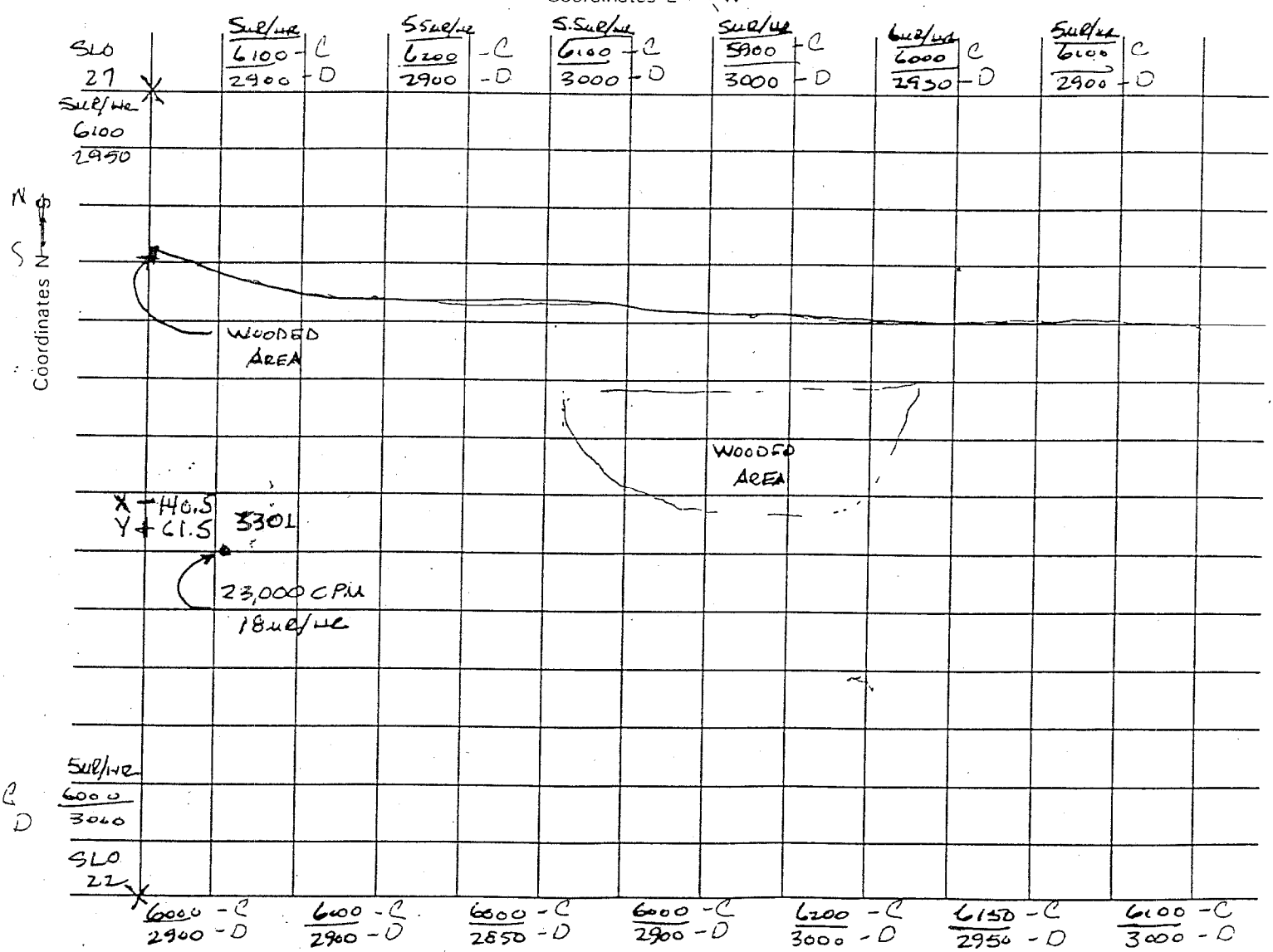
Scaler: LUDLUM 2221 M19 Detector: 4410 07NOV94 S/N: 99136 / 165 - D; ~~99830~~ 97830 / 157 - C; 95487 / M19

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE x 10' High

DRL 1/12/95

Coordinates ~~E W~~ W E WON 07NOV94




marks: NOTE: HOT SPOT 33-01 99830 - LUDLUM 2221 W/PROBE 157

23,000 CPM / 18uR/HR - LUDLUM 95487 - M19

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

uR/HR

LUD 2221 S/N 99830

# WALKOVER GAMMA SCAN DATA SHEET

GRID #33 (Page 2 of 2) Date: 07 NOV 94 Technician: J. SHOWERS / G. SHOWERS W.C.M.AY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: 99136 / 165 - D

~~99830~~ 97830 / 157 - C

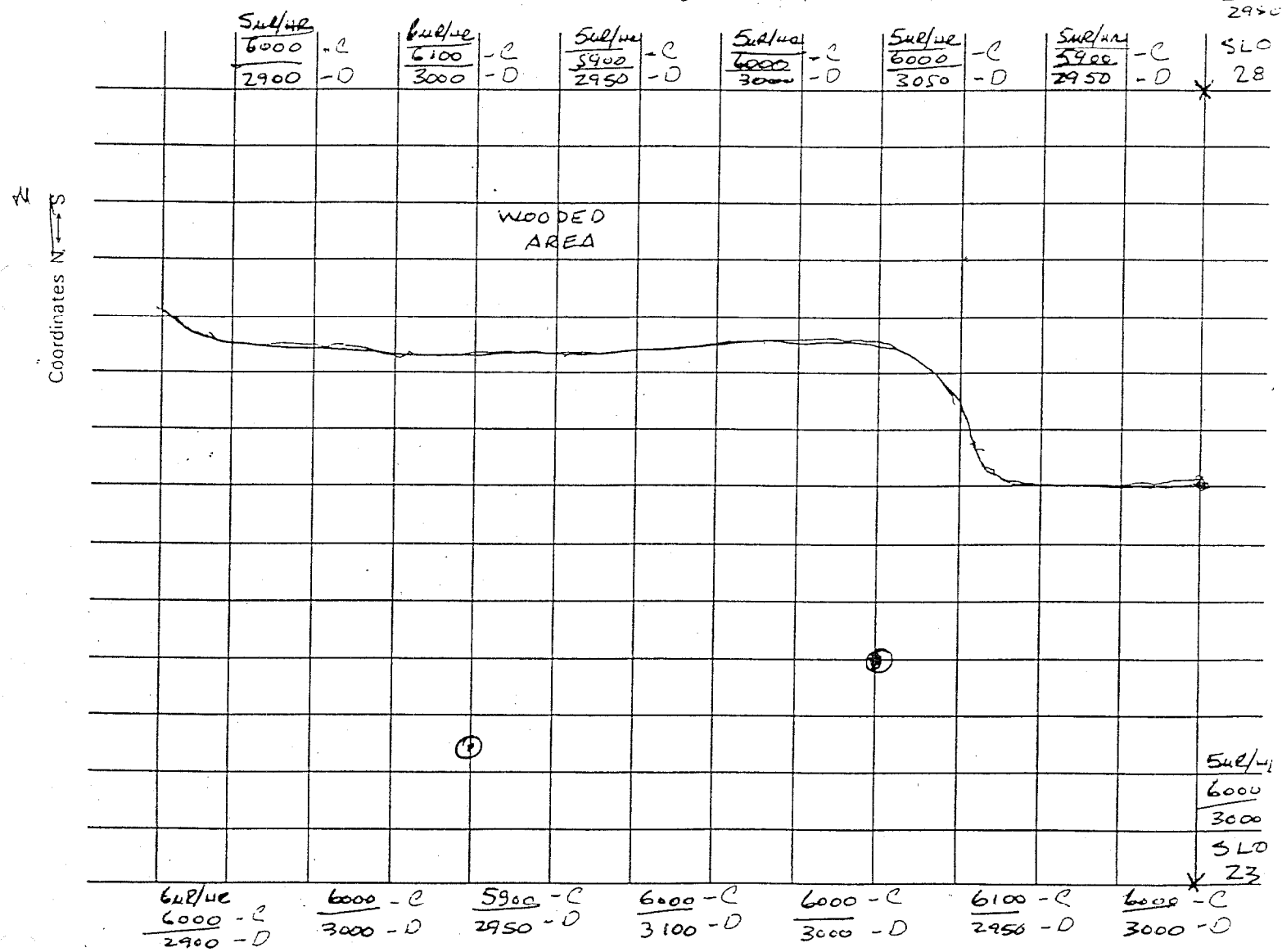
07NOV94 95467 / M19

Conversion: N / A Bkg: N / A

EACH SQUARE = 6' WIDE x 10' HIGH

1/12/93

Coordinates ~~E W~~ NW E WCM 07NOV94




marks:

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

uR/HR

LUD 2221 S/N 99830

LUD 2221 S/N 99136

# WALKOVER GAMMA SCAN DATA SHEET

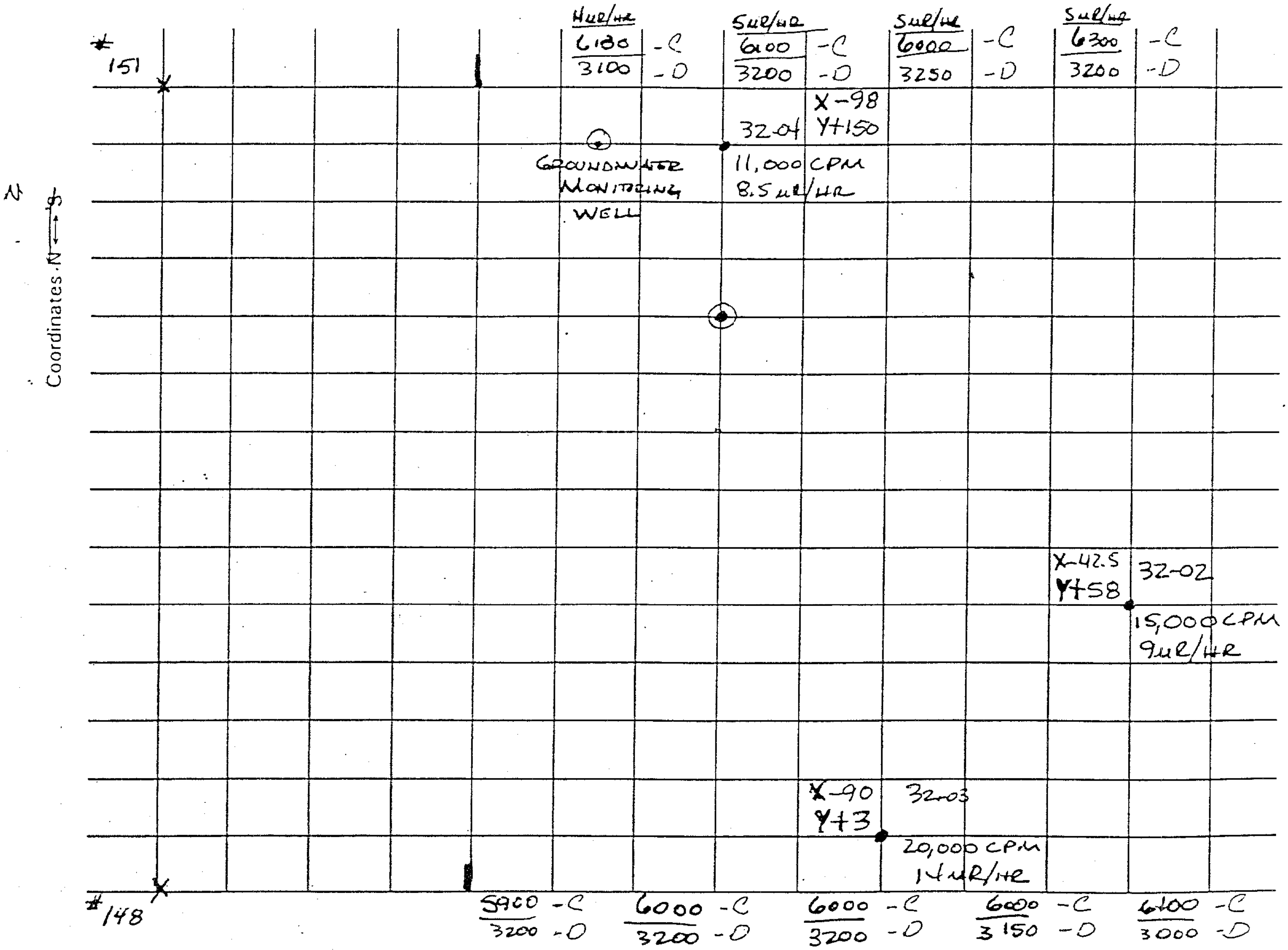
GRID #32 (Page 1 of 2) Date: 07 NOV 94 Technician: J.SHOWERS / G.SHOWERS, W.GRAY

Scaler: LUDLUM 2221, M19 Detector: 4410 S/N: ~~99830~~ 97830 / 157 - C (07NOV94), 99136 / 165 - D, M19 / 95487

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E ⟷ W~~ W E (WGM 07NOV94)




WGH 1/12/95

Remarks: NOTE: HOT SPOTS 32-02, 32-03, 3204 WITH LUDLUM 2221 - 99830 PROBE 157

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

* μR/HR

LUDLUM 2221 - 99830

LUDLUM 2221 - 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID # 32 (PAGE 2 of 2) Date: 07 NOV 94 Technician: J. SHOWERS / G SHOWERS WC MAY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: 07NOV94 97830 ~~99830~~ /157 - C 99136 /165 - D M19 /95487

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH

1/12/95

Coordinates ~~E ⟷ W~~ W E NON 07NOV94

| | 5uR/HR | | 5uR/HR | | 4.5uR/HR | | 5uR/HR | | 5uR/HR | | 5uR/HR | | 5uR/HR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6100 | - C | 6300 | - C | 6000 | - C | 6400 | - C | 6500 | - C | 6300 | - C | 6000 | - C |
| | 3200 | - D | 3200 | - D | 3250 | - D | 3400 | - D | 3200 | - D | 3200 | - D | 3100 | - D |

SLO 27

Coordinates N ⟷ S

WOODED AREA

X -13
Y +101

32-01

22,000 CPM
15uR/HR

| | | | | | |
|---|---|---|---|---|---|
| 5900 - C | 6000 - C | 6100 - C | 6200 - C | 6000 - C | 6200 - C |
| 3200 - D | 3100 - D | 3000 - D | 2950 - D | 3000 - D | 3100 - D |

Remarks: NOTE: HOT SPOTS 32-01 WITH LUDLUM 2241 99830 PROBE 157

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

* uR/HR
LUDLUM 2221-99830
LUDLUM 2221-99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID # 19 (Page 1 of 2)

Date: 08 NOV 94

Technician: S. HAESE / G. SHOWERS

08 NOV 94 9783 W.C. MAY

Scaler: LUDLUM 2221 M19

Detector: 4410

S/N: ~~99830~~/157 - C
99136/165 - D
95487/M19

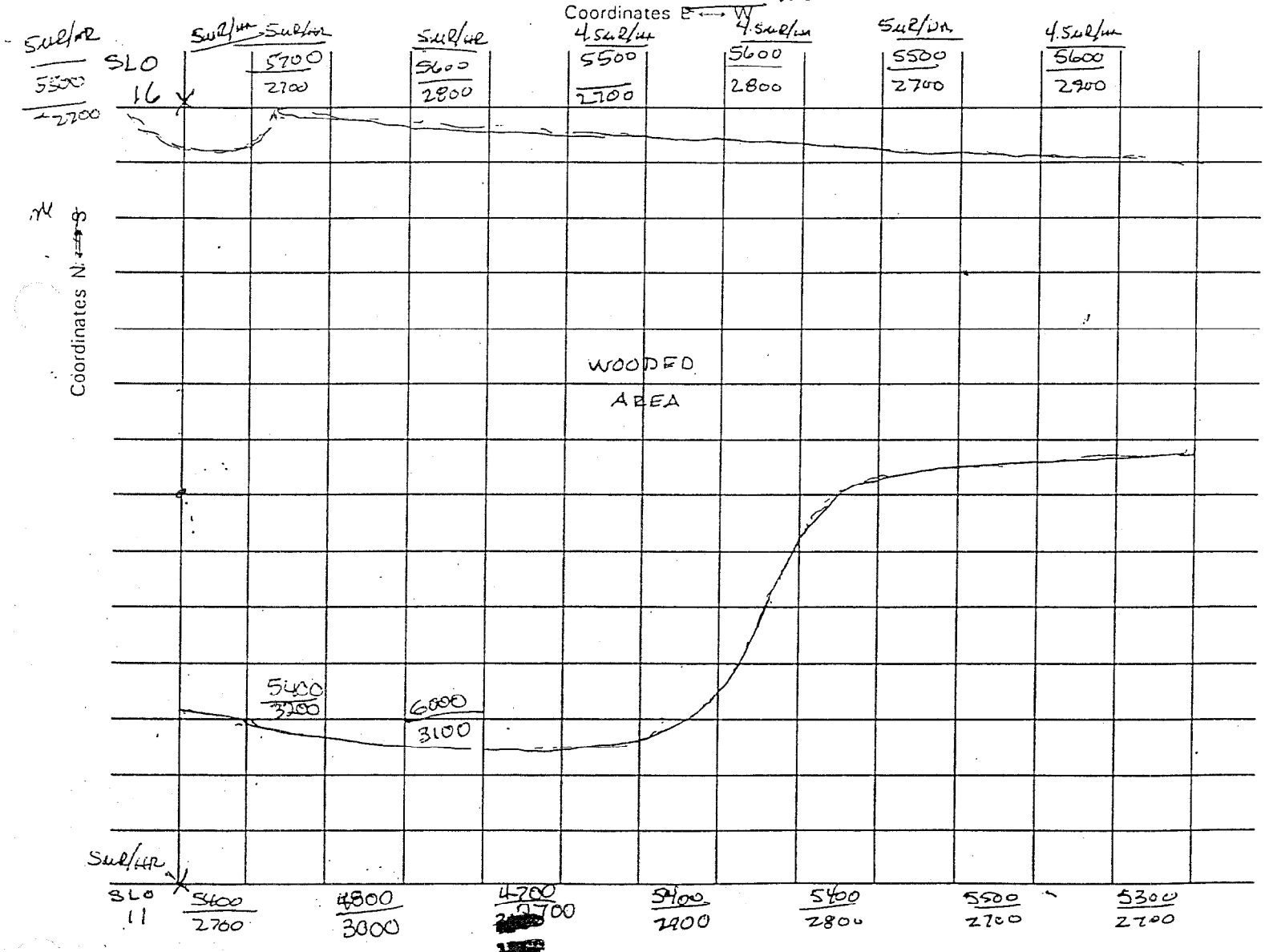
Conversion: N/A

Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

W - E W cm 08 NOV 94

Coordinates E ⟷ W




marks:

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR
LUD 2221 99830
LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #19 (Page 2 of 2) Date: 08 NOV 94 Technician: S. HAESE / G. SHOWERS

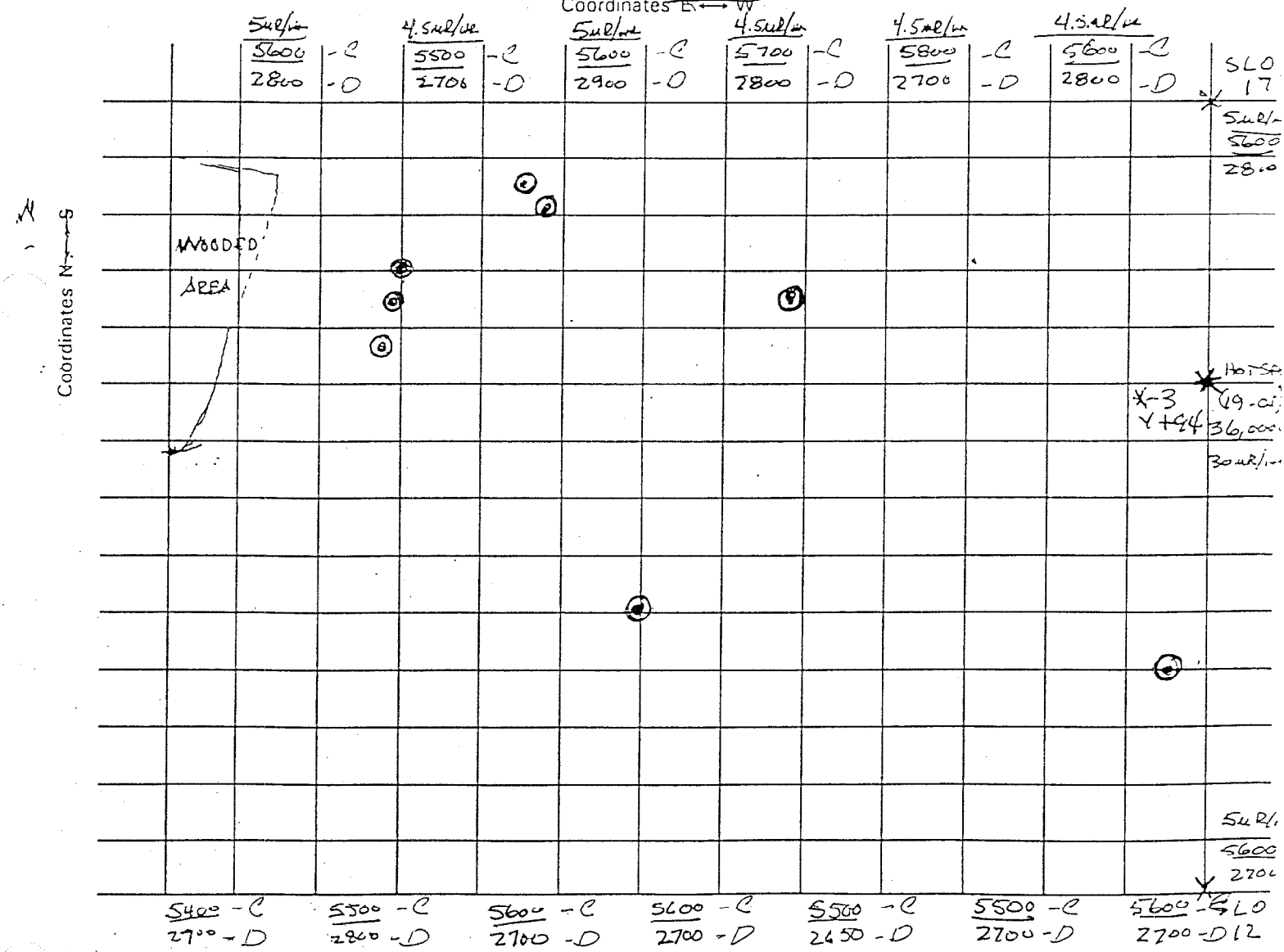
Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: ~~99830~~ 97830 W.C. MAY / 157 -C
@8NOV94 99136 / 165 -D
95487 / M19

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

1/12/95

Coordinates ~~E ⟷ W~~ W E WCM @8NOV94




Remarks: NOTE: HOTSPOT 19-01 36,000 CPM ON LVD 2221 99830 30 uR/HR W LVD M19 95487

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR
LVD 2221 99830
LVD 2221 99136

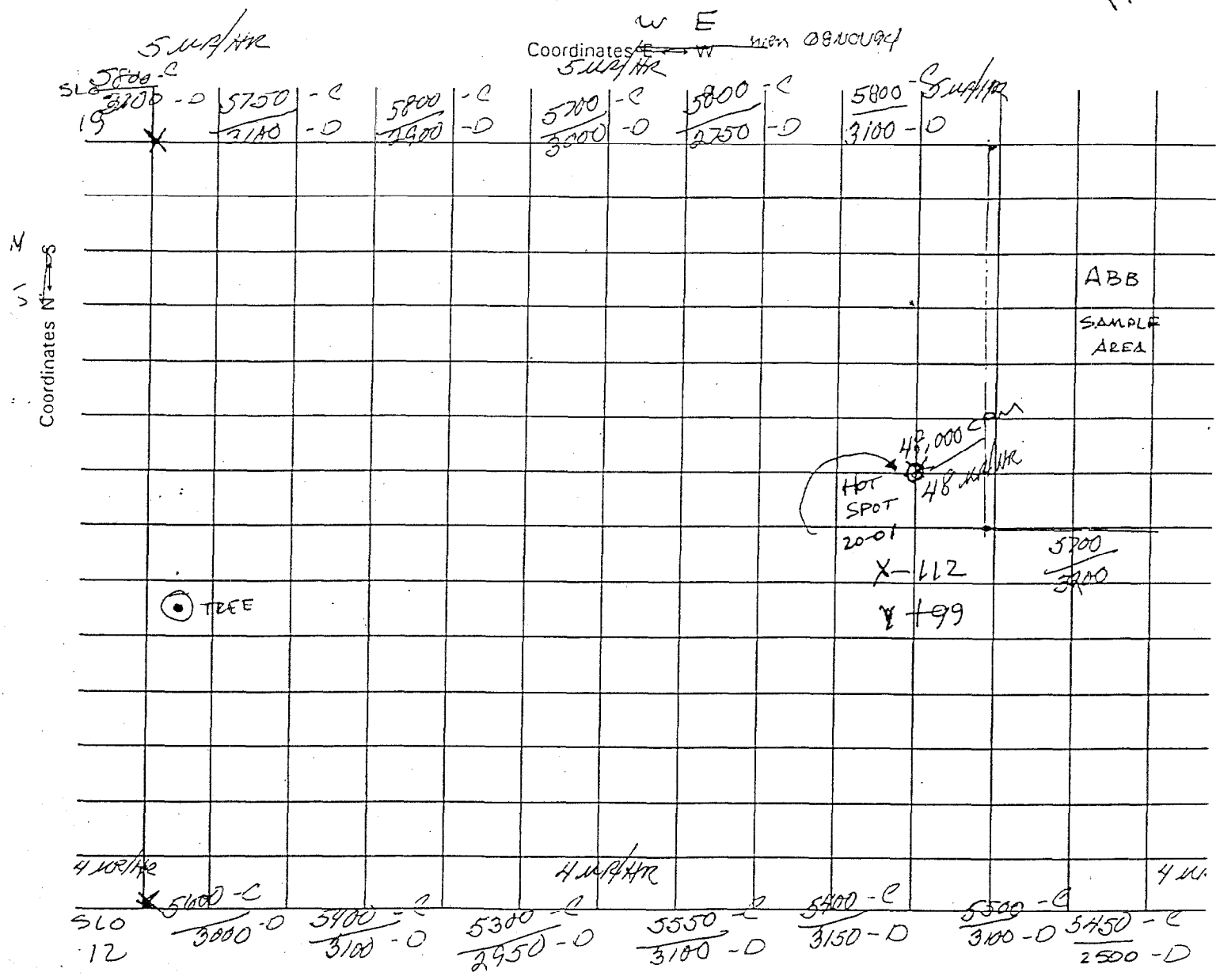
# WALKOVER GAMMA SCAN DATA SHEET

Grid #20 (Page 1 of 2) Date: 08 NOV 94 Technician: J. SHOWERS / G. SHOWERS S. HAESE / WC MAY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: ~~99830~~ 97830 /157 - C 08NOV94 99136 /165 - D 95487 / M19

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE x 10' HIGH




Remarks:

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

μR/HR

LUD 2221 99830

LUD 2221 99136

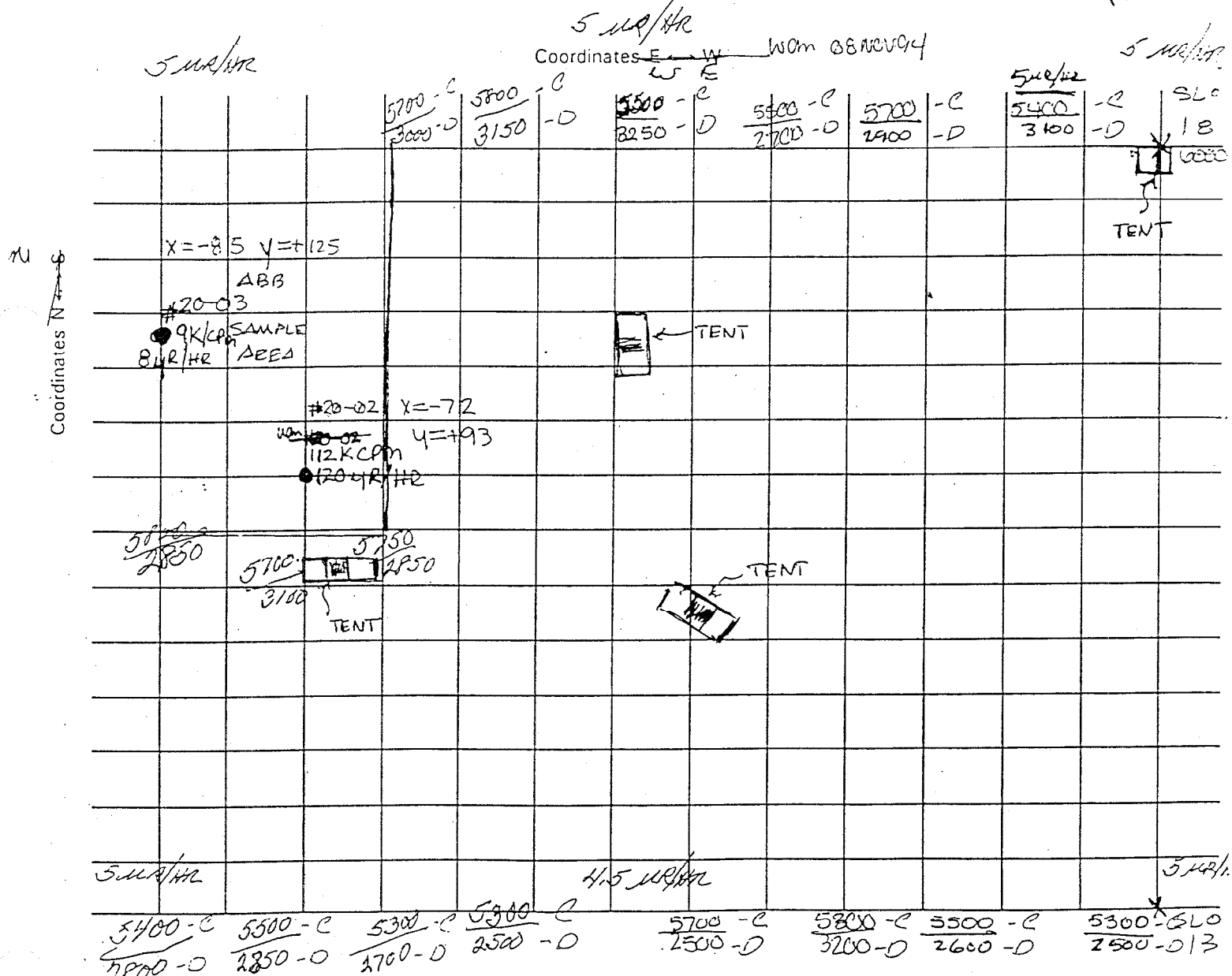
# WALKOVER GAMMA SCAN DATA SHEET

Grid #20 (Page 2 of 2) Date: 08 NOV 94 Technician: J. SHOWERS / G. SHOWERS S. HAGGE / W. CMAN

Scaler: Ludlum 2221 M19 Detector: 4410 S/N: ~~99530~~ / 157 - C; 99136 / 165 - D; 95467 / M19; 08NOV94 97830

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE x 10' WIDE




Remarks:

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR

LUD 2221 99830

LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

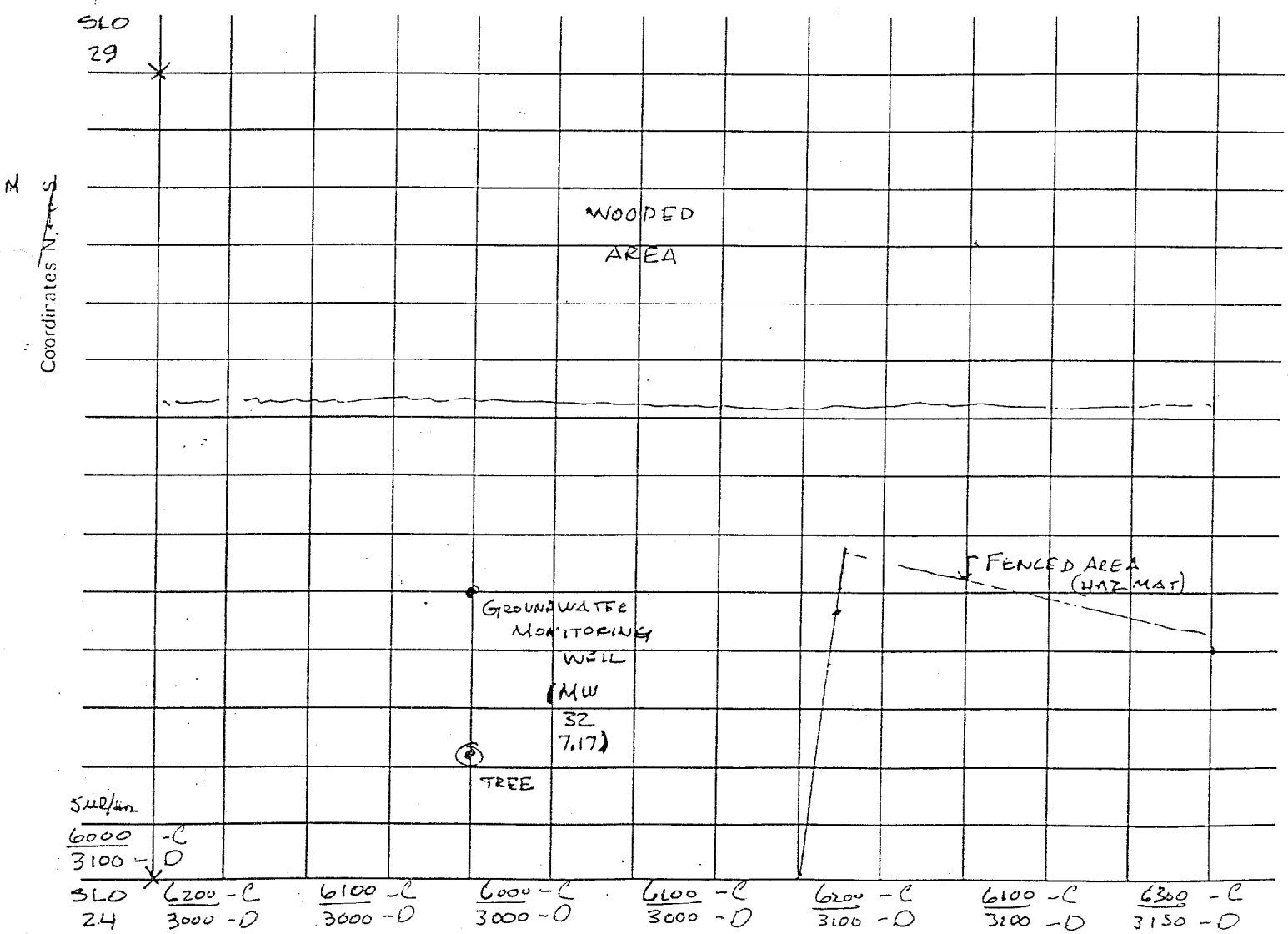
GRID # 35 (Page 1 of 2) Date: 08 NOV 94 Technician: S.HAESE / G.SHOWERS W.C.MAY

Scaler: LUDLUM 2221 M19 Detector: 4410 S/N: ~~99830~~ 97830 / 157 - C; 99136 / 165 - D; 95487 / M19

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E - W~~ W E from 08NOV94




Remarks:

- NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

μR/HR
LUD 2221 S/N 97830
LUD 2221 S/N 99136

# WALKOVER GAMMA SCAN DATA SHEET

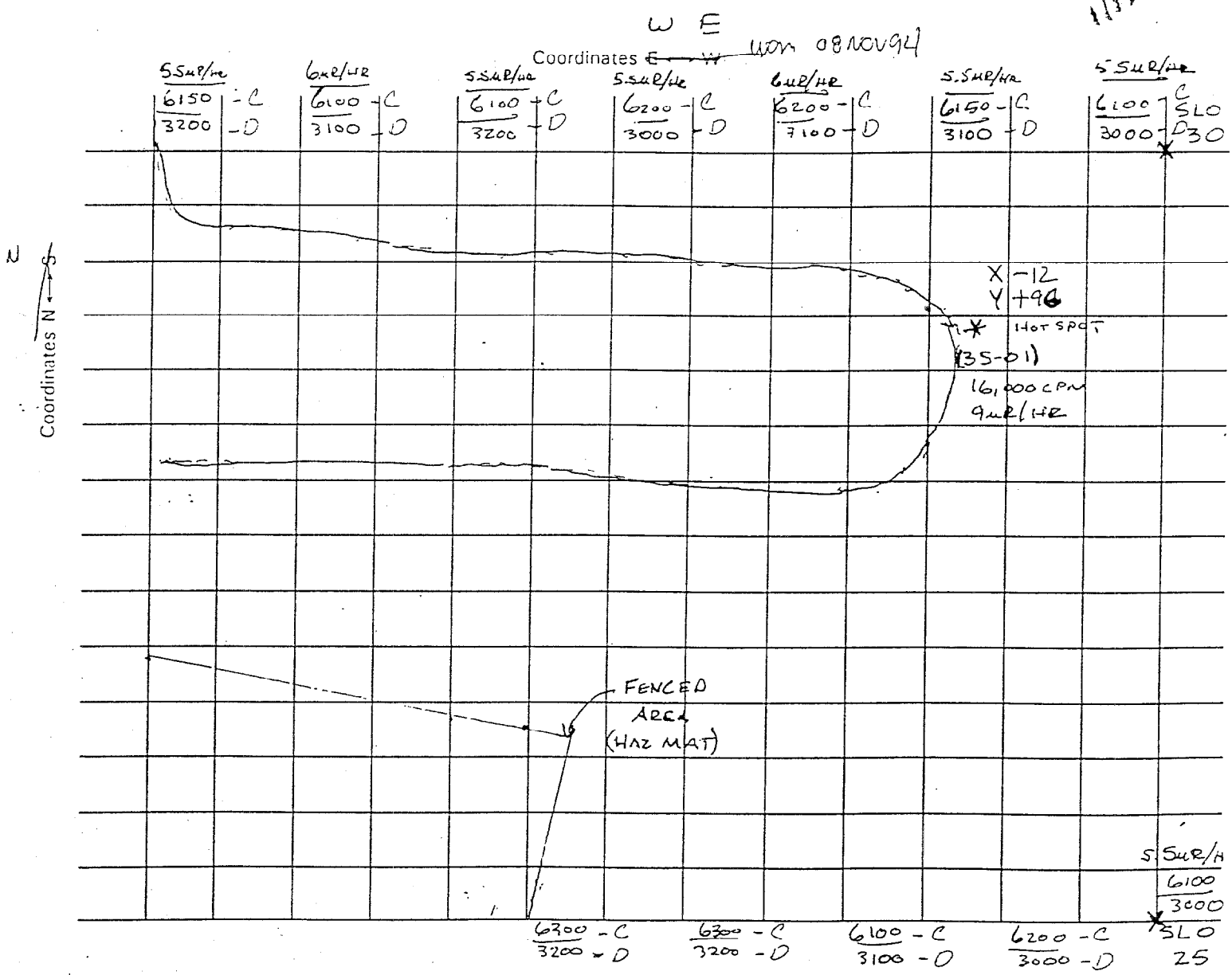
GRID #35 (Page 20 of 2) Date: 08 NOV 94 Technician: S.HAESE / G.SHOWERS W.C MAY

Scaler: LUDLUM 2221 Detector: 4410 S/N: 08NOV94 97830 ~~99830~~ / 157 - C
99136 / 165 - D
95487 / M19

Conversion: N/A (M19) Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

DWR 1/12/95




Remarks: NOTE: HOT SPOT (35-01) 16,000 CPM LUD 2221 97830/157 - M19 9uR/HR

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON G210

uR/HR
LUD 2221 S/N 97830
LUD 2221 S/N 99136

FIELD DATA ACQUISITION FORM

PAGE 21

# WALKOVER GAMMA SCAN DATA SHEET

GRID #13 (Page 1 of 2) Date: 08 NOV 94

Technician: J. SHOWERS / G. SHOWERS S. HAESE

Scaler: LUDLUM 2221 M19

Detector: 44-10

S/N: 08NOV94 ~~99830~~ 97830 /157 - C
99136 /165 - D
95487 / M19

Conversion: N/A

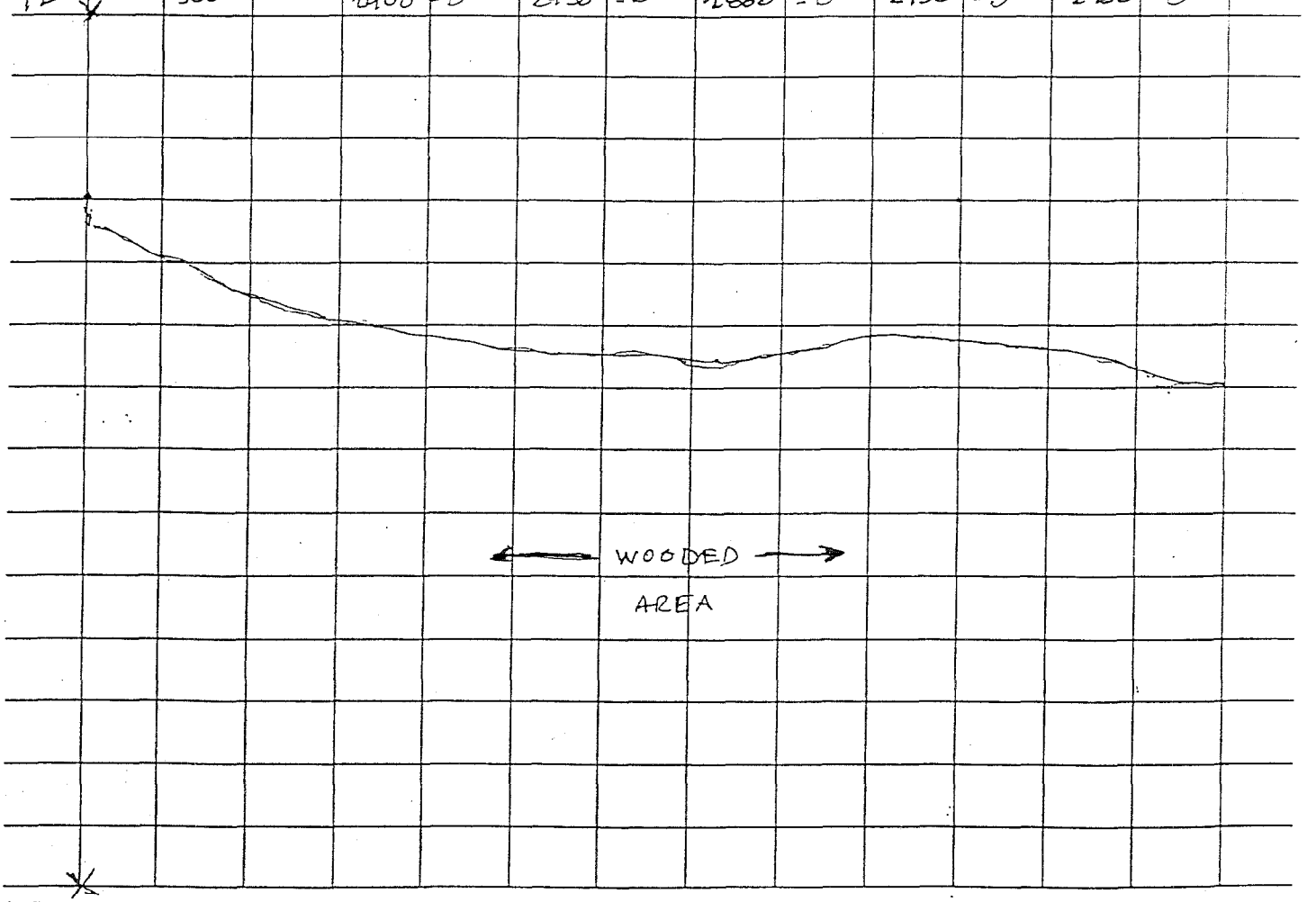
Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

1/12/95

Coordinates E ⟷ W

| | 4.5uR/HR | | 5uR/HR | | 4.5uR/HR | | 4.5uR/HR | | 5uR/HR | | 4.5uR/HR | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SLO 12 | 5600 | - C | 5400 | - C | 5500 | - C | 5400 | - C | 5400 | - C | 5400 | - C |
| | 3000 | - D | 2900 | - D | 2950 | - D | 2800 | - D | 2750 | - D | 2700 | - D |




Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR
LUD 2221 99830
LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #13 (Page 2 of 2) Date: 08 NOV 94 Technician: J. SHOWERS / G. SHOWERS

08NOV94 97830

Scaler: LUDLUM 2221 M19 Detector: 44-10 ~~S/N:~~ WM ~~99830~~/157 - C

99136/165 - D

95487/M19

Conversion: N / A Bkg: N / A

EACH SQUARE = 6' WIDE X 10' HIGH

DLA 1/12/95

Coordinates E ⟷ W

Coordinates N ⟷ S

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5500 / 2800 | 5 μR/HR - C / - D | 5400 / 2850 | - C / - D | 4 μR/HR 5300 / 2700 | - C / - D | 5 μR/HR 5400 / 2750 | - C / - D | 5 μR/HR 5400 / 2700 | - C / - D | 5 μR/HR 5300 / 2700 | - C / - D | 5 μR/HR 5400 / 2800 | - C SLC / - D 13 |

WOODED AREA

141

Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

μR/HR

LUD 2221 99830

LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

Grid # 14 (Page 1 of 2) Date: 08 NOV 94 Technician: J. SHOWERS / G. SHOWERS S. HAESE

Scaler: LUDLUM 2221 Detector: 4410

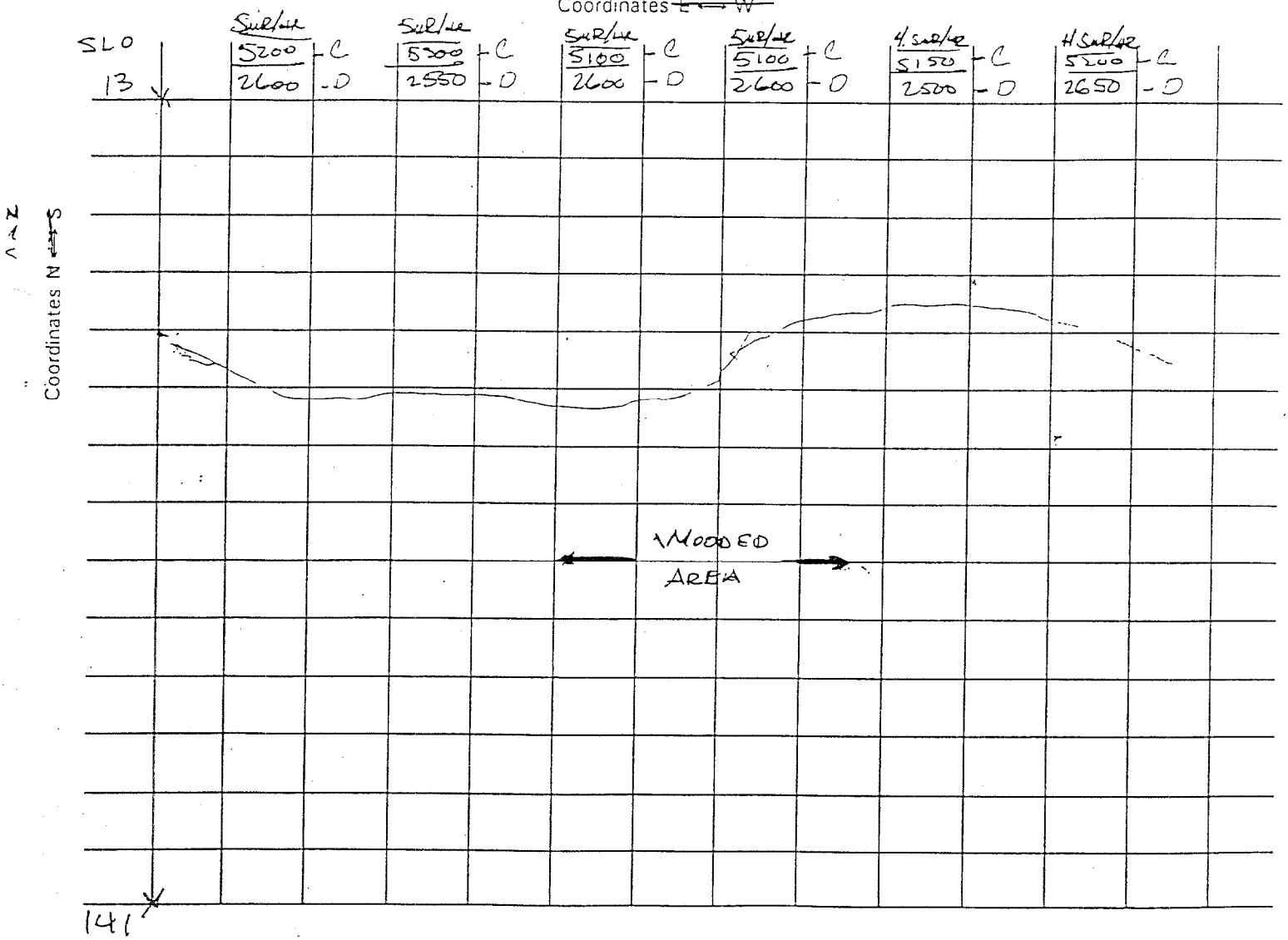
Conversion: N/A M19 Bkg: N/A

S/N: ~~99830~~ 97830 - /157 - C
08NOV94 99136 /165 - D
95487 /M19

EACH SQUARE = 6' WIDE X 10' HIGH

1/12/95

Coordinates ~~E ← W~~ W - E WEM 08NOV94




marks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR
LUD 2221 99830
LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #14 (PAGE 2 of 2)

Date: 08 NOV 94

Technician: S. HAESE / J. SHOWERS G. SHOWERS

Scaler: LUDLUM 2221 M19

Detector: 4410

S/N: ~~99830~~ 08NOV94 97830 / 157 - C
99136 / 165 - D
95487 / M19

Conversion: N / A

Bkg: N / A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E — W~~ W-E from 08 NOV 94

| | 5mR/hr | | 5mR/hr | | 4.5mR/hr | | 5mR/hr | | 5mR/hr | | 4.5mR/hr | | 5mR/hr | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5100 | C | 5200 | C | 5300 | C | 5200 | C | 5300 | C | 5250 | C | 5300 | C SLO |
| | 2600 | D | 2650 | D | 2600 | D | 2200 | D | 2650 | D | 2600 | D | 2600 | 14 |
| | | | | | | | | | | | | | D | |

Coordinates N ~~S~~ N

WOODED AREA

142

marks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUNDS ON GRID

MR/HR
LUD 2221 99830
LUD 2221-99136

# WALKOVER GAMMA SCAN DATA SHEET

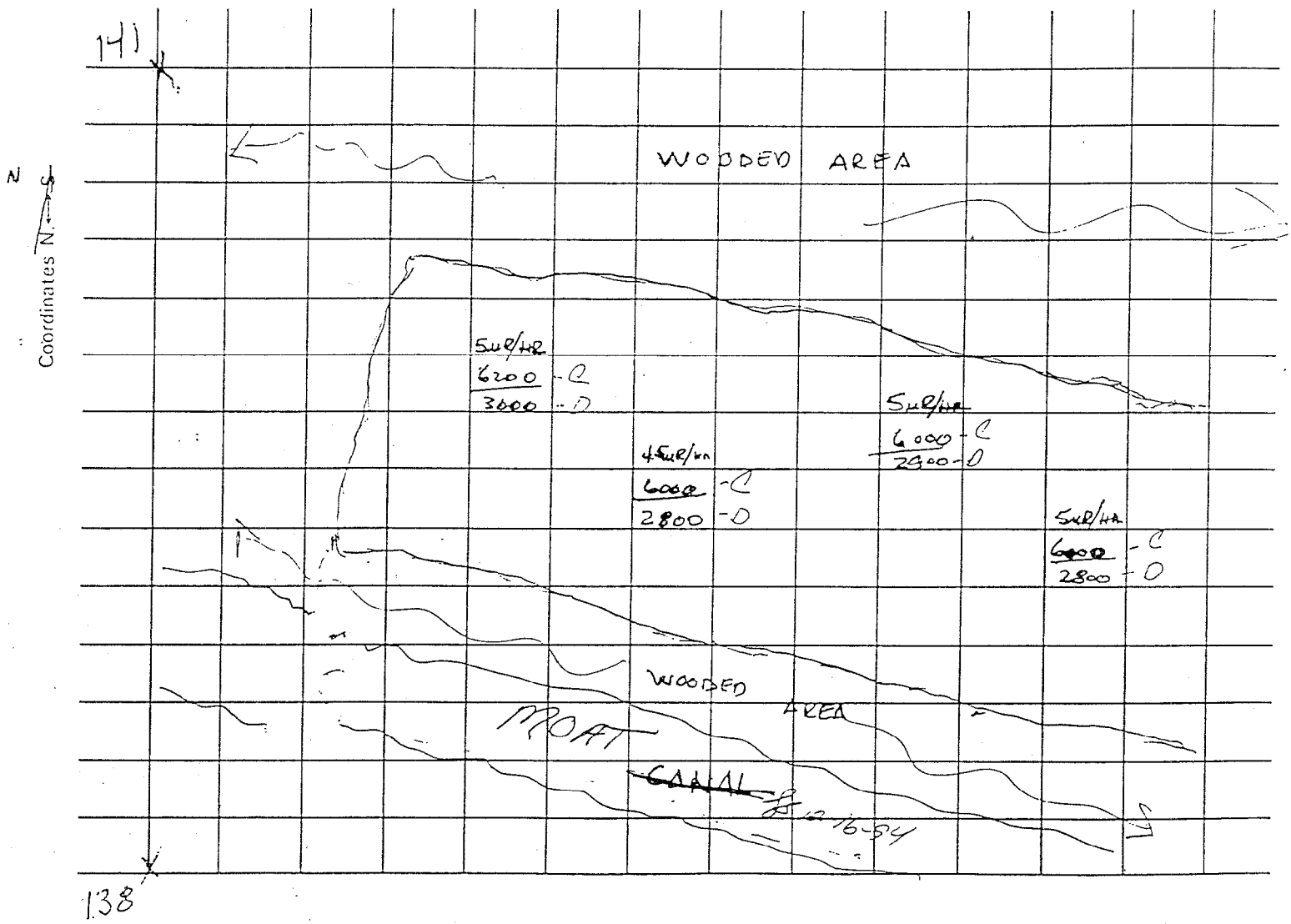
GRID # 11 (Page 1 of 2) Date: 08 NOV 94 Technician: J. SHOWERS / G. SHOWERS S. HAESE

Scaler: LUDLUM 2221 Detector: 4410 S/N: ~~99830~~ 97830 08NOV94 /157 - C; 99136 /165 - D; 95487 / M19

Conversion: N/A Bkg: N/A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E ⟷ W~~ W E NEW 08NOV94




Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR
LUD 2221 99830
LUD 2221 99136

# WALKOVER GAMMA SCAN DATA SHEET

GRID #11 (PAGE 2 OF 2)

Date: 08 NOV 94

Technician: J. SHOWERS / G. SHOWERS / S. HAESE

Scaler: LUDLUM 2221 M19

Detector: 4410

S/N: 97830 ~~99830~~ / 157 - C; 99136 / 165 - D; 95487 / M19

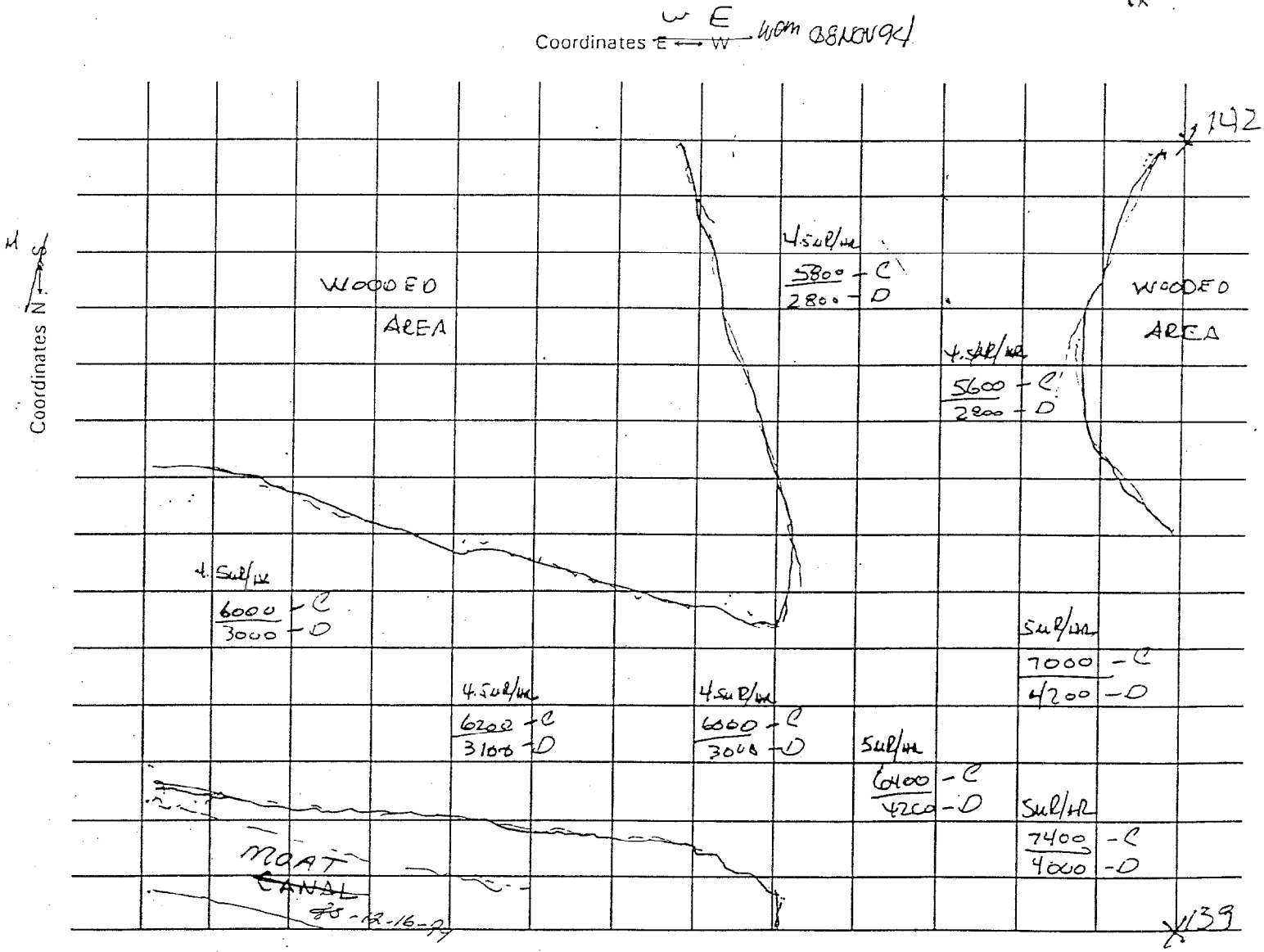
08NOV94 WDM

Conversion: N | A

Bkg: N | A

EACH SQUARE = 6' WIDE X 10' HIGH

Coordinates ~~E ⟷ W~~ W E WDM 08NOV94




Remarks:

* NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

uR/HR

LUD 2221 97830

LUD 2221 99136

Part I

# FIELD DATA ACQUISITION FORM
# WALKOVER GAMMA SCAN DATA SHEET



Grid # 29 · 08NOV94 Detector: 44-10 SEE BELOW * Technicians: STEVE HAESE

Scaler: LUDLUM 2221/M19 BKG N | A GEUSA SHOWERS

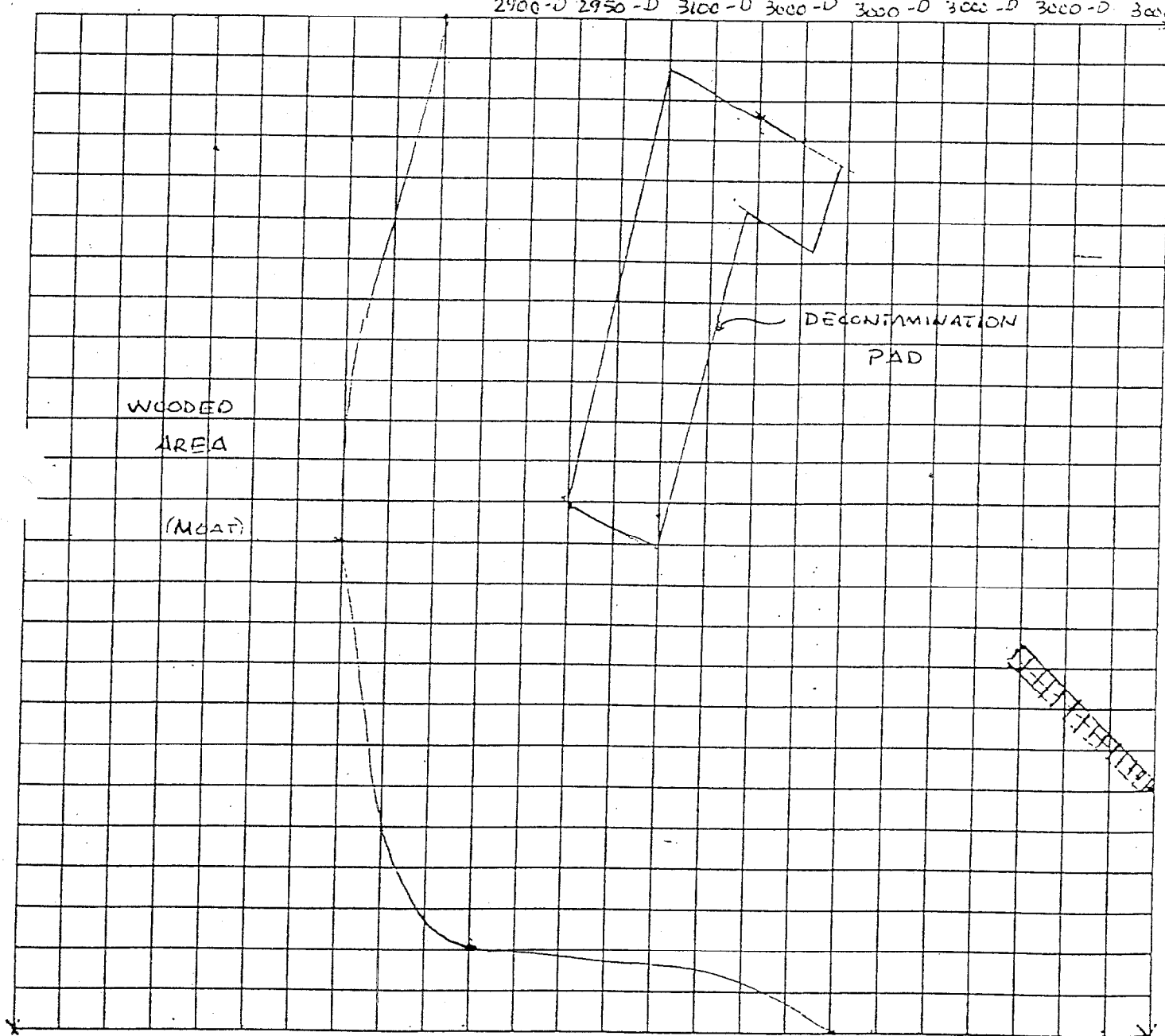
Conversion: N | A S/N: 99136/165-D ~~99830~~ 99830/157 - C * W. CARL MAY

95487- LUD 19

N E S

EACH SQUARE 6' X 6'

| 5uR/hr | 5uR/hr | 5uR/hr | 5uR/hr | 45uR/hr | 5uR/hr | 5uR/hr | 5uR/hr |
|---|---|---|---|---|---|---|---|
| 5700 - C | 5800 - C | 5700 - C | 5700 - C | 5700 - C | 6000 - C | 5700 - C | 6000 - C |
| 2900 - D | 2950 - D | 3100 - D | 3000 - D | 3000 - D | 3000 - D | 3000 - D | 3000 - D |




5uR/hr
5600
3000

Remarks NOTE: NUMBERS ON E-W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

= * uR/HR / LUD 2221 ~~99830~~ 97830 / LUD 2221 99136/165 - D

29NOV94

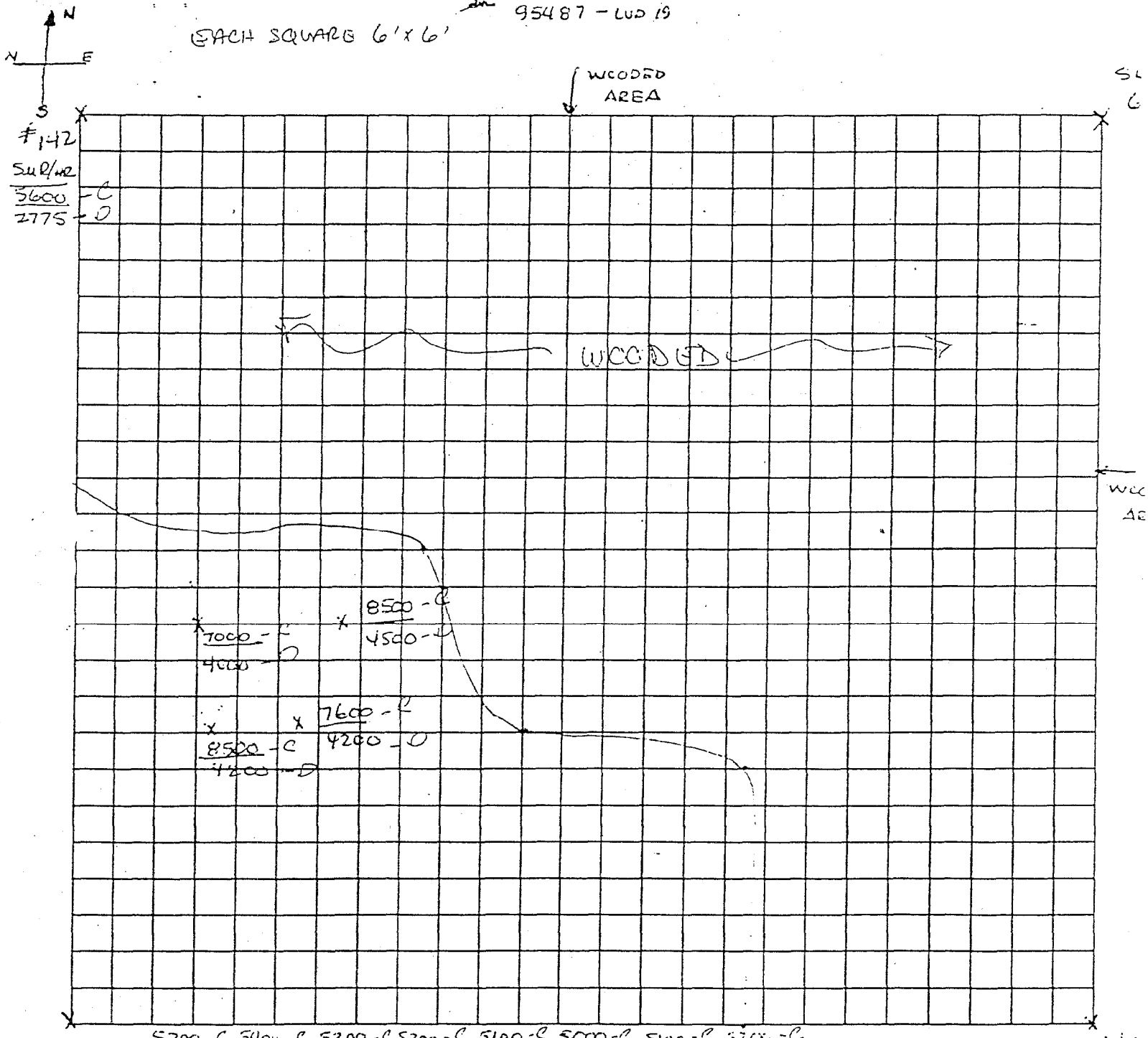
1/12/9

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



Grid # 12 09NOV94 Detector: 44-10 - See Below * Technicians: STEVE HAESE
Scaler: LUDLUM 2221/M19 BKG 09NOV94 97830 N/A GEUSA SHOWERS
Conversion: N/A S/N: ~~99830~~/157-C 99136/165-D * W.C. MAY
95487 - LUD 19

EACH SQUARE 6'x6'




Remarks NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

* uR/HR / LUD 2221 ~~99830~~ 97830 / LUD 2221 99136 /
09NOV94

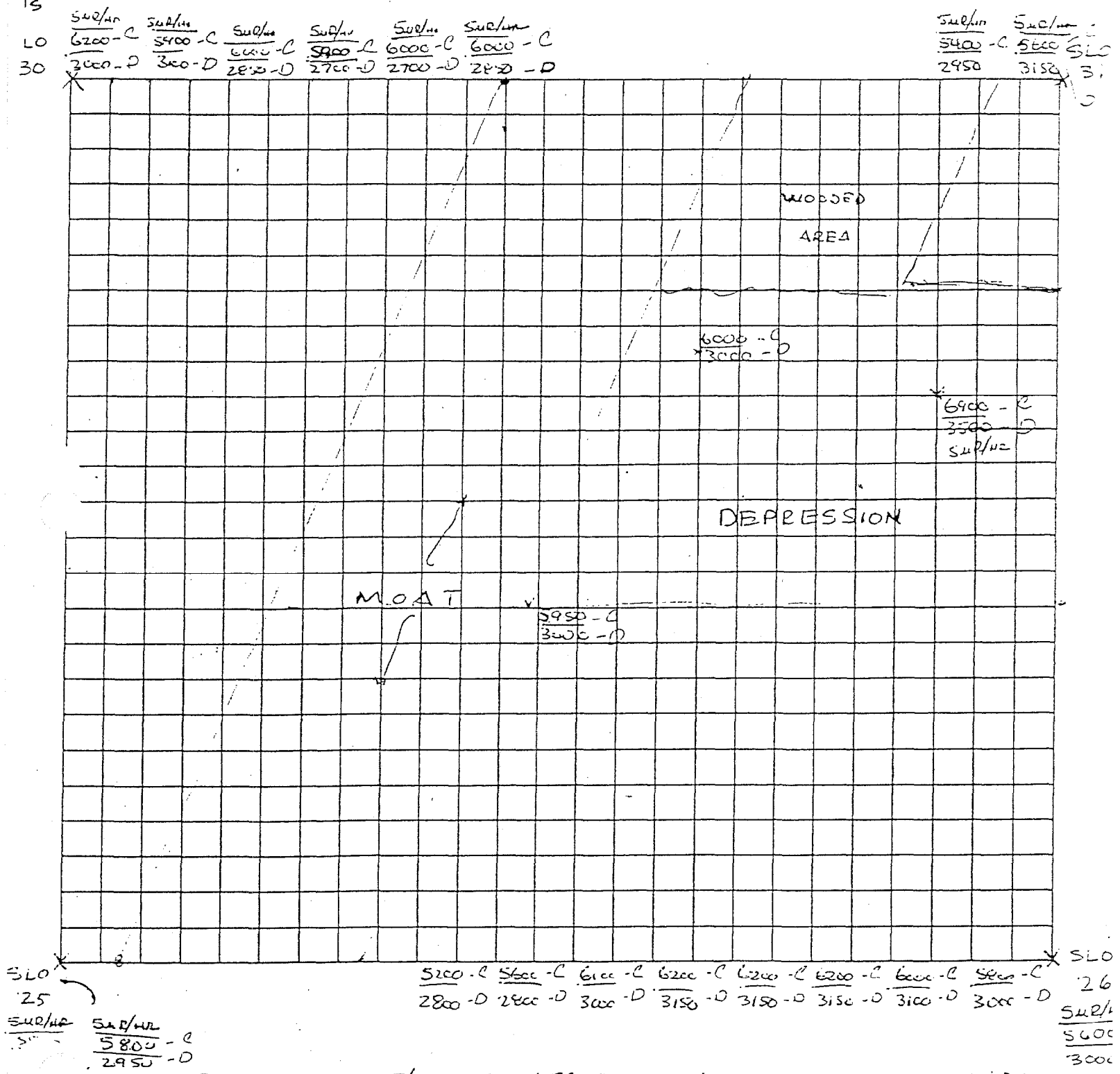
1/12/9

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 29

Part I

Grid # 36 09NOV94 Detector: 44-10 - SEE BELOW * Technicians: STEVE HAESE
Scaler: LUDLUM 2221/M19 BKG N/A 97830 WAM 09NOV94 GEUSA SHOWERS
Conversion: N/A S/N: 99136/165-D ~~[illegible]~~/157-C * W. CARL MAY
EACH SQUARE 6' X 6' 95487 LUD 19




Remarks NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

* uR/HR / LUD 2221 ~~99830~~/LUD 2221 99136
97830 09NOV94

DJH 11/12/95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



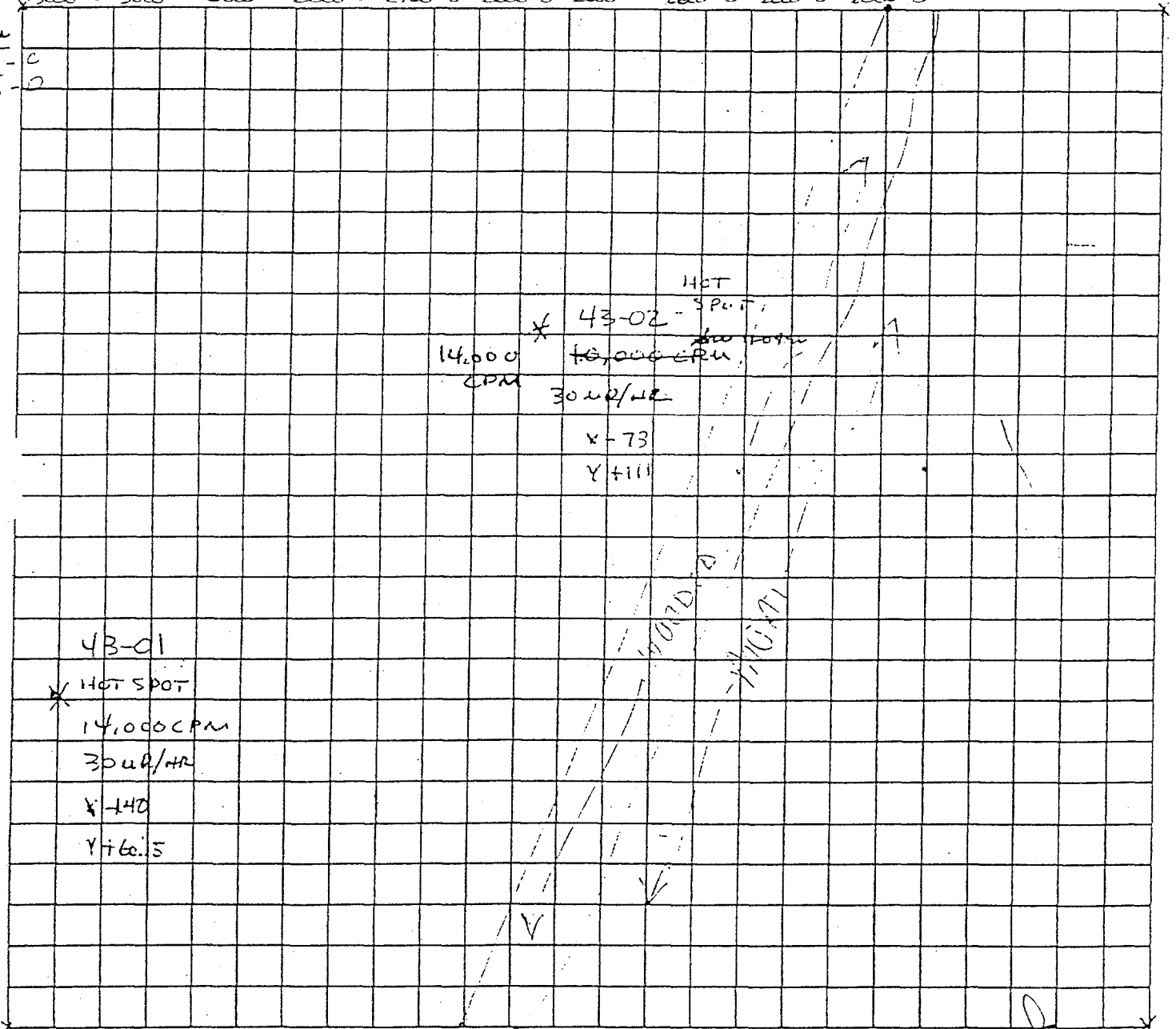
Part I

| | | | | | |
|---|---|---|---|---|---|
| Grid # | 43 - 09 NOV 94 | Detector: | 44-10 - SEE BELOW * | Technicians: | J. SHOWERS |
| Scaler: | LUDLUM 2221/M19 | BKG | N/A 97830 09NOV94 NOM | | R. PARRISH |
| Conversion: | N/A | S/N: | 99136/165-D ~~99830~~/157 - C * | | G. SHOWERS |
| | EACH SQUARE = 6'x6' | | 95487 / M 19 | | W.C. MAY |

N E S

SLO 35 — 5 uR/HR 5500 - C / 3000 - D; 5.5 uR/HR 6200 - C / 3000 - D; 5 uR/HR 5400 - C / 2800 - D; 5 uR/HR 5400 - C / 2800 - D; 5 uR/HR 5500 - C / 2700 - D; 5 uR/HR 5900 - C / 2600 - D; 5.5 uR/HR 5800 - C / 2600 - D; 5 uR/HR 5500 - C / 2600 - D; 5 uR/HR 5400 - C / 2600 - D; 5 uR/HR 5500 - C / 2600 - D — SLO 72

5 uR/HR 5500 - C / 3000 - D




SLO 30 — 5 uR/HR 5500 - C / 2900 - D; 5 uR/HR 5500 - C / 2900 - D; 5 uR/HR 5400 - C / 3000 - D; 5 uR/HR 5300 - C / 2900 - D; 5 uR/HR 5400 - C / 3000 - D; 5 uR/HR 5500 - C / 2950 - D — SLO 31

1/12/95

Remarks NOTE - HOT SPOTS 43-01 . 14000 CPM WITH LUD 2221 99830 30 uR/HR - WITH LUD 95487

43-02 10000 CPM WITH LUD 2221 99830 30 uR/HR WITH LUD 95487

NOTE: NUMBERS ON E/W COORDINATES REFLECT AVERAGE BACKGROUND ON GRID

* uR/HR / LUD 2221 ~~99830~~ / LUD 2221 99136

97830 09NOV94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

DATE: 06 DEC 94

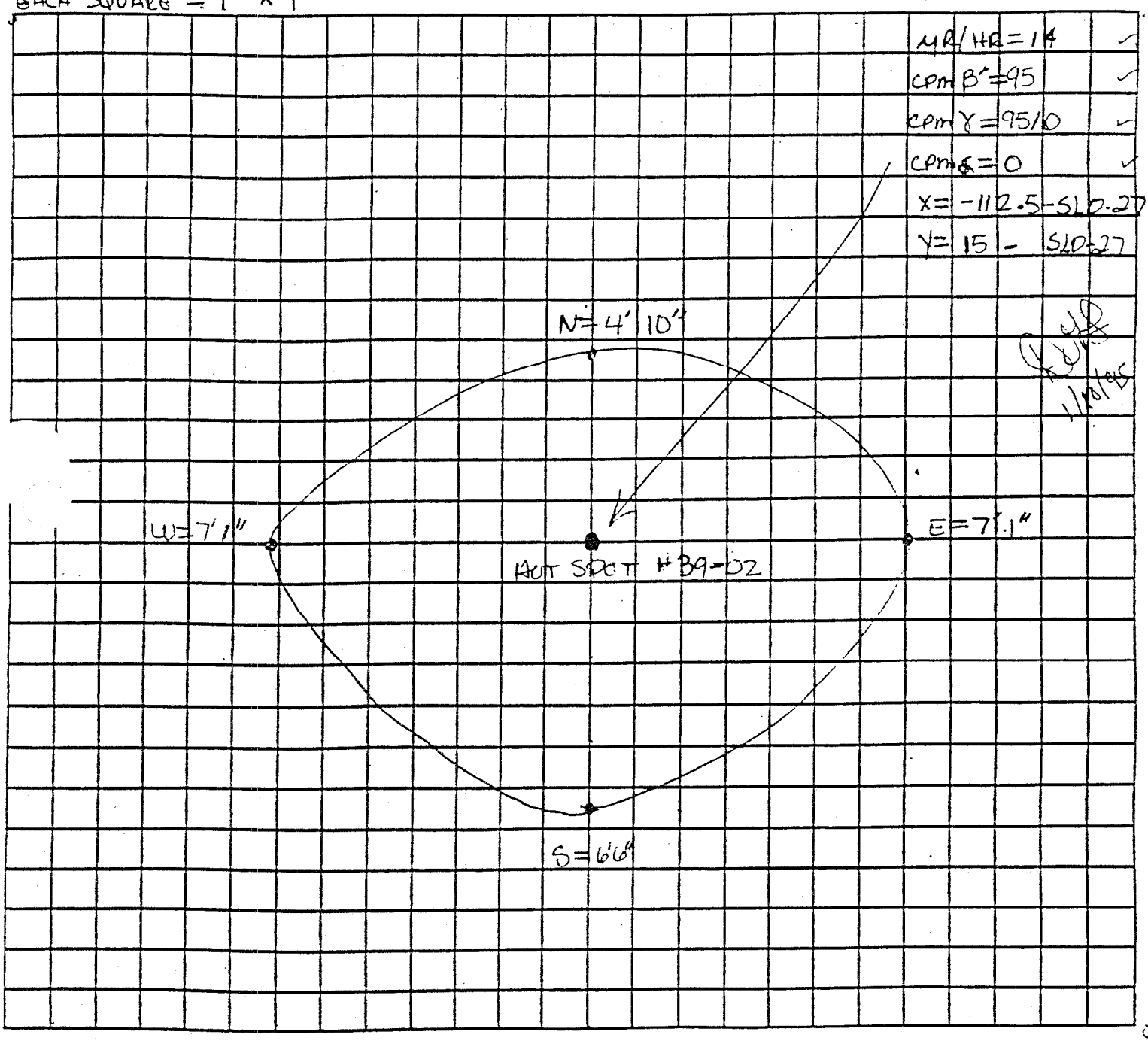
'# 39 39-02 Detector: * See below Technicians: J. Showers / G. Showers

r: LUDLUM 2221/m19 BKG N/A S. HABIB / R. PARRISH

ersion: N/A S/N: N/A W.C. May

*m19 = 95487 μR/HR
* 2221 = 99136 + DETECTOR # 165 γ
* 2221 = 117366 + DETECTOR # 116878 β⁻ γ
* 2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' X 1'




SLD-2

PAGE 3 OF 7

Remarks ① EACH SQUARE = 1' X 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Charlotte J. Stevens 12-13-9

# DIRECT SURFACE CONTAMINATION READINGS

SU[illegible]Y NO. N/A SITE: PSC-26 Grid #39 DATE: 04 JAN 95

IM[illegible] N/A PART ~~III~~ II

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| Ludlum M14 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| Ludlum 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| Ludlum 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/95 |
| Ludlum 2221 | 102049 | 43-65 | #090753 | 0.6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

[illegible] 01-04-95

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta/~~Gamma cpm | Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 39-01 | Ø ✓ | <0.68 | 80 ✓ | 198 ✓ | 18,500 ✓ | 232,632 ✓ | 28 ✓ |
| HOT SPOT 39-02 | Ø ✓ | <0.68 | 195 ✓ ~~40~~ [illegible] 01-04-95 | 645 ✓ | 27,300 ✓ | 362,044 ✓ | 40 ✓ |
| HOT SPOT 39-03 | 1 ✓ | 2.2 ✓ | 310 ✓ | 1093 ✓ | 69.380 ✓ | 980,868 ✓ | 90 ✓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[illegible] 1/10/95

Remarks (Notes):

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95 Part II

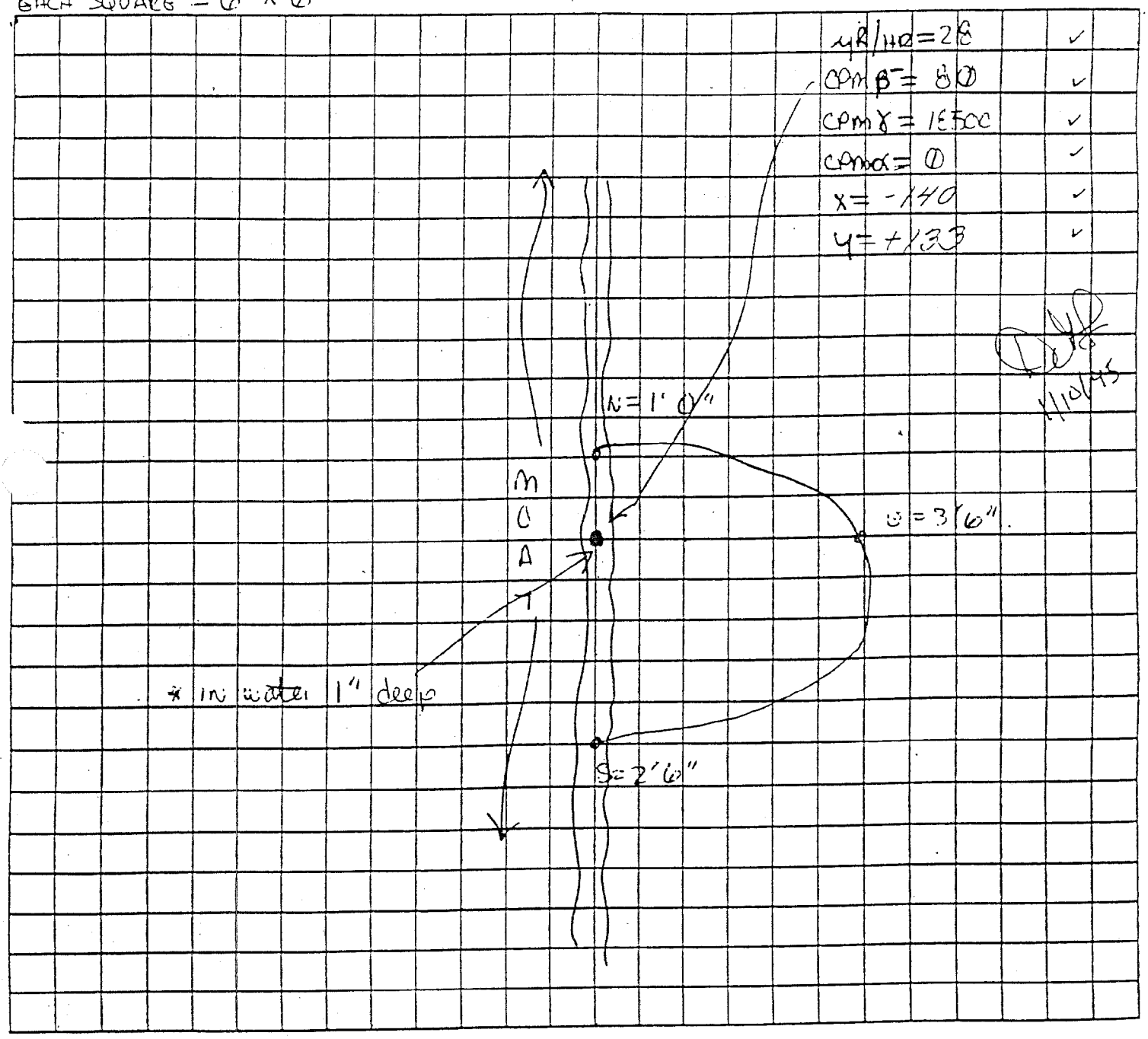
Grid # 39 39-01 ~~III~~ 1-4-95 Detector: *See Below Technicians: J. Showers / G. Showers
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM 2221/M19 BKG N/A

Conversion: N/A S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




PAGE 5 OF 7

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 48

DATE: 04JAN95 Print: ~~III~~ II 48 1-4-95

Grid # 39 39-02 Detector: *See Below Technicians: J. Shavers / G. Shavers

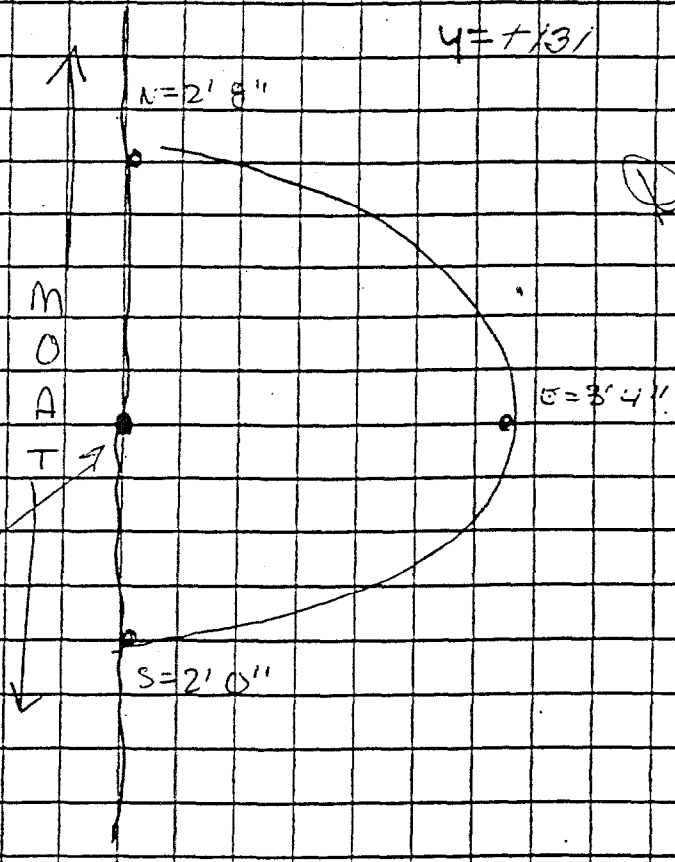
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

μR/HR = 40 ✓
CPM β = 195 ✓
CPM γ = 27300 ✓
CPM α = 0 ✓
X = -141 ✓
Y = +131 ✓




1/10/95

PAGE 6 OF 7

Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95 PART ~~III~~ II JS 1-4-95

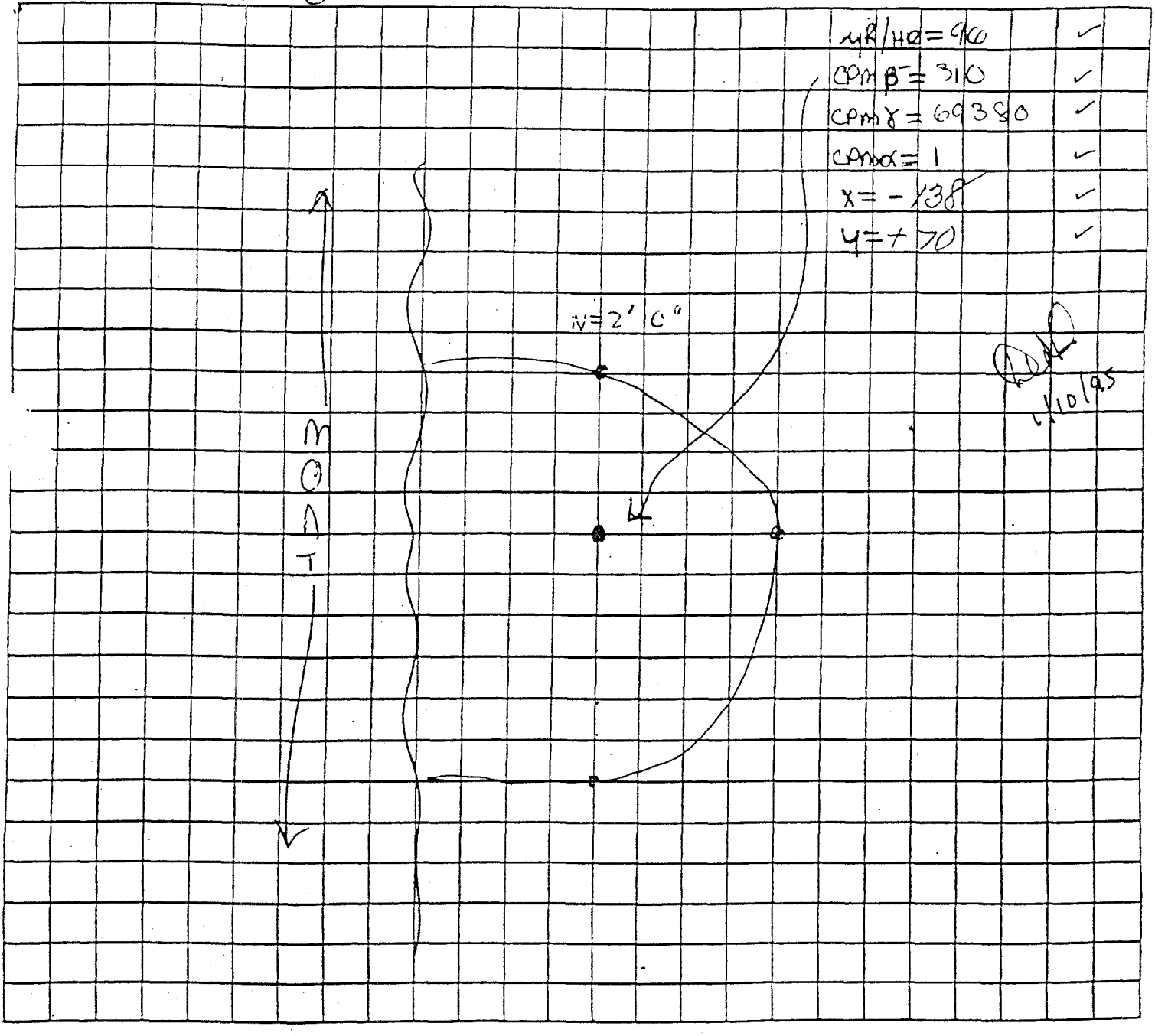
id # 39 39-03 Detector: *See Below Technicians: J. Shavers / G. Shavers

aler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




PAGE 7 OF 7

Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS



SURVEY NO. N/A SITE: PSC-26 Grid #40 DATE: 05 Dec 94

N/A

INSTRUMENTS

12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibra Dat |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2251 | .071 | 4/20 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/21 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20 |
| | | | | | | |
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| on description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R 12-15-9 |
|---|---|---|---|---|---|---|---|
| HOT SPOT 40-01 | 1 | <8.18 | 233 | 748 | 33,281 | 437042 ~~468744~~ | 45 |
| HOT SPOT 40-02 | 9 | 44.4 | 1057 | 3800 | 158816 | 2085140 ~~1236845~~ | 380 |
| HOT SPOT 40-03 | 2 | 9.5 ~~4.68~~ | 383 | 1303 | 40627 | 540507.0 ~~57224~~ | 60 |
| HOT SPOT 40-04 | 1 | 12-21-94 <8.18 | 305 | 1015 | 36528 | 12-15-94 482774 | 48 |
| | | | | | | | |
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Remarks (Notes): Checked by J. Stowers 12-13-94

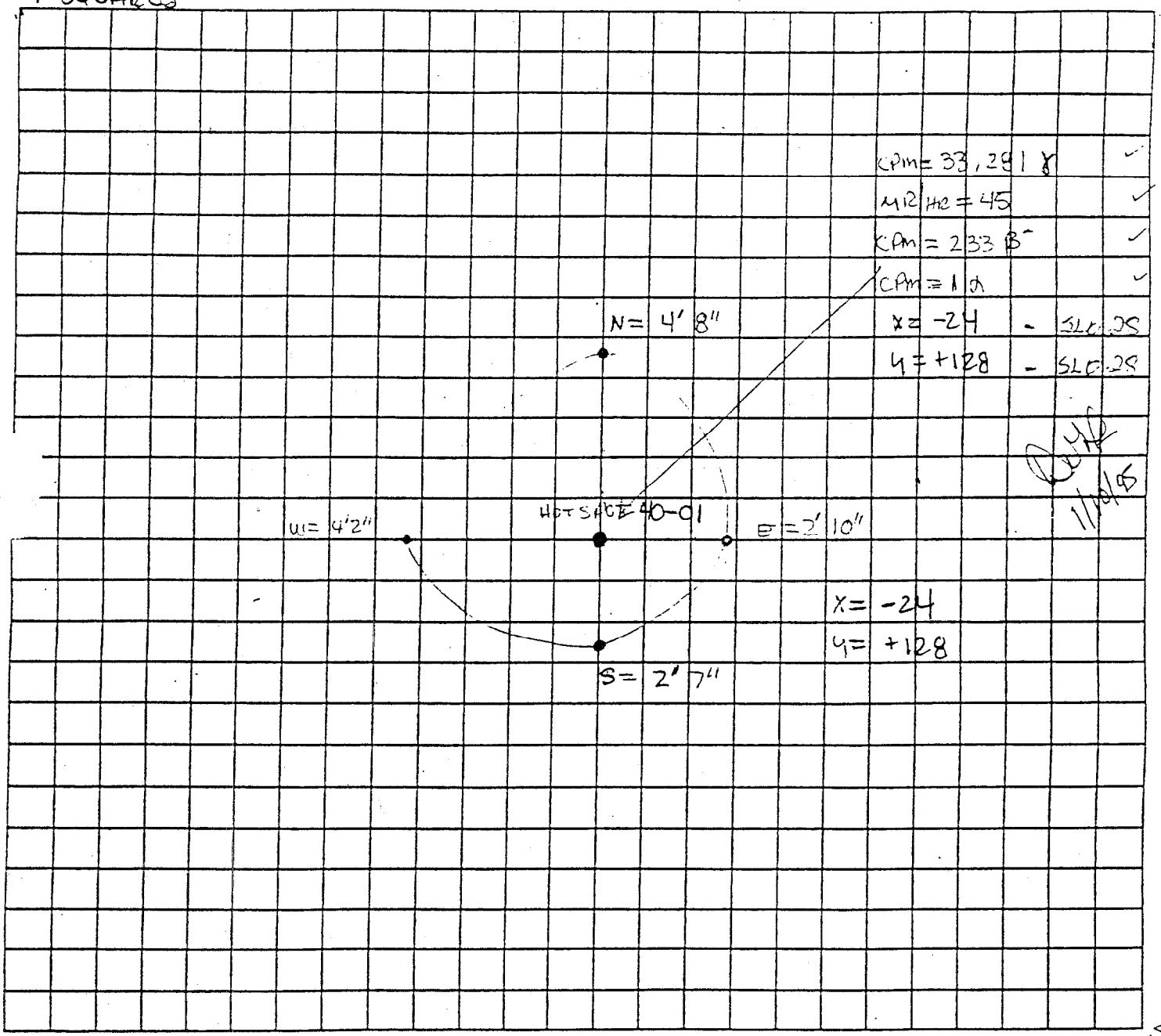
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 05 Dec 94

Grid # 40 : 40 - 01 Detector: *See below Technicians: S. Hagee / [illegible]
Scaler: Ludlum 2221/m19 BKG N/A R. Parrish / G. [illegible]
Conversion: N/A S/N: N/A

*m/19 = 95487 μR/Hr
*2221 = 99136 + Detector 165 γ ~~β γ~~
*2221 = 117366 + Detector 116878 β⁻γ
*2221 = 102049 + Detector 090753 α

1' SQUARES




SLO

PAGE 2 OF 5

Remarks ① EACH SQUARE IS 1' x 1' ② Peak reading @ center ③ Measurements are 1 from center out to boarded area (area of interest)

Checked by [illegible] 12-13-94

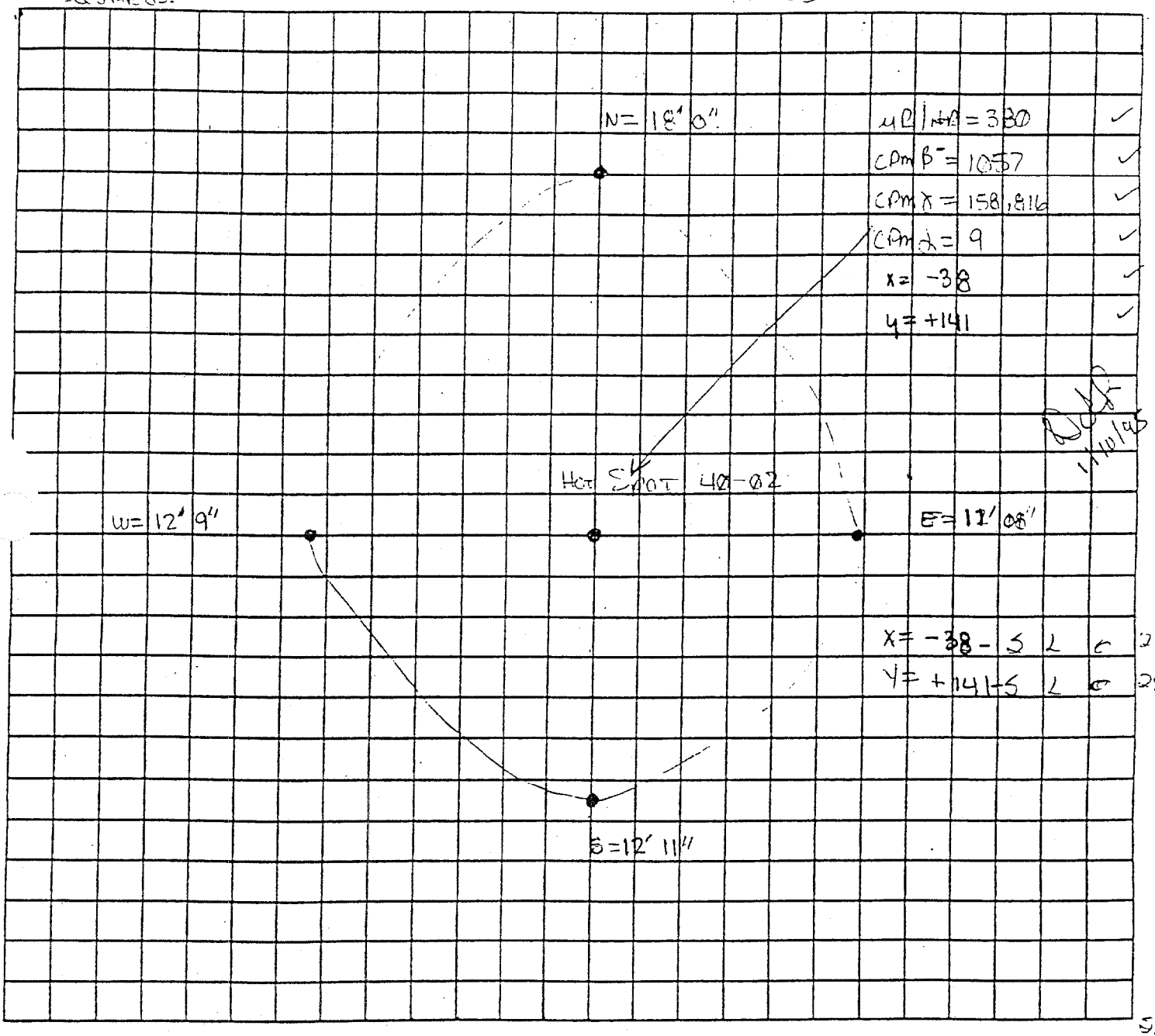
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 05 Dec 94

Grid # 40 40-02 Detector: * See Below Technicians: S. Hasse / J. Shower
Scaler: LudLum 2221 / m19 BKG N/A G. Shower / C. Parrish
Conversion: N/A S/N: N/A W. C. Mary

* m/19 = 95487 μR/HR
* 2221 = 99136 + Detector 165 γ
* 2221 = 117366 + Detector 116878 β⁻γ
* 2221 = 102049 + Detector 090753 α

2' SQUARES.




SLC



Remarks ① EACH SQUARE IS 2' x 2' ② Peak Reading @ center ③ MEASUREMENTS ARE FROM Center OUT TO BORDERED AREA (AREA of interest)

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 05 Dec 94

Grid # 40 40-03 Detector: *[illegible] Technicians: [illegible]

Scaler: Ludlum 2221/m19 BKG N/A [illegible]

Conversion: n/a S/N: N/A [illegible]

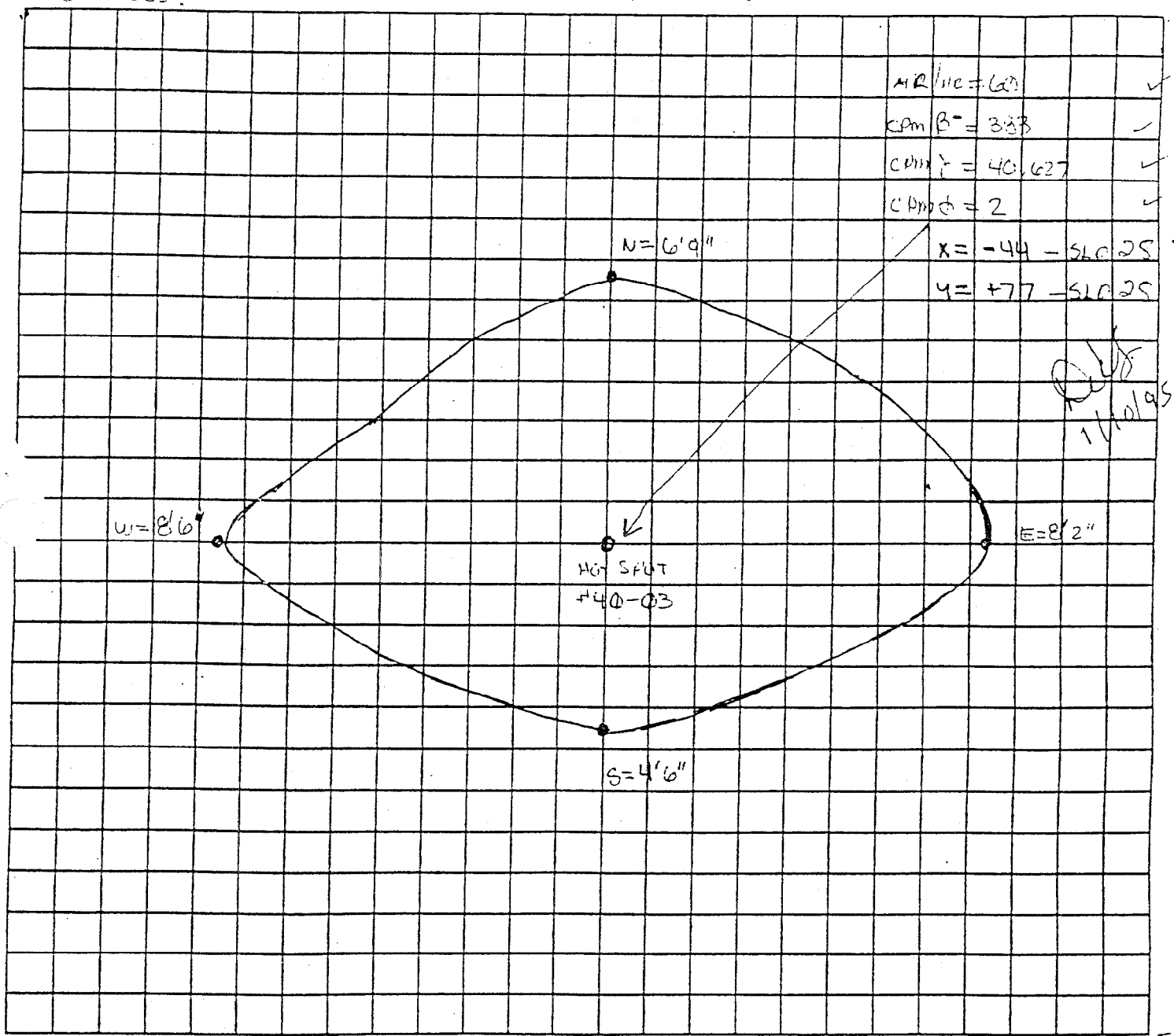
*M19 = 95487 μR/HR

*2221 = 991364 Detector #165 γ

*2221 = 117366 + 116878 β⁻γ

*2221 = 102049 + 090753 α

1' SQUARES




SL025

PAGE 4 OF 5

Remarks ① EACH SQUARE ~~6"~~ WAS 1'x1' SQUARE ② PEAK READING @ CENTER ③ MEASUREMENT ARE FROM CENTER OUT TO BOUNDARY AREA (AREA of INTERCEPT)

Checked by J. SHOWERS 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 54

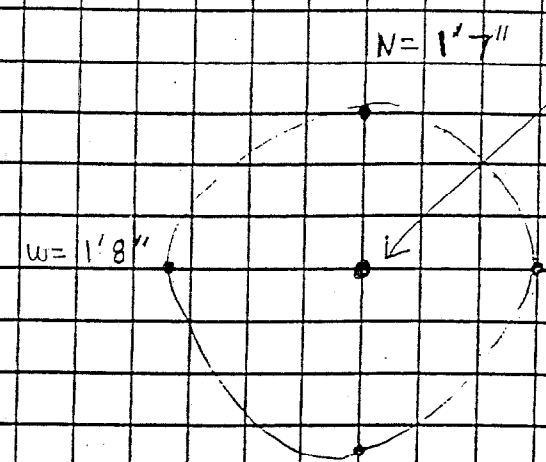
DATE: 05 Dec 94

Grid # 40 40-04 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUNLUM 2221 / M19 BKG N/A R. Farrah / S. Hacke
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + Detector #165 γ
*2221 = 117366 + Detector # 116878 β γ
*2221 = 102049 + DETECTOR #090753 α

6" SQUARES

μR/HR = 48 ✓
CPM β⁻ = 305 ✓
CPM γ = 36,528 ✓
CPM α = 1 ✓
X = -47 - SLO 28 ✓
Y = +67 - SLO 28 ✓




X = -47
Y = +67

SLO 28

PAGE 5 OF 5

Remarks ① EACH SQUARE 6" x 6" SQUARE ② Peak Reading @ center ③ Measurements are from center out to BOARDERED AREA (AREA of interest)

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS



SURVEY NO. N/A SITE: PSC-26 Grid # 41 DATE: 05 Dec 94

N/A

INSTRUMENTS

BB 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibra Dat |
|---|---|---|---|---|---|---|
| Ludlum m19 micro R | 95487 | N/A | N/A | 4 mR/HR | N/A | 4/2 |
| Ludlum 2221 | 99136 | 44-10 | #165 | 2251 | .071 | 4/20 |
| Ludlum 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/21 |
| Ludlum 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20 |
| | | | | | | |
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| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ P/Gamma cpm | ~~Beta~~ P/Gamma dpm | Micro |
|---|---|---|---|---|---|---|---|
| Hot Spot 41-01 | 4 ✓ | 15.2 ✓ | 88 ✓ | 211 ✓ | 13004 ✓ | 151450 ✓ | 18 |
| | | | | | | | |
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Remarks (Notes): Checked by J. Howard 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

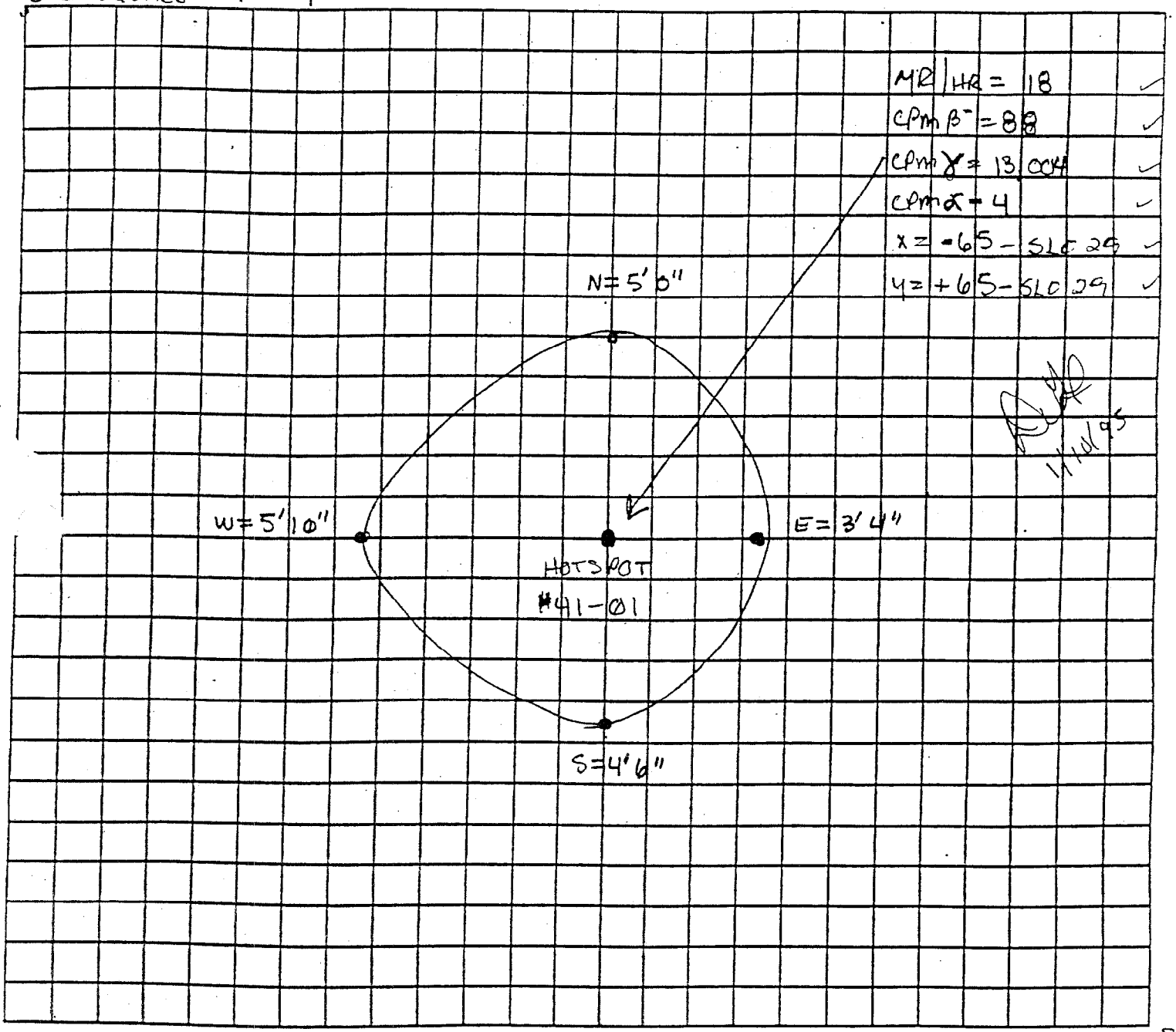
PAGE 06

DATE: 05 DEC 94

Grid # 41 41-01 Detector: *SEE BELOW Technicians: J. SHOWERS / G. SHOWERS
Scaler: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARR...H
Conversion: N/A S/N: N/A W. C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'




SLC 2

PAGE 2 OF 2

Marks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. SHOWERS 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

PAGE 01

SURVEY NO. N/A SITE: PSC-26 Grid #42 DATE: 05 Dec 94

N/A

INSTRUMENTS

AS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibra Dat |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2251 | .071 | 4/20 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/21 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20 |
| | | | | | | |
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| ...ion description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ AS/Gamma cpm | ~~Beta~~ AS/Gamma dpm | Micro R |
|---|---|---|---|---|---|---|---|
| HOT SPOT 42-01 | 0 | ~~<8.18~~ ~~0~~ <0.57 | 115 | 311 | 13789 | 162507 | 16 |
| | | | | | | | |
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DWF 1/10/95

Remarks (Notes): Checked by J. Howles 12-13-9

PAGE 1 OF 2

FIELD DATA ACQUISITION FORM

WALKOVER GAMMA SCAN DATA SHEET



DATE: 05 DEC 94

Grid # 42 42-01 Detector: *SEE BELOW Technicians: J. Showers / G. Showers

aler: LUDLUM 2221/m19 BKG N/A S. HAESG / R. PARRISH

nversion: N/A S/N: N/A W. C. MAY

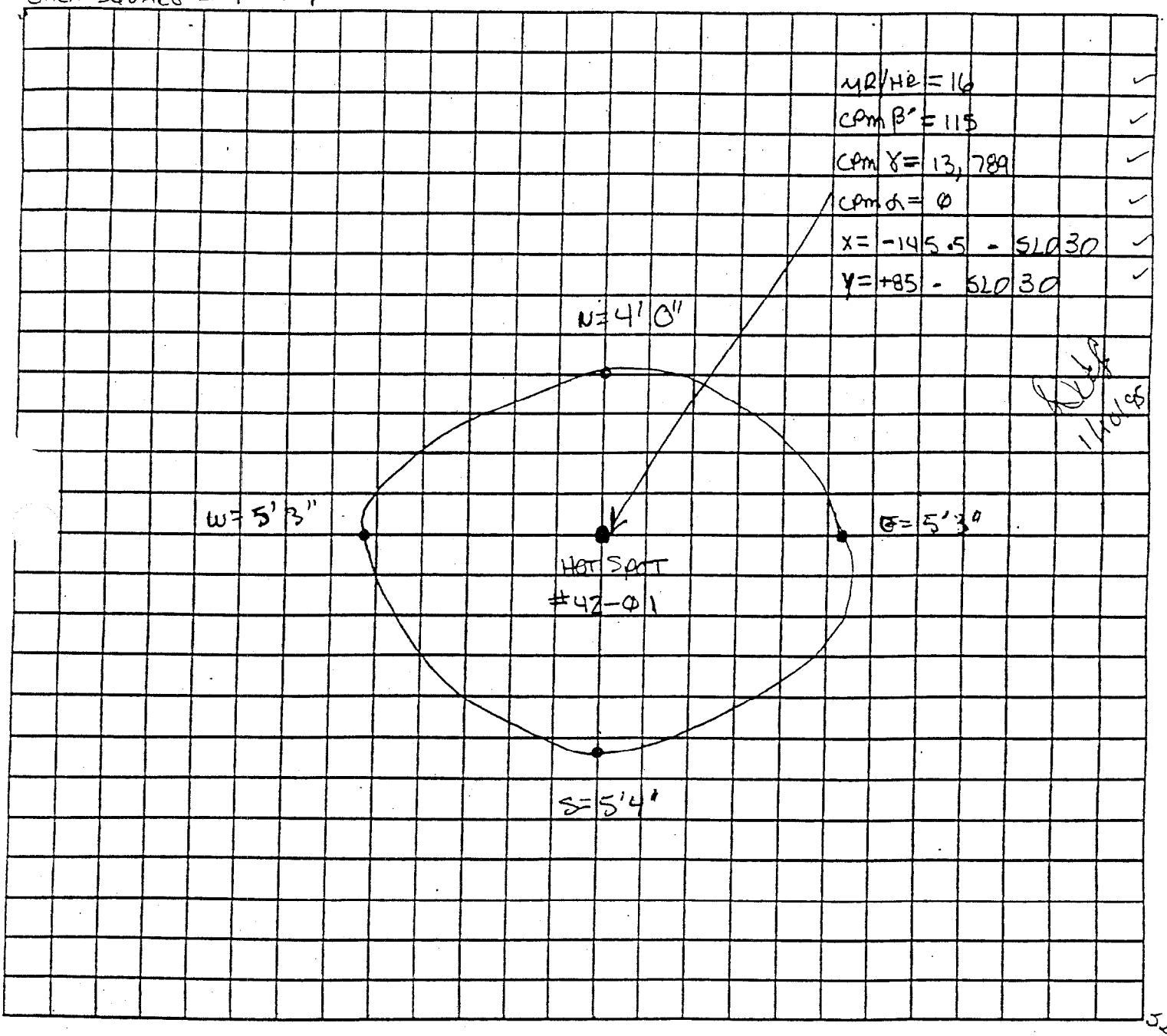
*m19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' X 1'






rks ① EACH SQUARE = 1' X 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by G. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS



SURVEY NO. N/A SITE: PSC-26 Grid # 43 DATE: 05 Dec 94

N/A

INSTRUMENTS

DS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibra Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICRO R | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2 |
| LUDLUM 2221 | 99136 | 44-10 | #465 | 2251 | .071 | 4/20 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/21 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20 |
| | | | | | | |
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| | | | | | | |

| on description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ P/Gamma cpm | ~~Beta~~ P/Gamma dpm | Micro F |
|---|---|---|---|---|---|---|---|
| HoT spot 43-01 | 1 ✓ | < 8.18 | 82 ✓ | 188 ✓ | 15950 ✓ | 192943 ✓ | 30 ✓ |
| HoT spot 43-02 | 1 ✓ | < 8.18 | 61 ✓ | 111 ✓ | 8627 ✓ | 89803 ✓ | 15 ✓ |
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[signature] 1/10/95

Remarks (Notes): Checked J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

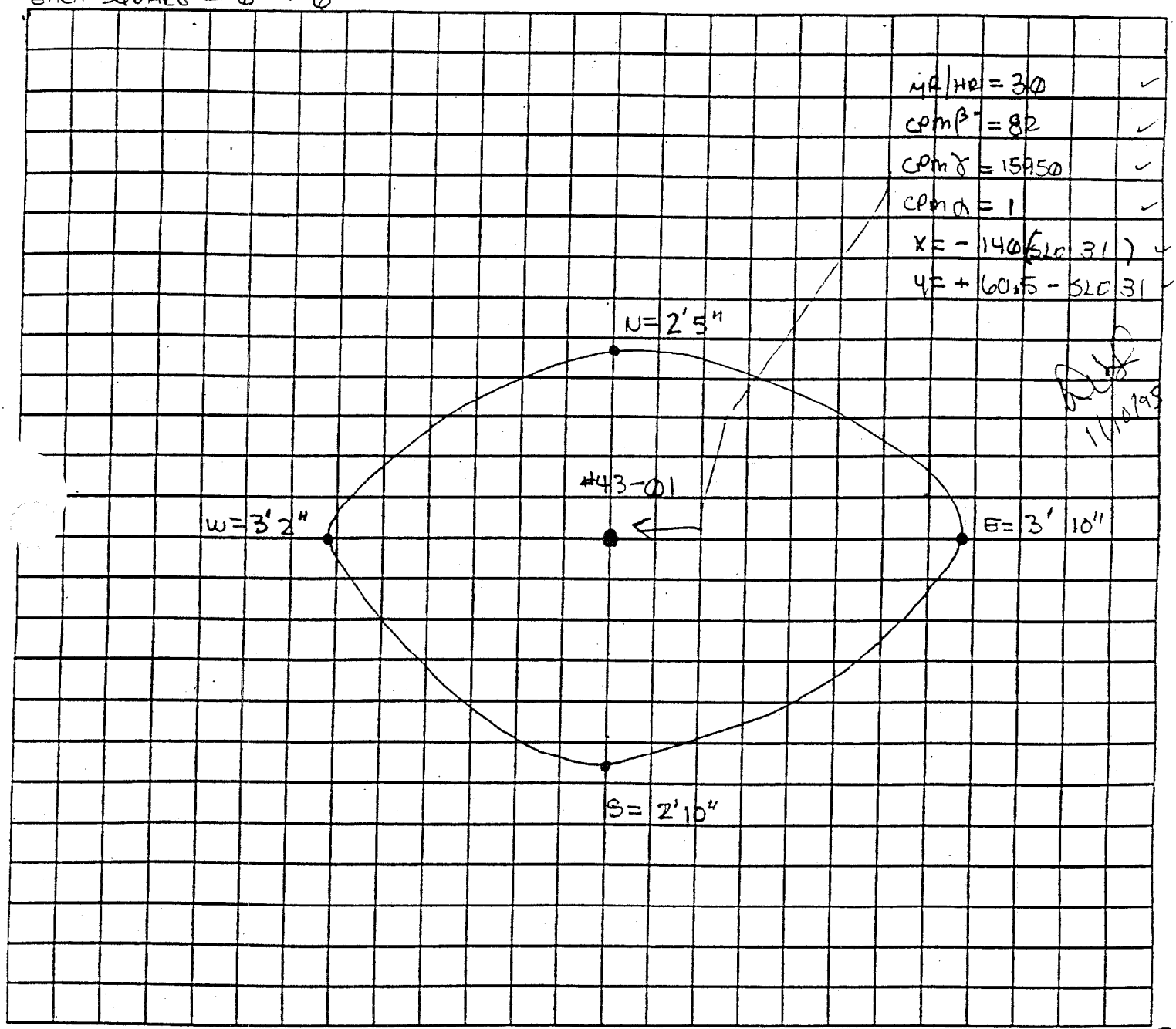
PAGE 60

DATE: 05 DEC 94

Grid # 43 43-01 Detector: * See below Technicians: J. Showers | G. Showers
ler: LUDLUM2221/M19 BKG N/A R. Parrish | S. Hasse
version: N/A S/N: N/A W. C. May

* M19 = 95487 μR/HR
* 2221 = 99136 + DETECTOR # 165 γ
* 2221 = 117366 + DETECTOR # 116878 β⁻ γ
* 2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




SLO

PAGE 2 OF 3

rks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

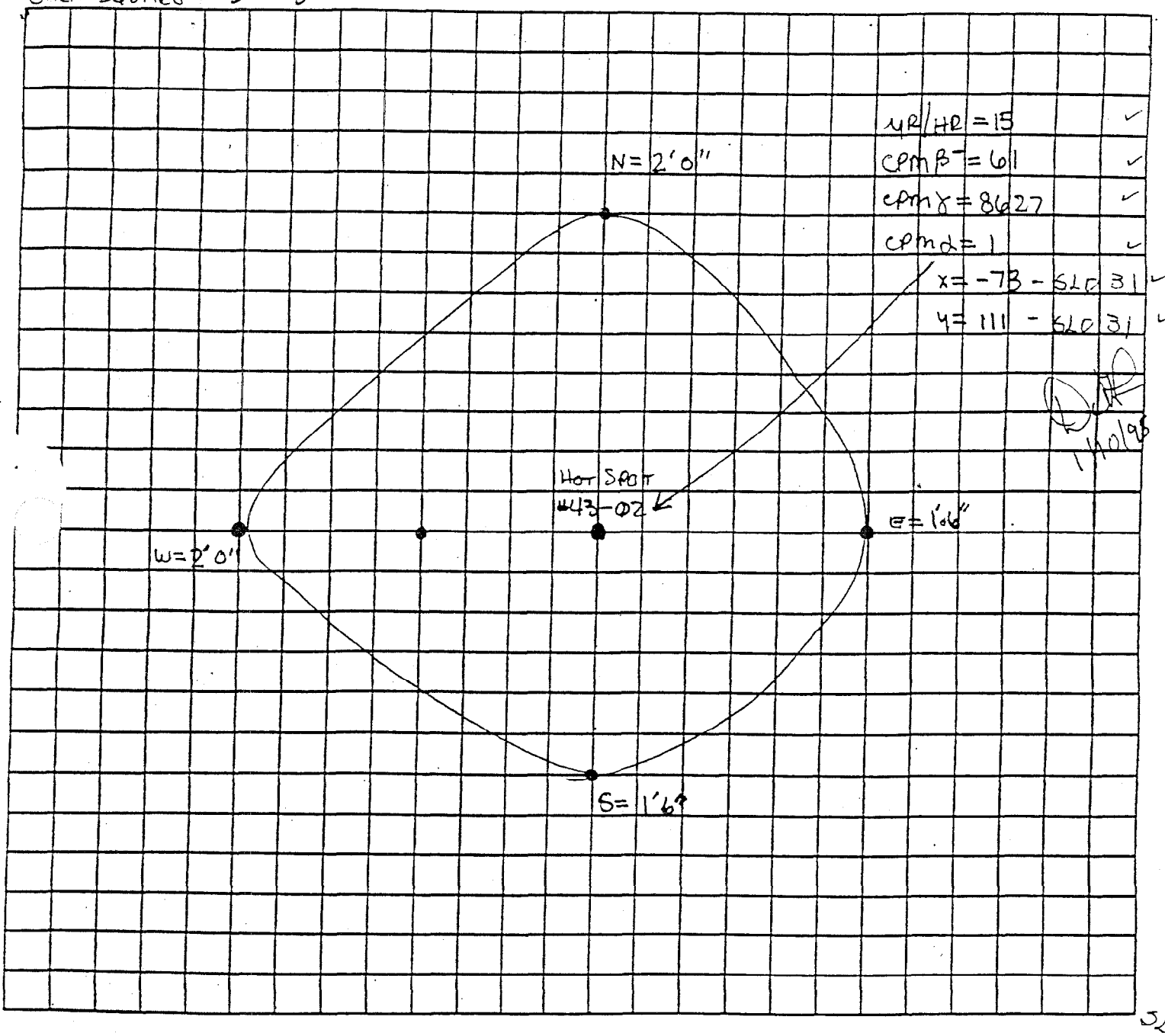


DATE: 06 DEC 94

Grid # 43 43-02 Detector: * See below Technicians: W.C. May | R. Parrish
aler: LUDLUM2221/M19 BKG N/A S. Haese | J. Showers
nversion: N/A S/N: N/A G. Showers

* M19 = 95487 μR/HR
* 2221 = 99136 + DETECTOR # 165 γ
* 2221 = 117366 + DETECTOR # 116878 β⁻ γ
* 2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 3" X 3"




SLO 3

PAGE 3 OF 3

rks ① EACH SQUARE = 3" X 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

Y NO. N/A SITE: PSC-26 Grid # 44 DATE: 12 DEC 94

IM N/A

NSTRUMENTS

fs 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2147 | .0687 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 36 | .277 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .173 | 4/20/95 |
| | | | | | | |
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| | | | | | | |

| Location description Hot Spot | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ fs/Gamma cpm | ~~Beta~~ fs/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 44-02 | 1 ✓ | 2.3 ✓ | 65 ✓ | 104.6 ✓ | 11000 ✓ | 128864.6 ✓ | 14 ✓ |
| 44-01 | 1 ✓ | 2.3 ✓ | 105 ✓ | 249.0 ✓ | 13700 ✓ | ~~196292.5~~ ~~196095~~ | 15 ✓ |
| | | | | | Dwf 1/10/95 | fs 12-21-94 | |
| | | | | | | 168165 ✓ Dwf 1/10/95 | |
| | | | | | | | |
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DWF 1/10/95

Remarks (Notes): * 37-01 does not meet Hot Spot Characterizations - J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 60

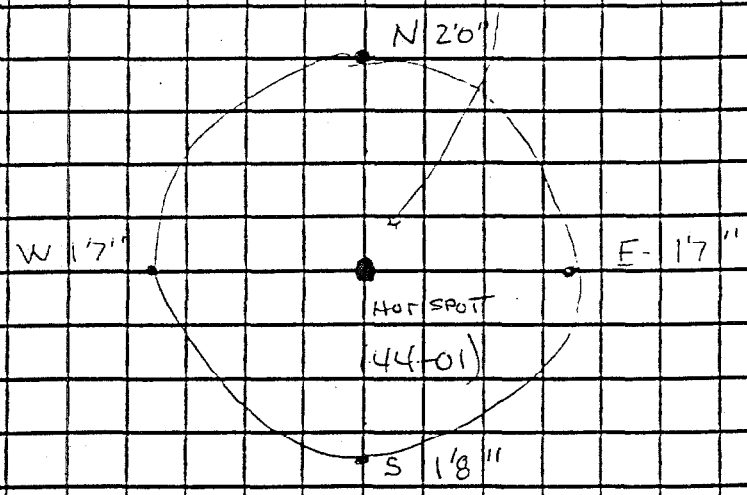
DATE: 12 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| 'd # | 44-01 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| ıler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| ıversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | |
|---|---|---|---|
| μR/HR = | 15 | | ✓ |
| CPM β⁻ = | 105 | | ✓ |
| CPM γ = | 13,700 | | ✓ |
| CPM α = | 1 | | ✓ |
| x = | −9 | −5270 | ✓ |
| y = | +146 | −5270 | ✓ |




11/10/95

PAGE 2 OF 3

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA o/ INTEREST IS OUT to EDGE o/ ENCIRCLED AREA

Checked by J. Showers 12-13-9

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

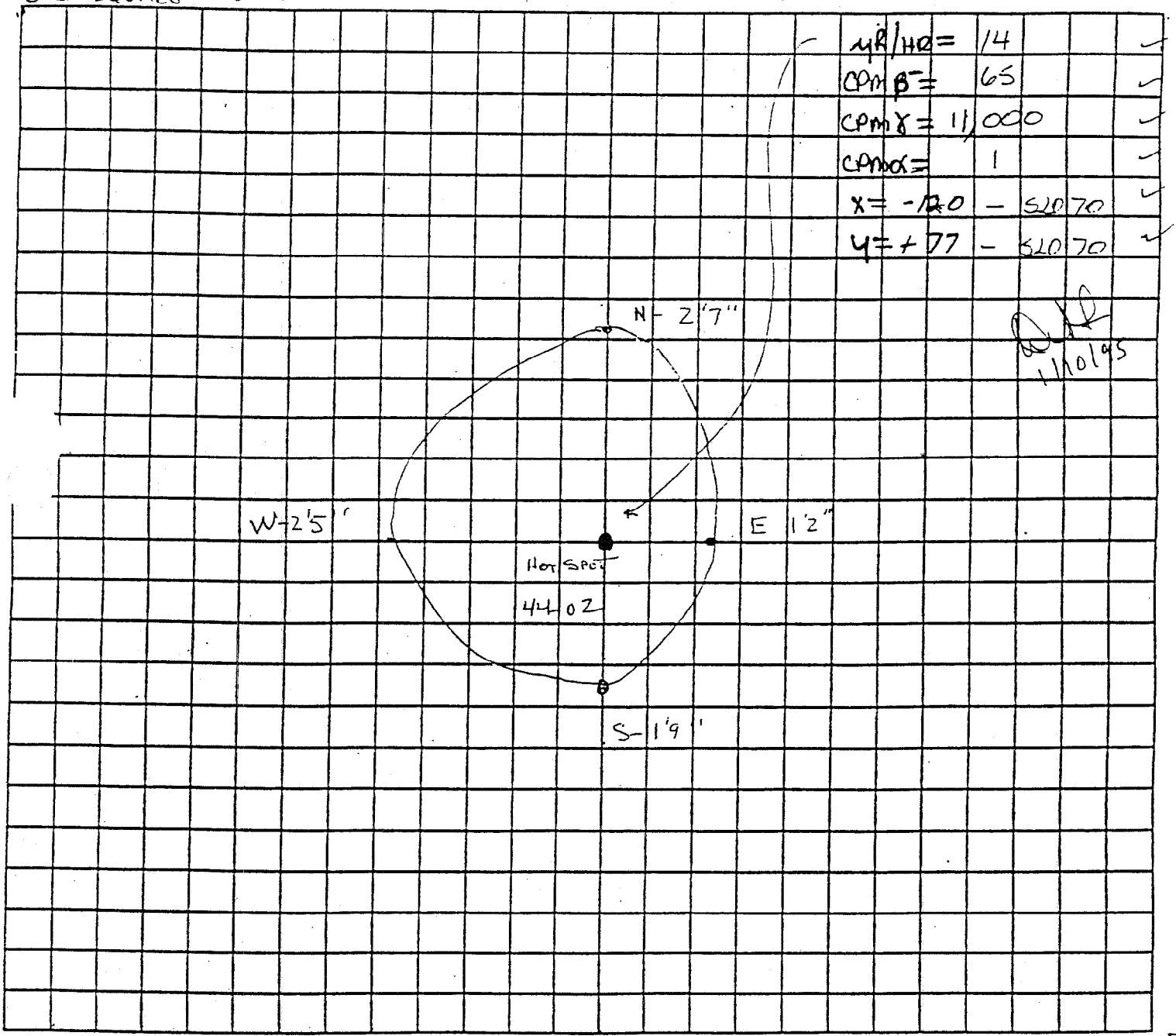


DATE: 12 DEC 94

d #: 44-02 Detector: *See Below Technicians: J. Showers / G. Showers
aler: Ludlum 2221/m19 BKG: N/A R. PARRISH / S. HAGSE
onversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




PAGE 3 OF 3

Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA - Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SURVEY NO. N/A SITE: PSC-26 GRID #45 DATE: 08 DEC 94

N/A

INSTRUMENTS

RS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICRO R | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |
| | | | | | | |
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| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOTSPOT 45-01 | 4 ✓ | 20 ✓ | 104 ✓ | 377 ✓ | 16200 ✓ | 199571 ✓ | 25 |
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11/10/95

Remarks (Notes): Checked by J. Showers 12-13-9

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

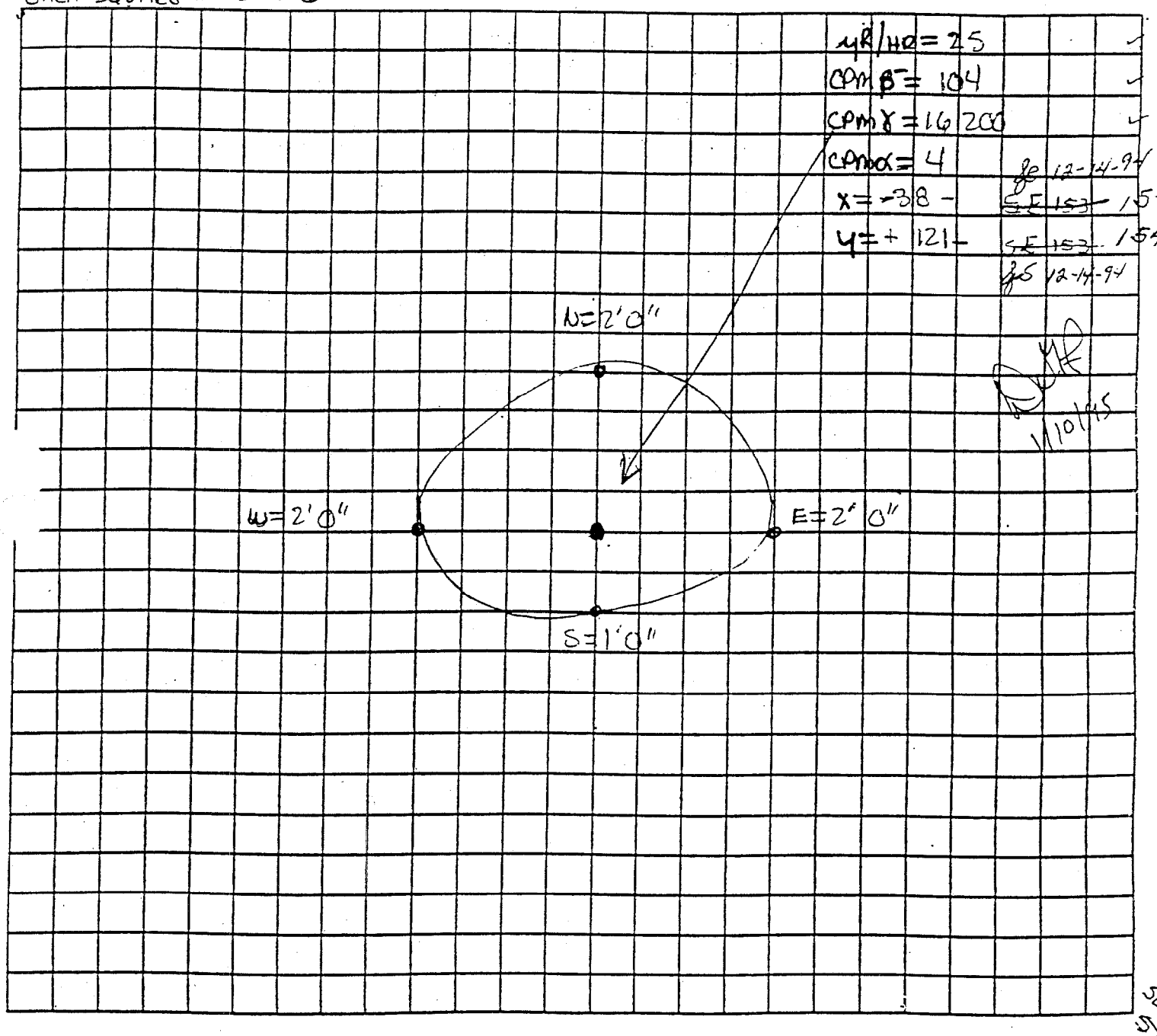
PAGE 66

DATE: 08 DEC 94

Grid # 45 45-01 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




JS 12-14-94
~~SE 153~~ 154
~~SE 153~~ 154
JS 12-14-94

1/10/95

SE 1
SE 15
JS 12-14-

PAGE 2 OF 2

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 46 DATE: 06 Dec 94

N/A

STRUMENTS

BS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| UDLUM m19 NICOR | 95487 | N/A | N/A | 3 | N/A | 4/2/9 |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/9 |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/ |
| UDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/9 |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| HOT SPOT - 46-02 | 3 | 10.9 | 1314 | 4582 | 57222 | 809735.2 | 120 |
| HOT SPOT - 46-01 | 1 | BS 12-21-94 <0.625 | 83 | 185.7 | 18108 | 234529.4 | 15 |
| HOT SPOT - 46-03 SEE BELOW NOTE | | | | | | | |
| HOT SPOT - 46-04 | 0 | BS 12-21-94 <0.625 | 439 | 1562.3 | 31343 | 422144.9 | 46 |

11/10/95

Remarks (Notes): K = 1000

NOTES - 46-03 ENDED UP IN MULTIPLE HIT AREA

Charles G. Stevens 12-15

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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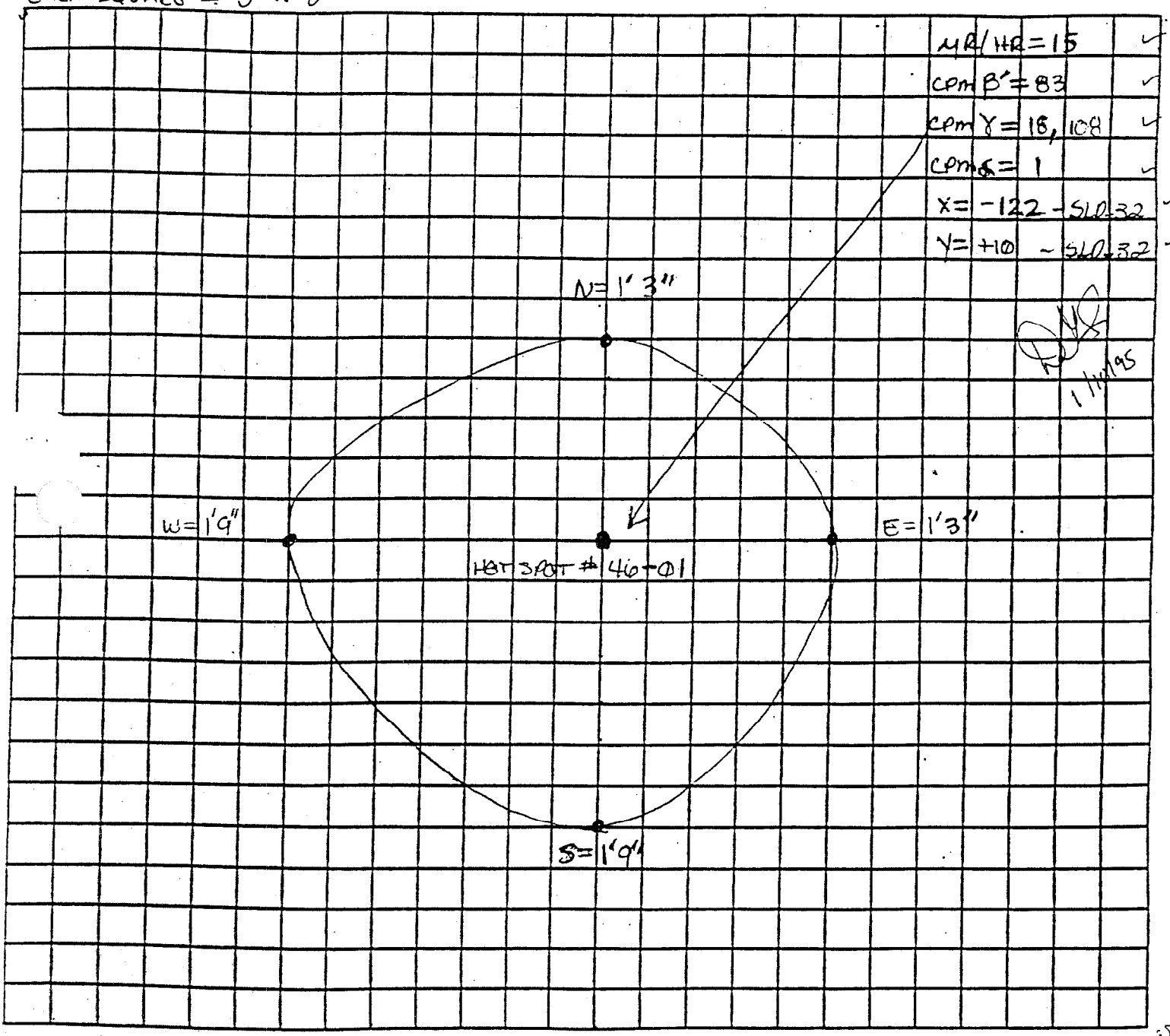
DATE: 06 DEC 94

# 46 46-01 Detector: * See below Technicians: J. Showers / G. Showers
r: LUDLUM 2221/M19 BKG N/A S. HAESE / R. PARRISH
ersion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" X 3"




SLD 3

PAGE 2 OF 8

Remarks ① EACH SQUARE = 3" X 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

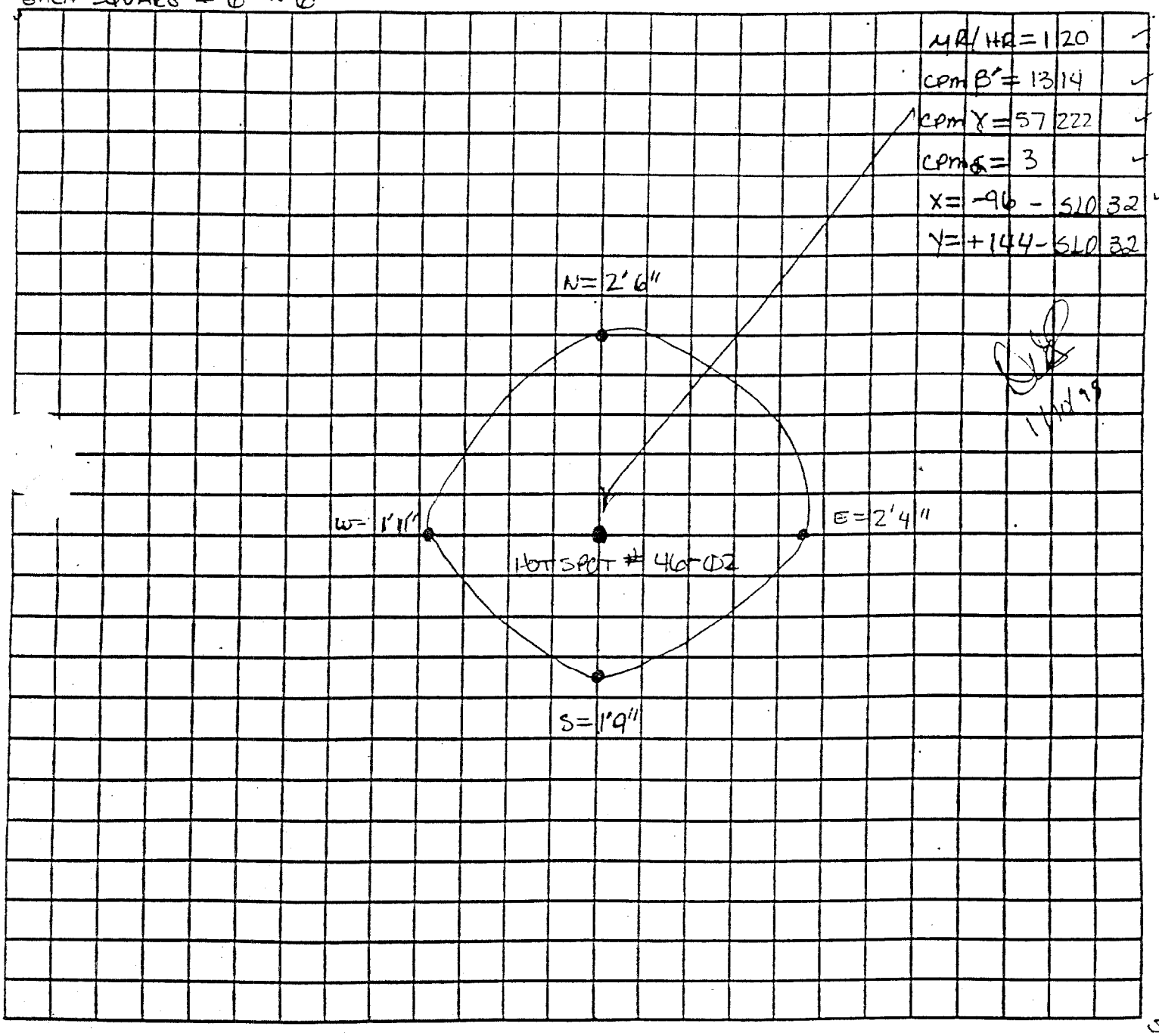


DATE: 06 DEC 94

# 46 46-02 Detector: *See below Technicians: J. Showers / G. Showers
r: LUDLUM 2221/M19 BKG N/A S. HAESE / R. PARRISH
ersion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO 3

PAGE 3 OF 8

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

Checked by J. Showers 12-13-94

WALKOVER GAMMA SCAN DATA SHEET

DATE: 07 DEC 94

Grid # 46 — 46-~~A1~~ 04 12-13-94

Detector: *See Below

Technicians: J. Showers / G. Shave, R. PARRISH / S. HAGSE, W. C. May

Scaler: LUDLUM 2221/M19

BKG: N/A

Conversion: N/A

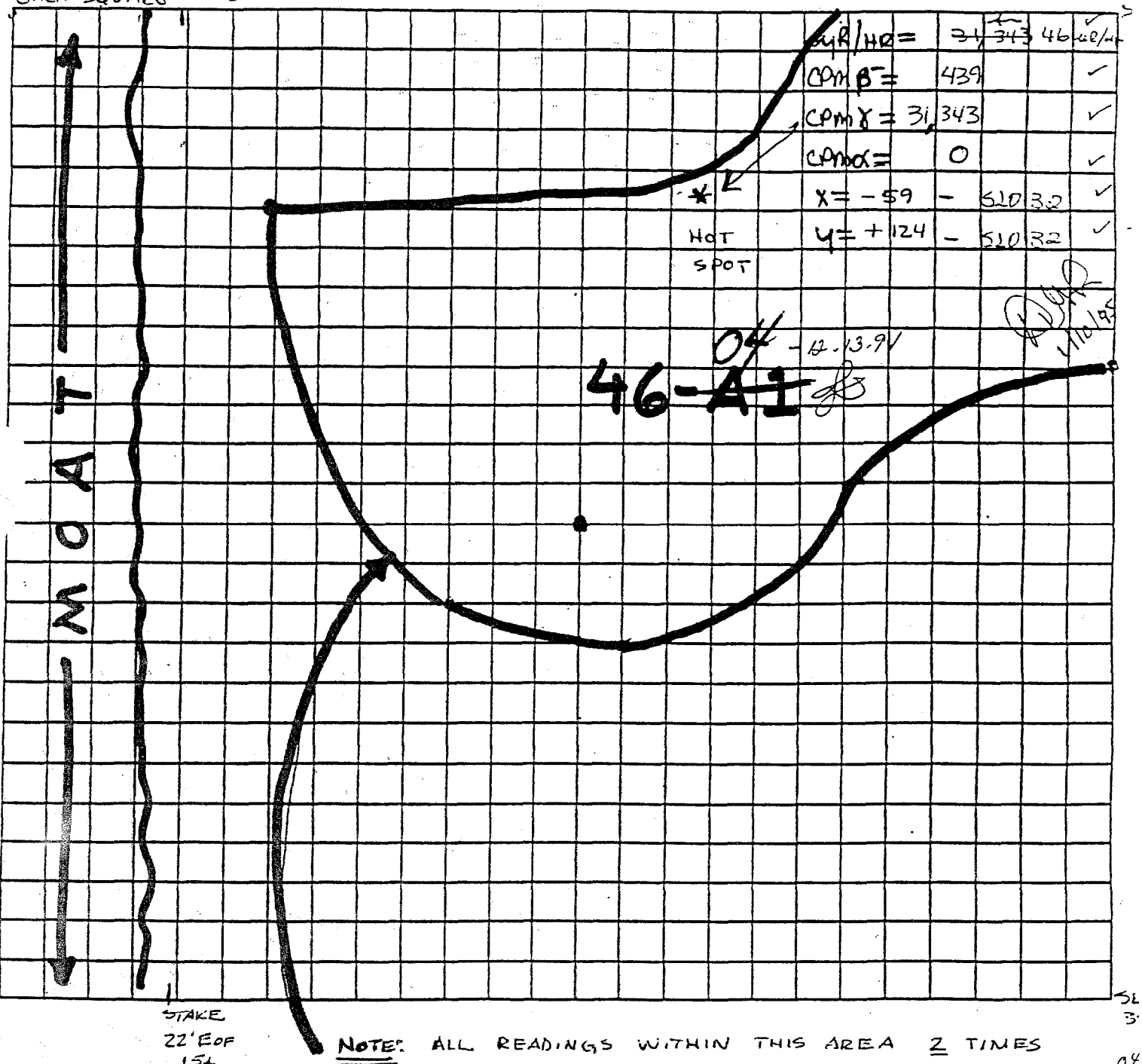
S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

STAKE 22' E OF 156

EACH SQUARE = 6' X 6'

156




154

STAKE 22' E OF 154

NOTE: ALL READINGS WITHIN THIS AREA 2 TIMES GREATER THAN BACKGROUND DESIGNATED AS 46-A1 04 12-13

Remarks: ① EACH SQUARE = 6' X 6' ② Peak Reading is @ center point ③ Area of interest is out to edge of encircled area

Checked by G. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SUR NO. N/A SITE: PSC-26 GRID # 46 PART III DATE: 04 JAN 95
IMI N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

SW 01-04-95

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 46-01 | DID | NOT | MEET | HOT | SPOT | CRITERIA | |
| HOT SPOT 46-02 | Ø ✓ | | 104 ✓ | 291 ✓ | 12270 ✓ | 141,015 ✓ | 18 ✓ |
| HOTSPOT 46-03 | 4 ✓ | 18.8 ✓ | 64 ✓ | 135 ✓ | 9405 ✓ | 99,882 ✓ | 18 ✓ |
| HOTSPOT 46-04 | Ø ✓ | | 77 ✓ | 186 ✓ | 11,500 ✓ | 129,691 ✓ | 35 ✓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/10/95

Remarks (Notes): NOTE: HOT SPOT ID NUMBER 46-01 DID NOT MEET HOT SPOT CRITERIA 2 TIMES BACKGROUND

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 12

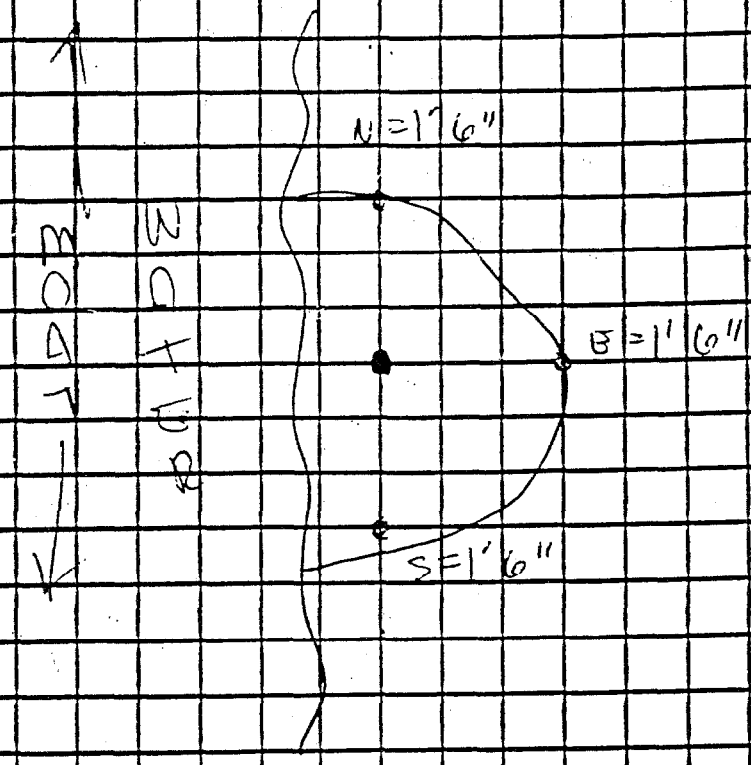
DATE: 04 JAN 95 PART III

Grid # 46 46-02 Detector: *See Below Technicians: J. Showers / G. Shaw
aler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
nversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6'

μR/HR = 18 ✓
CPM β⁻ = 104 ✓
CPM γ = 12270 ✓
CPM α = 0 ✓
x = -138 ✓
y = +104 ✓




DWR 1/10/95

PAGE 6 OF 8

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

04 JAN 95

DATE: ~~Dec 94~~

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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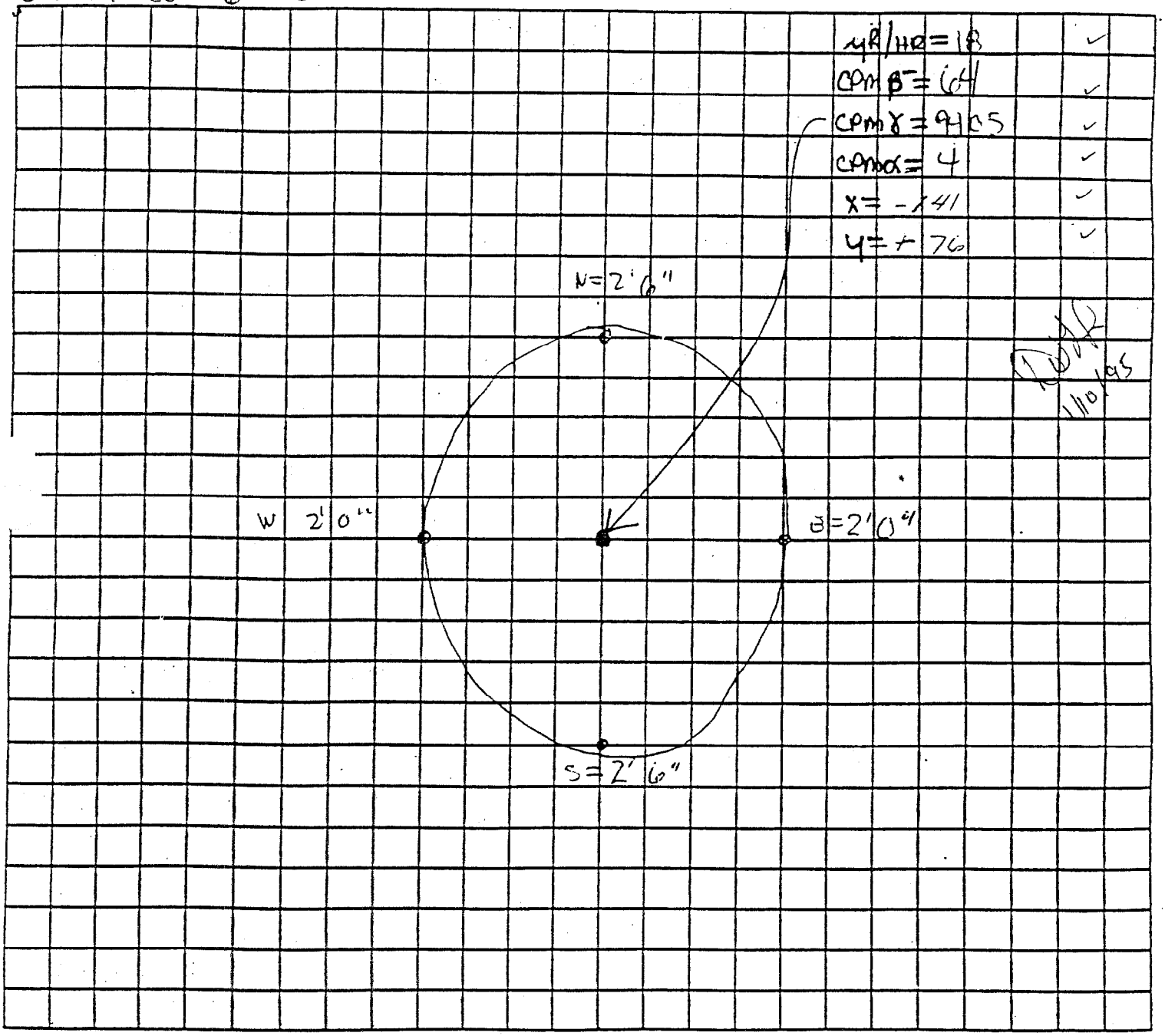
Grid # 46-03 Part III Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




PAGE 7 OF 8

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

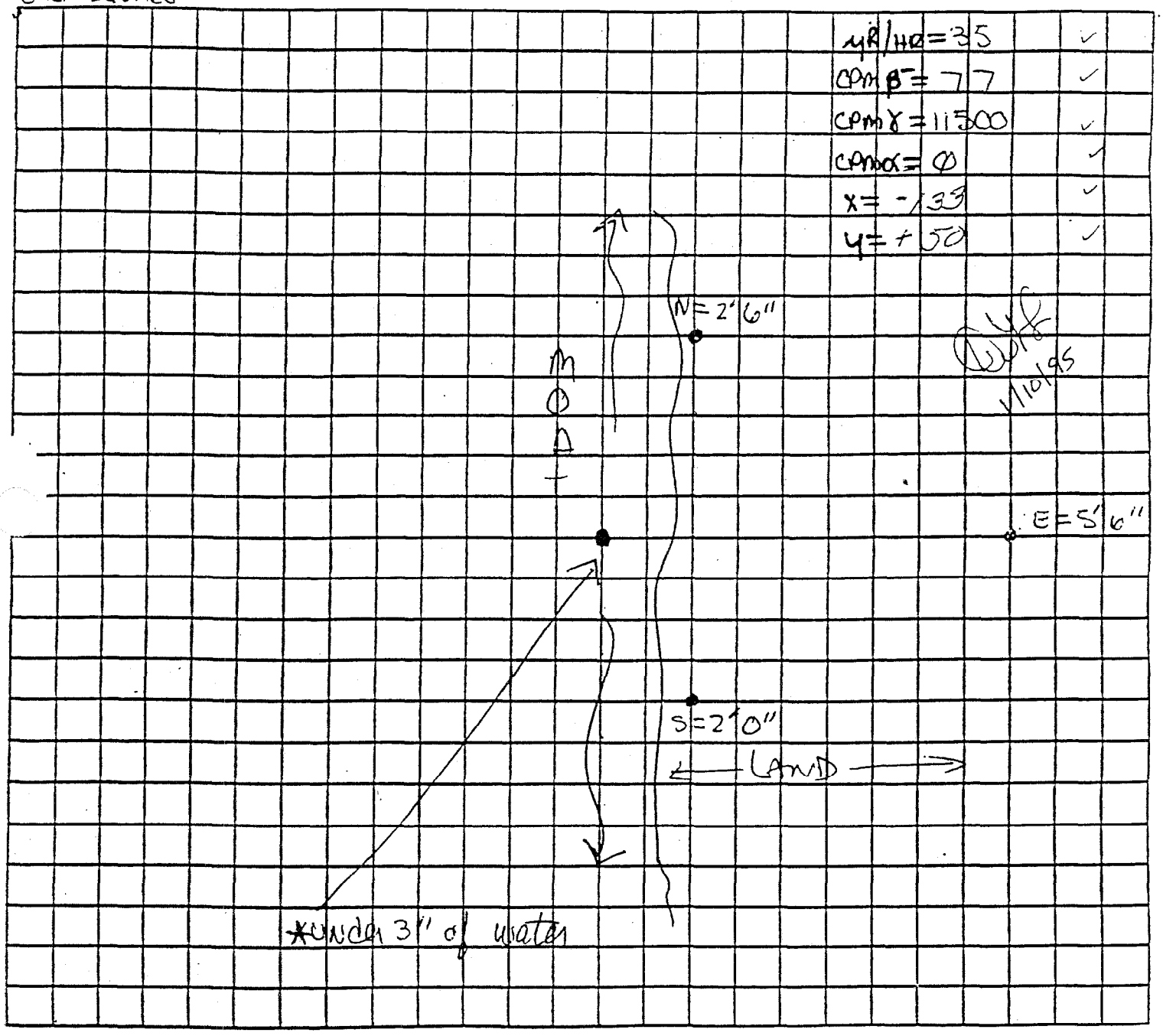
PAGE 7 7

DATE: DEC 94

Grid # 46-04 PART III Detector: *See Below Technicians: J. Showers / G. Shower
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = X




PAGE 8 OF 8

Remarks ① EACH SQUARE = X ② PEAK Reading is @ center point ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 47 DATE: 06 Dec 94

N/A

ISTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ | Calibrat Date |
|---|---|---|---|---|---|---|
| UDLUM M19 MICROR | 95487 | N/A | N/A | 3 | N/A | 4/2/ |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/ |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21 |
| UDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/ |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Gamma cpm | ~~Beta~~ Gamma dpm | Micro F |
|---|---|---|---|---|---|---|---|
| 4ft Sqrt - 47-02 | 7 | 32.7 | 68 | 132.1 | 7238 | 74676.4 | 13 |
| | | | | | | | |
| | | | | | | | |
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1/10/95

Remarks (Notes): Checked by J. S. Howard 12/1

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 06 DEC 94

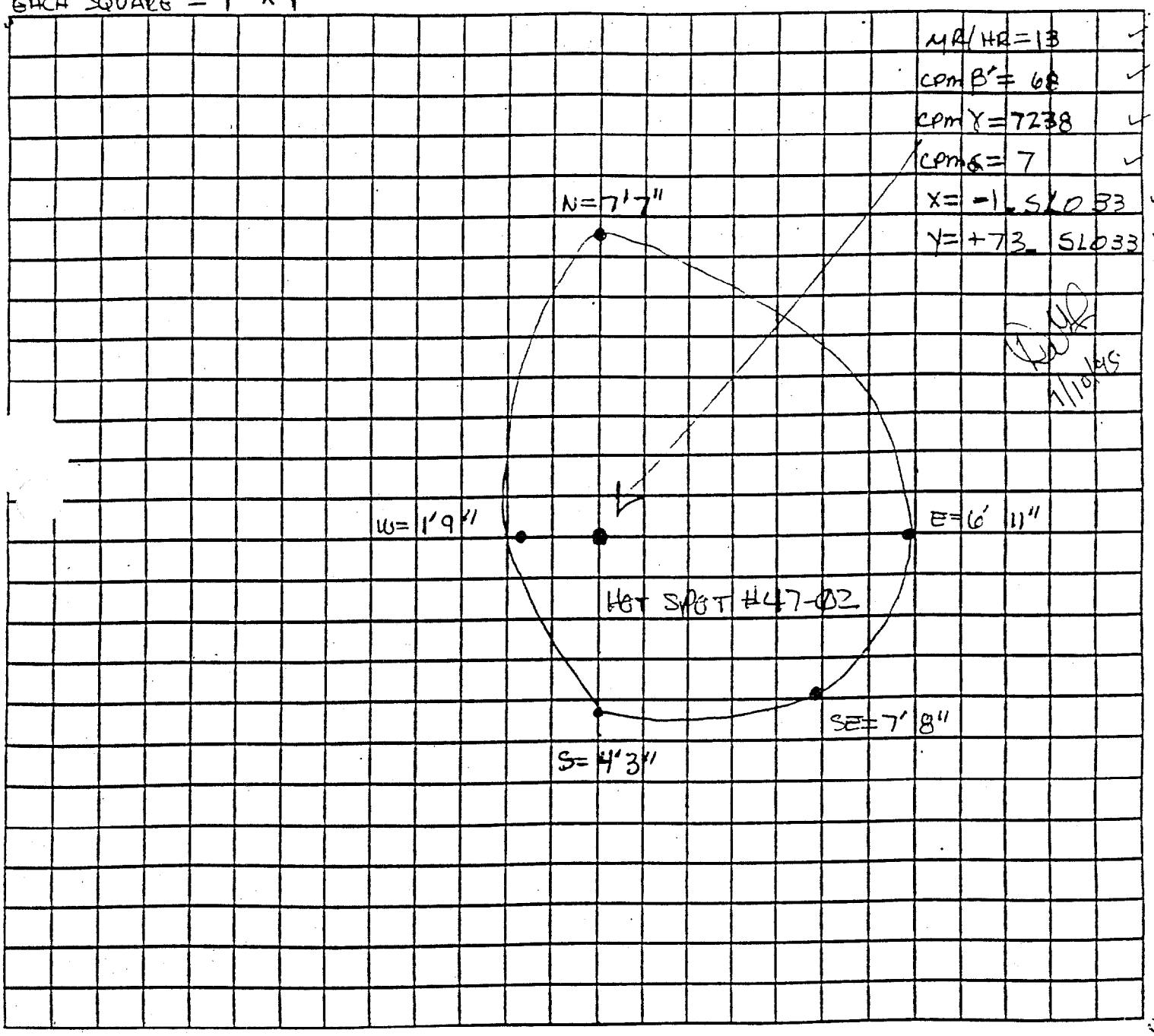
47 47-02 Detector: *See Below Technicians: J. Showers / G. Showers

: LUDLUM2221/m19 BKG N/A S. HAESE / R. PARRISH

ersion: N/A S/N: N/A W.C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'




SLO

PAGE 2 OF 6

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-9

DIRECT SURFACE CONTAMINATION READINGS



IRVEY NO. N/A SITE: PSC-26 Grid # 47 DATE: 05 Dec 94

N/A

RS 12-15-94

| INSTRUMENTS | | | | | | |
|---|---|---|---|---|---|---|
| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibra Dat |
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2 |
| LUDLUM 2221 | 99136 | 44-10 | #465 | 2251 | .071 | 4/20 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/2 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ...ion description | Alpha | | Beta | | ~~Beta~~/Gamma | | Micro |
|---|---|---|---|---|---|---|---|
| | cpm | dpm | cpm | dpm | cpm | dpm | |
| HOT SPOT 47-03 | 0 | < 8.18 | 92 | 226 | 18035 | 222309 | 30 |
| | | | | | | | |
| | | | | | | | |
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1/10/95

Remarks (Notes): Checked by J. Stevens 12-13-9

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

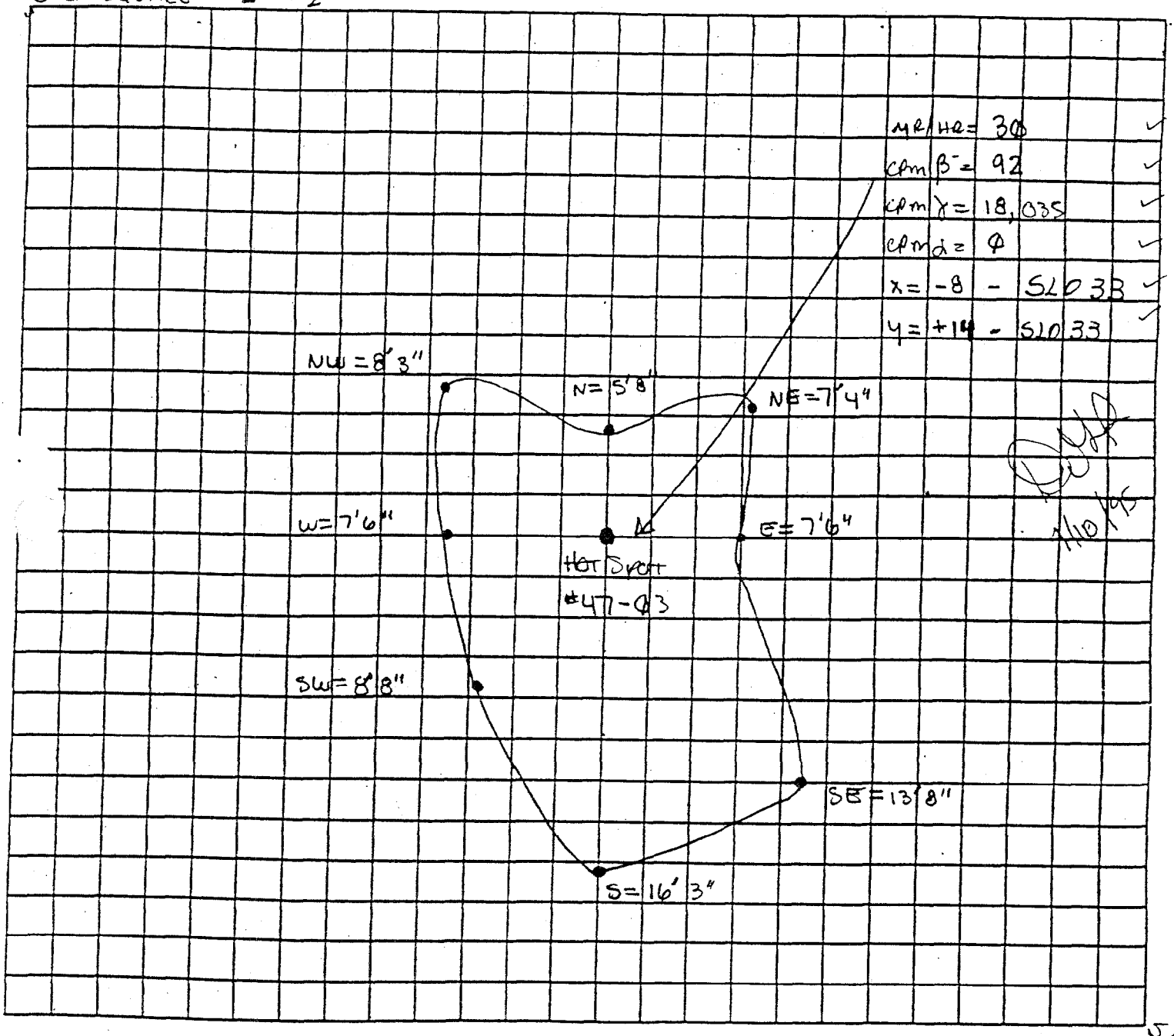
PAGE 11

DATE: 05 DEC 94

Grid #47 47-03 Detector: * See Below Technicians: J. Shown / G Shown
aler: Ludlum 2221/m19 BKG N/A R. Parrish / S. Haase
nversion: N/A S/N: N/A W.C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 2' x 2'




SL033

PAGE 4 OF 6

arks ① EACH SQUARE = 2' x 2' ② Peak Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Shown 12-23-94

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 47-A-1 DATE: 07Dec94

N/A

STRUMENTS

12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibr Da |
|---|---|---|---|---|---|---|
| JDLUM M19 INDOOR | 95487 | N/A | N/A | 4 uR/hr | N/A | 4/2 |
| JDLUM 2221 | 99136 | 44-10 | #165 | 22.5 | .069 | 4/20 |
| JDLUM 2221 | 117366 | 44-9 | #116878 | 32.8 | .26 | 10/2 |
| JDLUM 2221 | 102049 | 43-65 | #090753 | .1 | .17 | 4/20 |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro |
|---|---|---|---|---|---|---|---|
| ** HOT SPOT 47-A1 | 4 | 22.9 | 388 | 1366 | 66255 | 928116 | 80 |
| * SEE NOTE BELOW | | | | | | | |

11/10/95

Remarks (Notes): 47-01 47-04, 47-05 46-06 46-08 ARE LOCATED WITHIN A MULTIPLE HIT AREA -** 47.07 NOW IS 47-A-1

Checked by [illegible] 12-13

FIELD DATA ACQUISITION FORM

WALKOVER GAMMA SCAN DATA SHEET

DATE: 07 DEC 94

Grid # 47 Detector *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

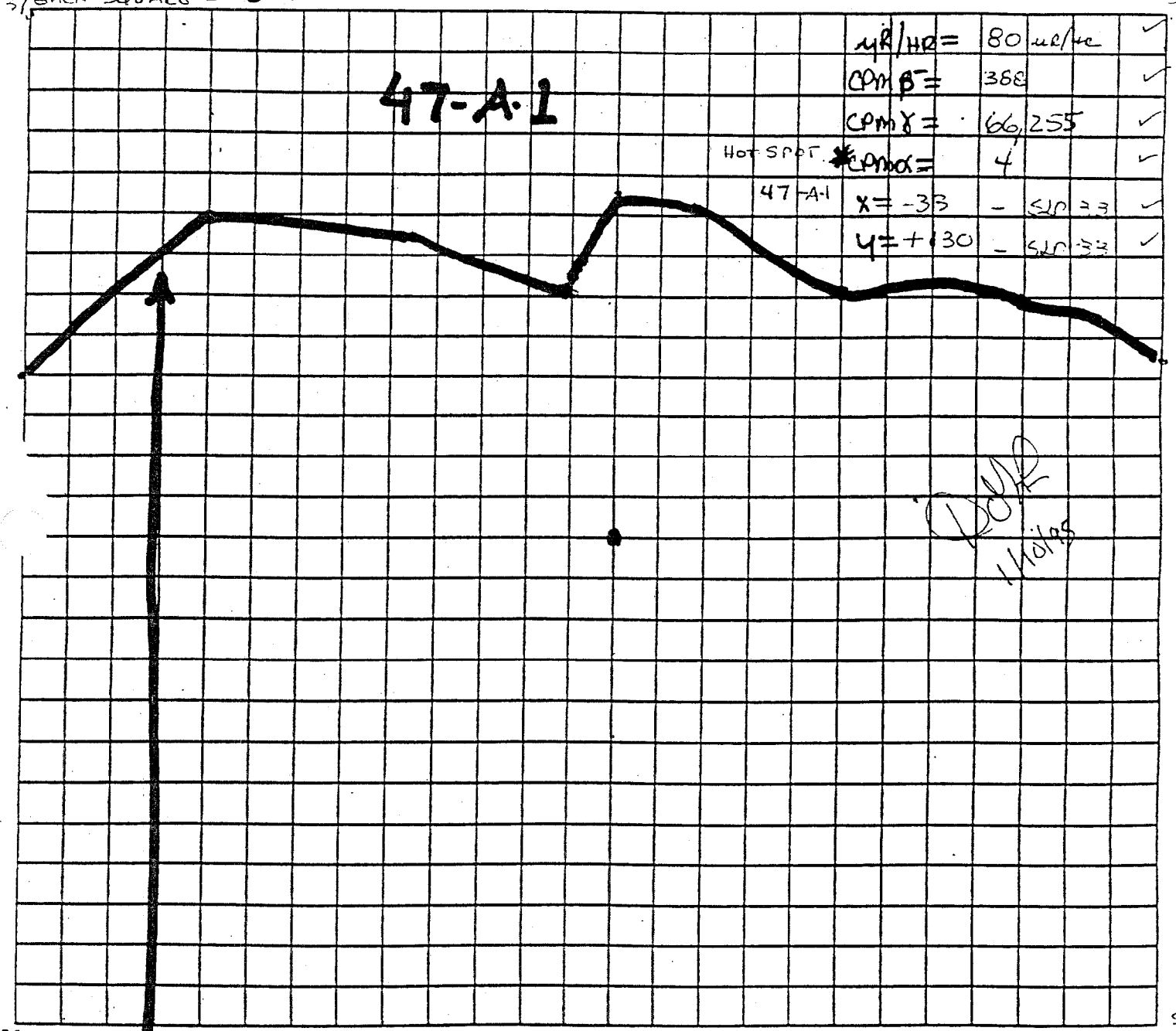
*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR #165 γ

*2221 = 117366 + DETECTOR #116878 β⁻ γ

*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6' x 6'




NOTE: ALL READINGS WITHIN THIS AREA 2 TIMES GREATER THAN BACKGROUND AND DESIGNATED AS 47-A-1

marks ① EACH SQUARE = 6' x 6' ② Peak Reading is @ center point ③ AREA of INTEREST is out to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

PAGE 6 OF 6

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID #48 DATE: 07Dec94

N/A

STRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibrati Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4 | N/A | 4/2/9 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2215 ~~2260~~ | .069 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 32.8 | .26 | 10/21/ |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .1 | .17 | 4/20/ |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| Hot Spot 48-06 | 2 | 11.1 | 95 | 239 ~~270~~ | 11040 | 127898.5 | 18 |
| 48-03 | 2 | 11.1 | 123 | 346.9 | 12900 | 154855 | 26 |
| 48-04 | 5 | 28.8 | 142 | 420 | 36430 | 425869.5 | 50 |
| 48-08 | 4 | 22.9 | 118 | 327.6 | 15742 | 196043 | 24 |
| 48-02 | 1 | 5.2 | 105 | 277.6 | 17839 | 226434 | 24 |
| 48-05 | 3 | 17.0 | 180 | 566.1 | 23969 | 315275.3 | 38 |
| 48-01 | 4 | 22.9 | 148 | 443 | 15257 | 189014 | 26 |

Remarks (Notes): #48-07 ENCOMPASSED BY #48-08 – Charles L. Havens 12-13-

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

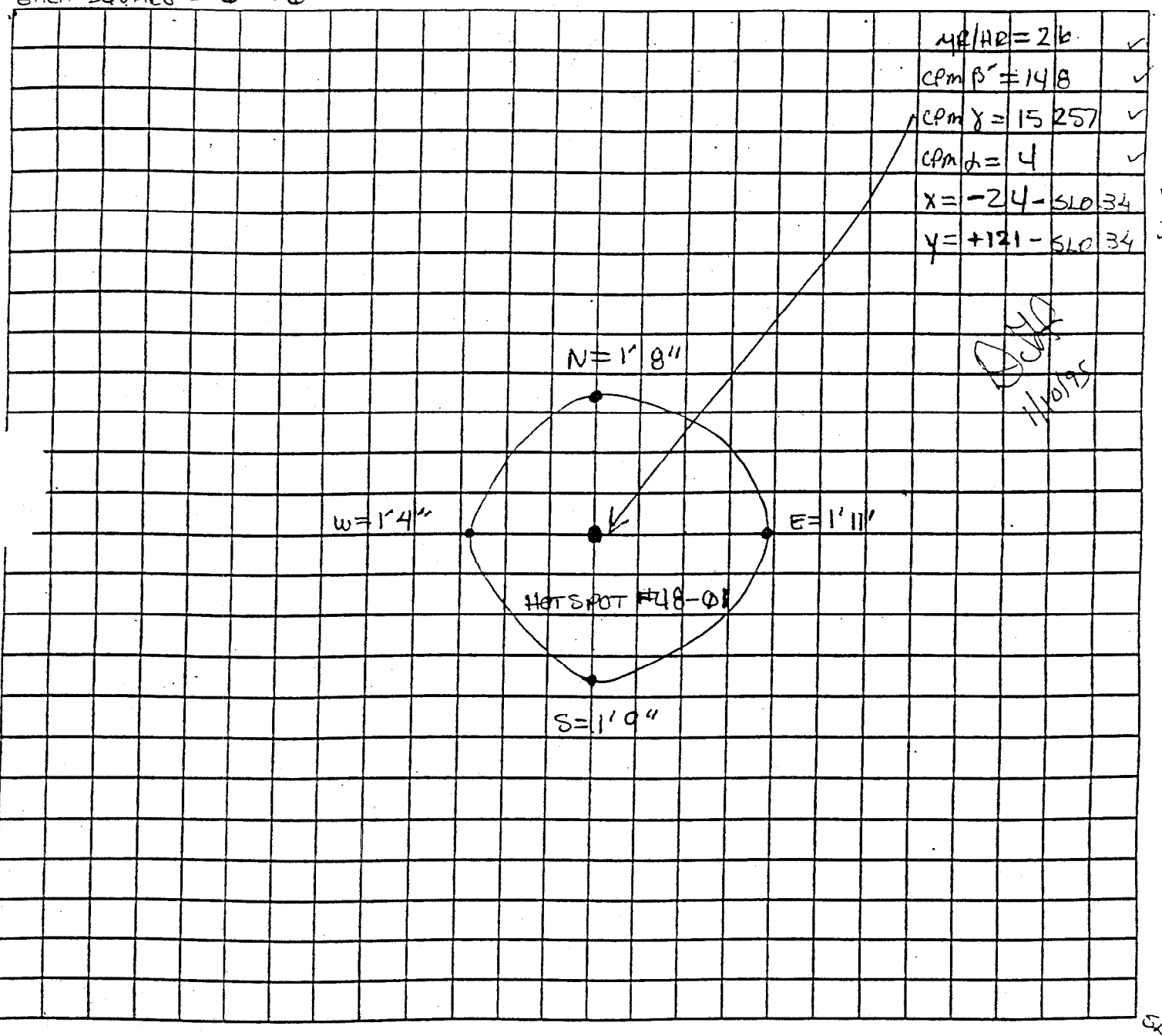
PAGE 01

DATE: 07 DEC 94

Grid # 48 48-01 Detector: *See Below Technicians: J. Showers | G. Showers
ler: LUDLUM2221/M19 BKG N/A R. Parrish | S. HAESE
nversion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




PAGE 2 OF 8

marks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

WALKOVER GAMMA SCAN DATA SHEET

DATE: 07 DEC 94

Grid # 48 48-02 Detector: *See Below Technicians: J. Showers / G. Shawe

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

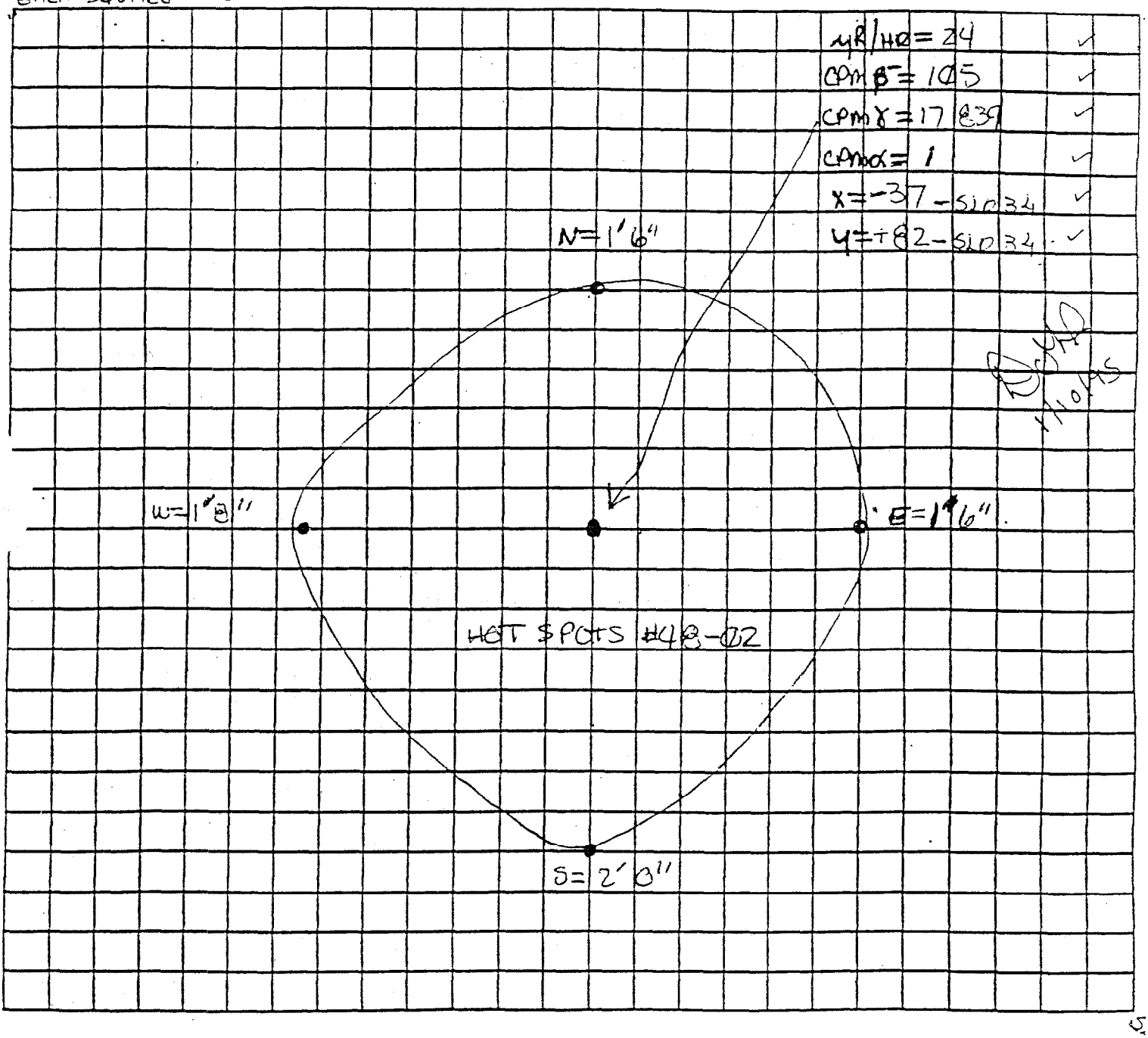
*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR #165 γ

*2221 = 117366 + DETECTOR #116878 β⁻ γ

*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"




PAGE 3 OF 8

Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 07 DEC 94

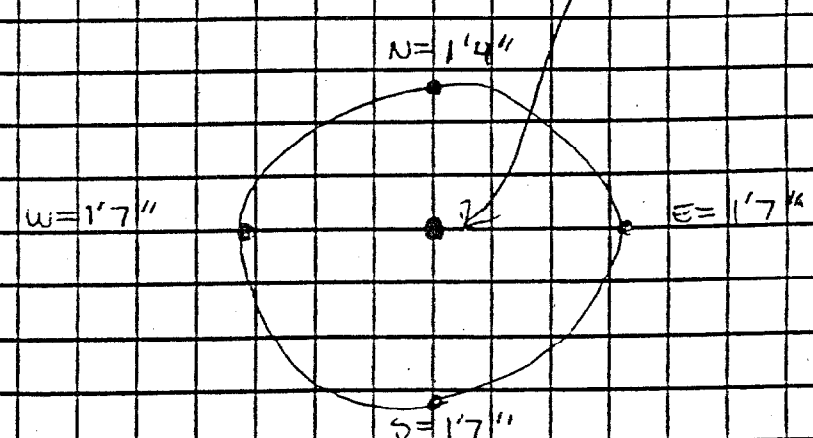
WALKOVER GAMMA SCAN DATA SHEET

Grid # 48 48-03 Detector: *See Below Technicians: J. Showers / G. Showe
Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

μR/HR = 26 ✓
CPM β⁻ = 123 ✓
CPM γ = 12900 ✓
CPM α = 2 ~~SLD 34~~ 95 12-
x = - 42 - SLD 34 ✓
y = + 38 - SLD 34 ✓




DCH 1/10/95

PAGE 4 OF 8

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 07 DEC 94

WALKOVER ... SAN DATA SHEET

Grid # 48 48-04 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

onversion: N/A S/N: N/A W. C. May

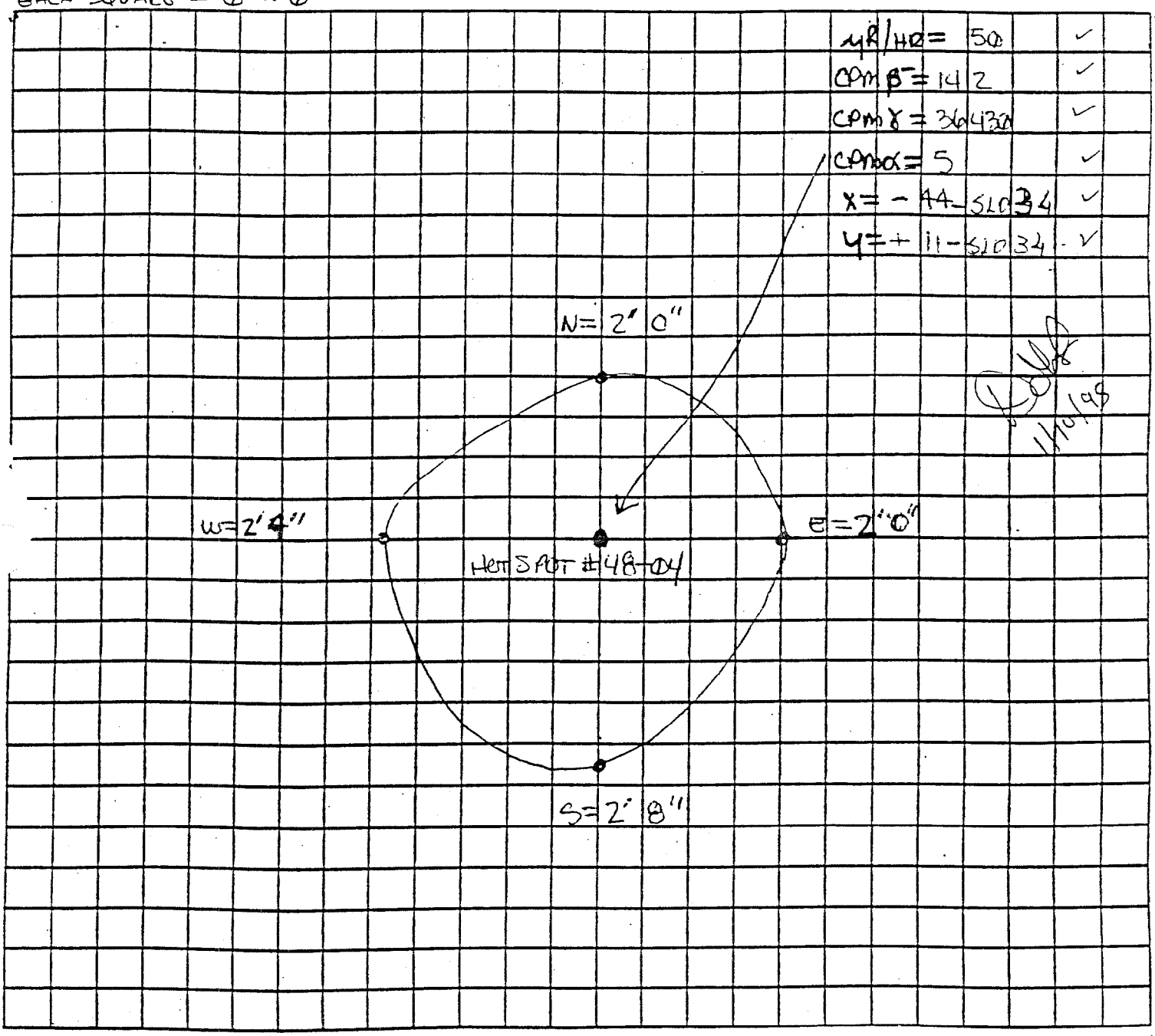
*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR #165 γ

*2221 = 117366 + DETECTOR #116878 β⁻ γ

*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

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emarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 07 DEC 94

WALKOVER ... DATA SHEET

Grid # 48 48-05 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

onversion: N/A S/N: N/A W. C. May

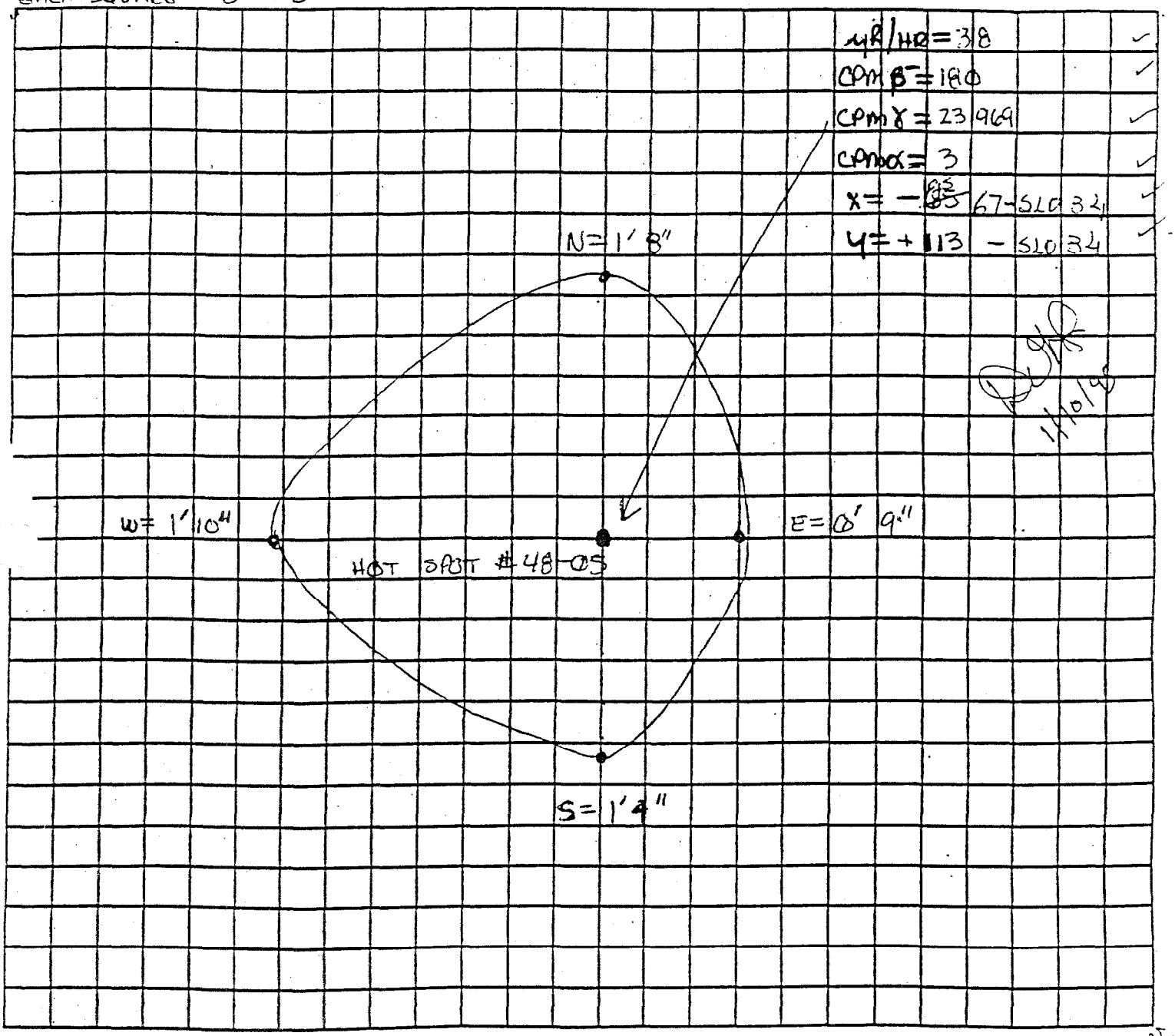
*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR #165 γ

*2221 = 117366 + DETECTOR #116878 β⁻ γ

*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"




1/10/95

SLO

PAGE 6 OF 8

marks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

Checked by J. Showers 12-13-94

DATE: 07 DEC 94

WALKOVER GA[illegible] SCAN DATA SHEET

Grid # 48 48-06 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 2' x 2'

μR/HR = 18

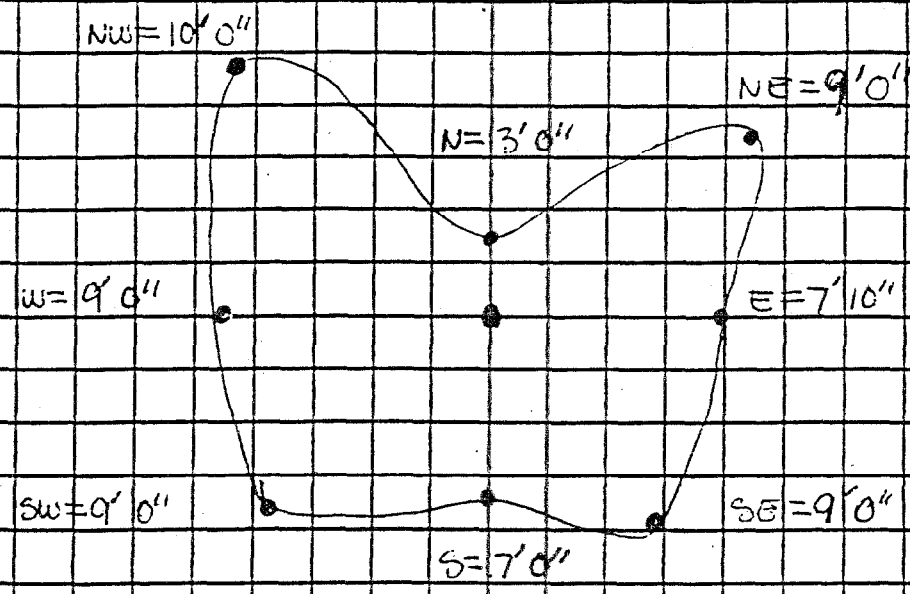
CPM β⁻ = 95

CPM γ = 11040

CPM α = 2

X = ~~-133~~ 95 98 - 51034

Y = + ~~76~~ 95 100 - 51034




1/10/95

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Remarks ① EACH SQUARE = 2' x 2' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 07 DEC 94

WALKOVER SAMMING DATA SHEET

Grid # 48 48-08 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE

onversion: N/A S/N: N/A W. C. May

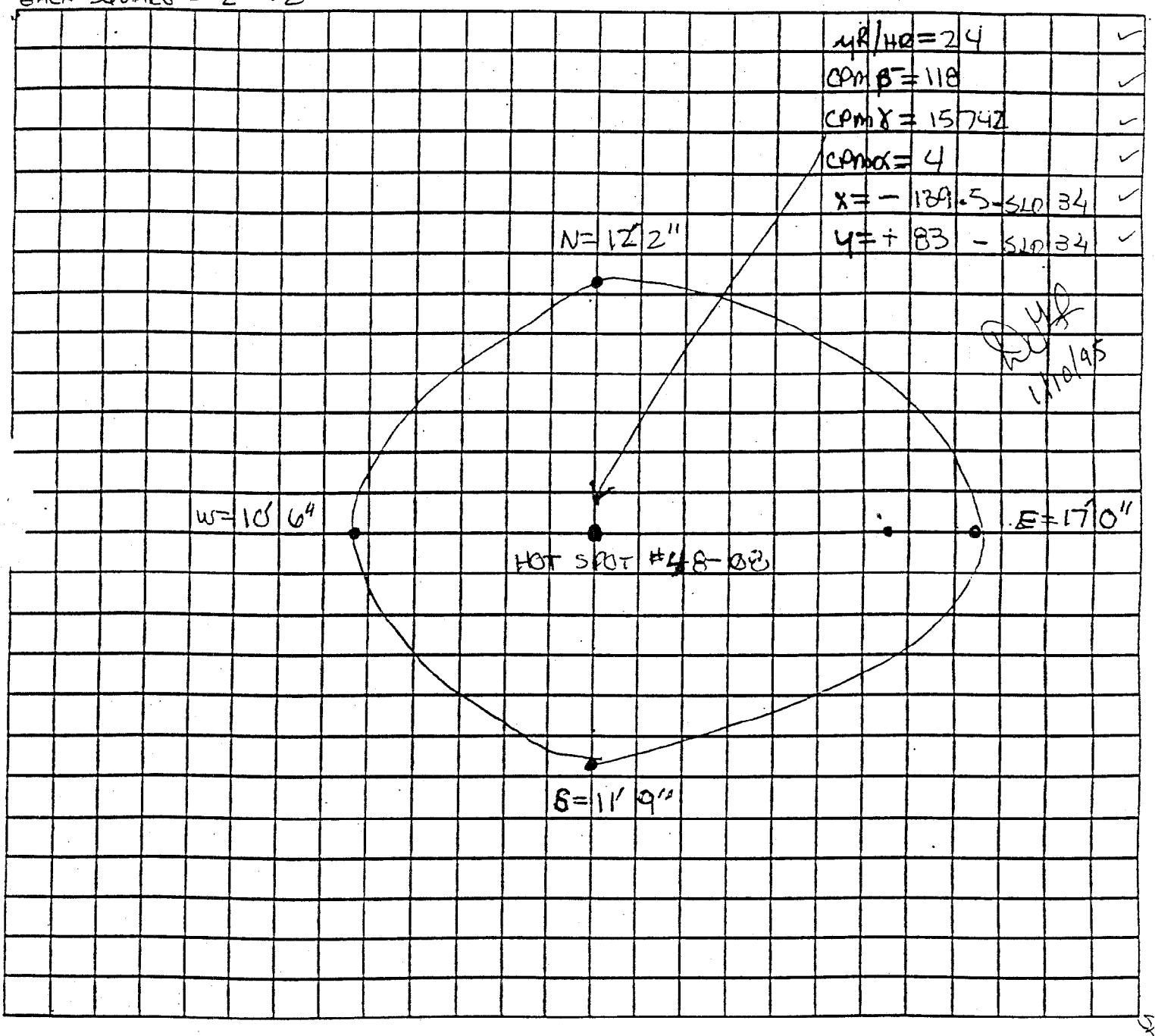
*m19 = 95487 μR/HR

*2221 = 99136 + DETECTOR #165 γ

*2221 = 117366 + DETECTOR #116878 β γ

*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 2' x 2'




PAGE 8 OF 8

emarks ① EACH SQUARE = 2' x 2' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID #49 DATE: 07Dec94

N/A

STRUMENTS

AS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibrati Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICRO R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #465 | 2215 ~~2260~~ Oven | .069 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 32.8 | .26 | 10/21/ |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .1 | .17 | 4/20/ |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| HOT SPOT 49-01 | 0 | <0.4 | 66 | 127.6 | 8400 | 89637.6 | 11 |
| HOT SPOT 49-02 | 1 | 5.2 | 161 | 493 | 19260 | 247028.9 | 29 |
| HOT SPOT 49-03 | 0 | <0.4 | 125 | 354.6 | 18950 | 242536 | 20 |
| HOT SPOT 49-04 See Note Below | | | | | | | |
| HOT SPOT 49-05 ↓ | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

DWF 11/10/95

Remarks (Notes): 49-04 DID NOT MEET THE HOT SPOT CRITERIA } AREA LESS THAN -
49-05 DID NOT MEET THE HOT SPOT CRITERIA } TWO TIMES BACKGROUND

Checked by J. Stowers 12-13-94

DATE: 07 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 49 49-01 Detector: *See Below Technicians: J. Shawers / G. Shawe

Scaler: Ludlum2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

μR/HR = 11

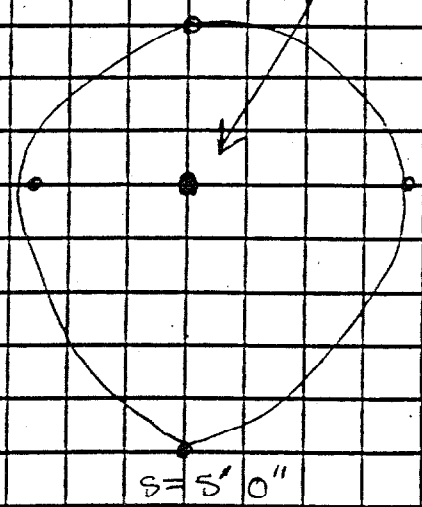
CPM β = 66

CPM γ = 8400

CPM α = 0

X = -195 -S LO 35

Y = +149 -S LO 35




PAGE 2 OF 6

Remarks ① EACH SQUARE = 1' x 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by J. Shawers 12-13-9

DATE: 07 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 49 49-02

Scaler: LUDLUM2221/M19

Conversion: N/A

Detector: *See Below

BKG N/A

S/N: N/A

Technicians: J. Shawver / G. Shawver, R. PARRISH / S. HAGSE, W. C. May

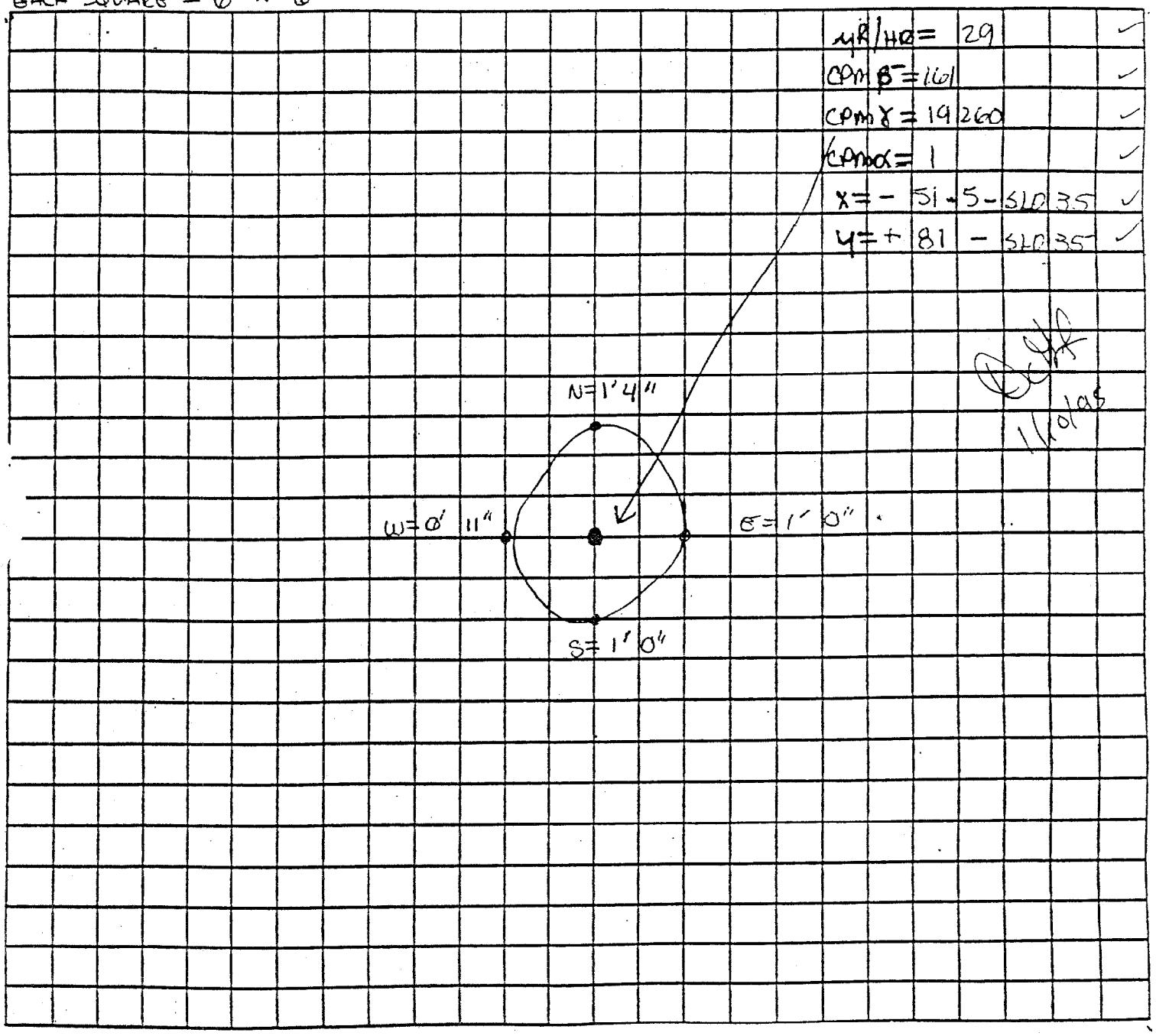
*M19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

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Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by J. Shawver 12-13-94

DATE: 07DEC94

Grid # 49 49-03 Detector: *See Below Technicians: J. Shawen / G. Shawen

Scaler: Ludlum2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 1165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 3" x 3"

μR/HR = 20 ✓

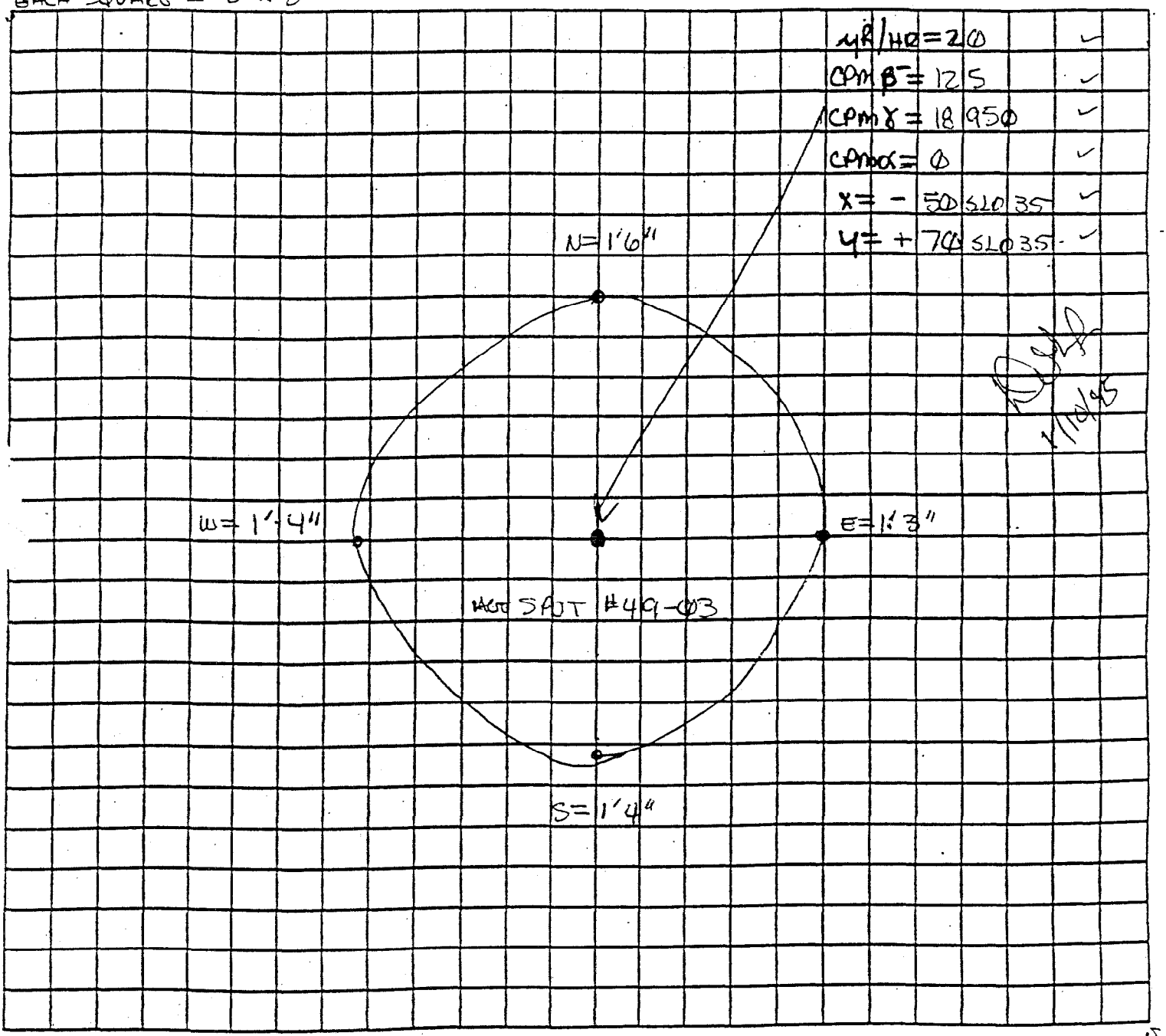
CPM β⁻ = 125 ✓

CPM γ = 18950 ✓

CPM α = 0 ✓

X = - 50 S 20 35 ✓

Y = + 70 S 20 35 ✓




1/10/95

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Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

G. Shawen 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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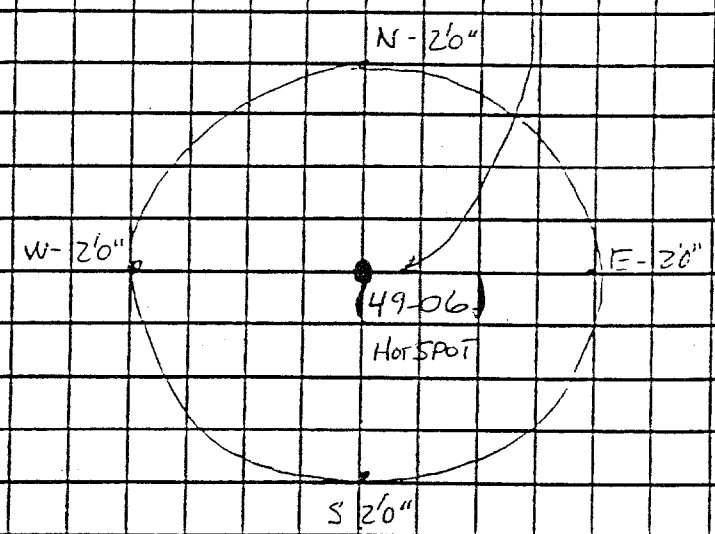
DATE: 08 DEC 94

Grid # 49-06 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 36 | ✓ |
| CPM β⁻ = | 174 | ✓ |
| CPM γ = | 24,985 | ✓ |
| CPM α = | 2 | ✓ |
| x = | -1-SLO 35 | ✓ |
| y = | +51-SLO 35 | ✓ |




Dwff 11/10/95

SLO

PAGE 6 OF 6

marks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13

# DIRECT SURFACE CONTAMINATION READINGS

EY NO. N/A SITE: PSC-26 GRID #50 DATE: 08 DEC 94

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. (fs 12-15-94) | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICROR | 95487 | N/A | N/A | 4MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/9[illegible] |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ...ation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ fs/Gamma cpm | ~~Beta~~ fs/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 50-01 | 1 | 2.3 | 180 | 569.6 | 35536 | 475800 | 50 |
| 50-02 | 1 | 2.3 | 70 | 146.5 | 11570 | 133428.5 | 15 |
| 50-03 | 3 | 14.1 | 76 | 169.6 | 10729 | 121414.2 | 18 |
| 50-04 | 4 | 20 | 102 | 269.6 | 19150 | 241714 | 25 |
| 50-05 | 0 | <0.4 (fs 12-21-94) | 73 | 158.0 | 12500 | 146714 | 21 |
| 50-06 | 3 | 14.1 | 77 | 173.4 | 18200 | 228142 | 20 |
| 50-07 | 5 | 25.8 | 454 | 1623.4 | 52,100 | 712428.5 | 34 |
| * 50-08 SEE BELOW | | | | | | | |

1/10/9[illegible]

Remarks (Notes): * 50-08 DID NOT MEET HOT SPOT CRITERIA, AREA WAS LESS THAN TWO TIMES BACKGROUND

Checked by J. Showers 12-13-94

DATE: 08 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-01 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

onversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR

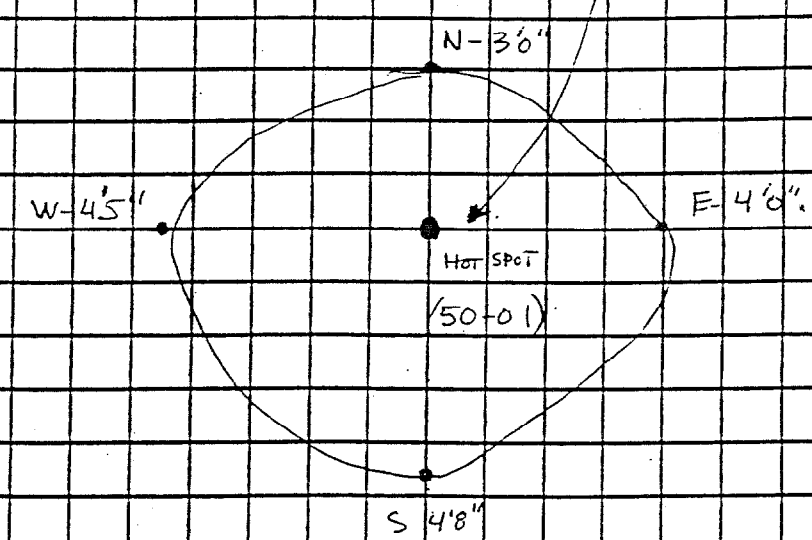
*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' X 1'

| | | | | |
|---|---|---|---|---|
| μR/HR = | 50 | | | ✓ |
| CPM β⁻ = | 180 | | | ✓ |
| CPM γ = | 35,536 | | | ✓ |
| CPM α = | 1 | | | ✓ |
| X = | -149.5 | - | 5LD | 72 |
| Y = | +80 | - | 5LD | 72 |




1/10/95

PAGE 2 OF 16

emarks ① EACH SQUARE = 1' X 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 08 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-02 Detector: *See Below Technicians: J. Showers / G. Shower

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR

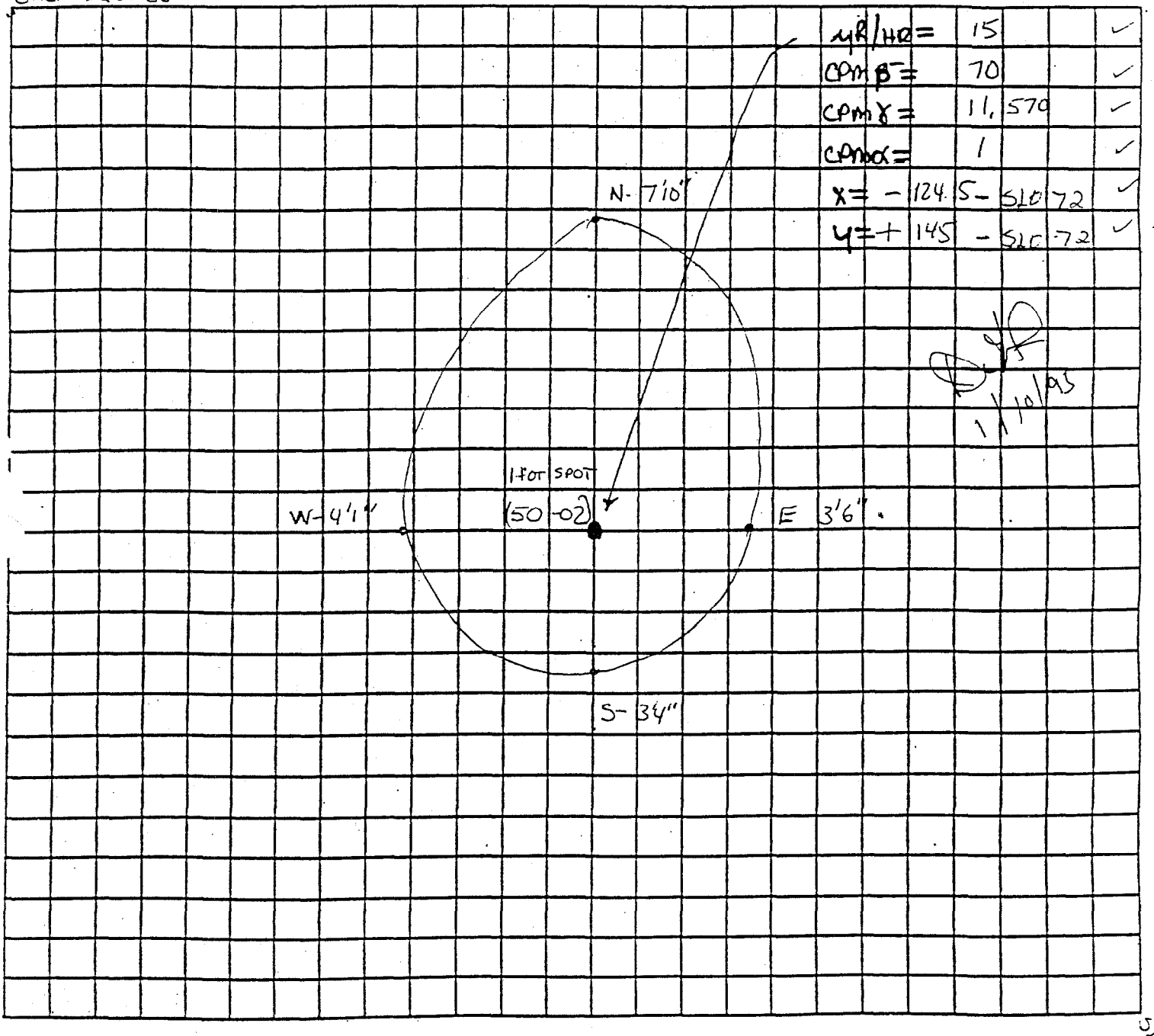
*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | | |
|---|---|---|
| μR/HR = | 15 | ✓ |
| CPM β⁻ = | 70 | ✓ |
| CPM γ = | 11,570 | ✓ |
| CPM α = | 1 | ✓ |
| X = | -124.5 - SLC 72 | ✓ |
| Y = | +145 - SLC 72 | ✓ |




1/10/95

PAGE 3 OF 16

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center point ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

DATE: 08 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-03 Detector: *See Below Technicians: J. Shauers / G. Shauers

Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

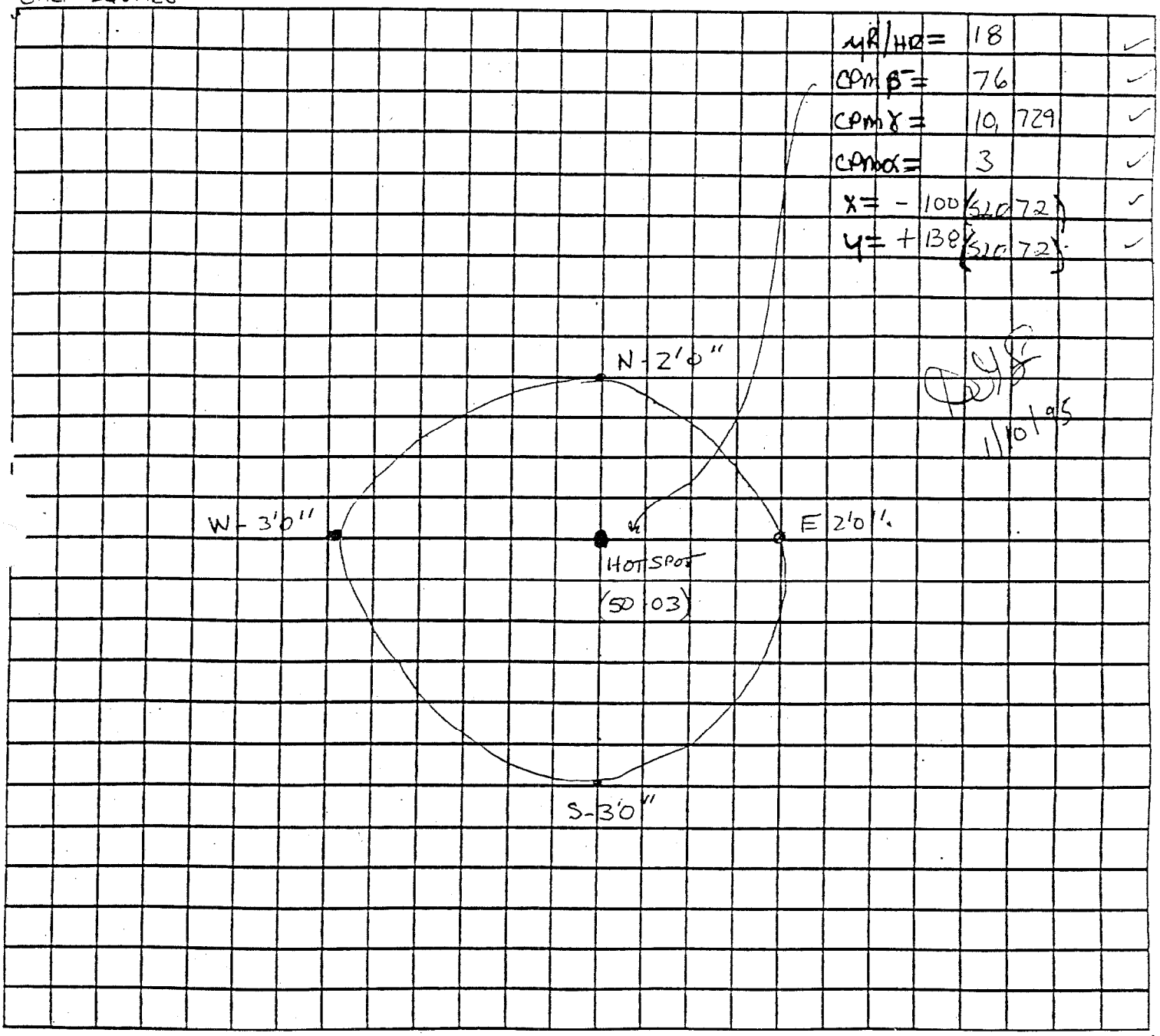
*m19 = 95487 μR/HR

*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

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Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT to EDGE OF ENCIRCLED AREA

Shelley G. Shauers 12-13-94

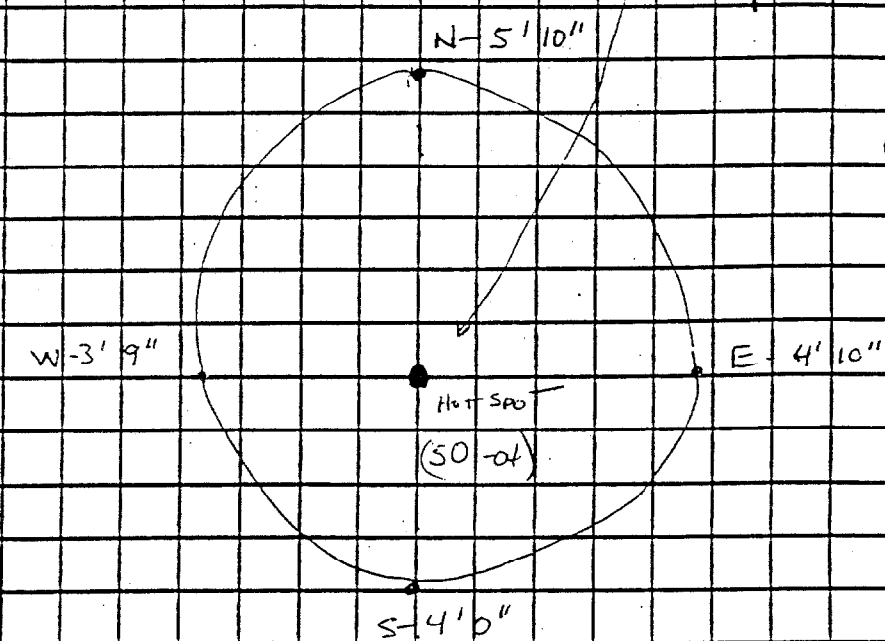
DATE: 08 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| Grid # | 50-04 | Detector: | *See Below | Technicians: | J. Showers / G. Showe |
| Scaler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| Conversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | | |
|---|---|---|
| μR/HR = | 25 | ✓ |
| CPM β⁻ = | 102 | ✓ |
| CPM γ = | 19,150 | ✓ |
| CPM α = | 4 | ✓ |
| X = | -89-SLO72 | ✓ |
| Y = | +139-SLO72 | ✓ |




DJH 1/10/95

PAGE 5 OF 16

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

Checked by J. Showers 12-13-94

DATE: 08 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-05 Detector: *See Below Technicians: J. Showers / G. Shaw

Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

onversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR

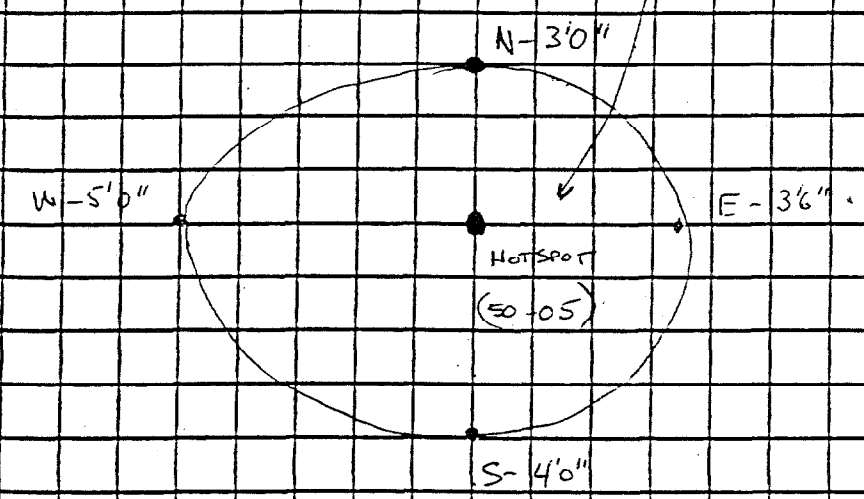
*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | | |
|---|---|---|
| μR/HR = | 21 | ✓ |
| CPM β⁻ = | 73 | ✓ |
| CPM γ = | 12,500 | ✓ |
| CPM α = | 0 | ✓ |
| X = | − 68'0" − SLC 72 | ✓ |
| Y = | + 42'0" − SLC 72 | ✓ |




DCH 1/10/95

SLC

PAGE 6 OF 16

emarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked G. J. Showers 12-13-94

DATE: 8 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-06 Detector: *See Below Technicians: J. Shawers / G. Shawe

Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR

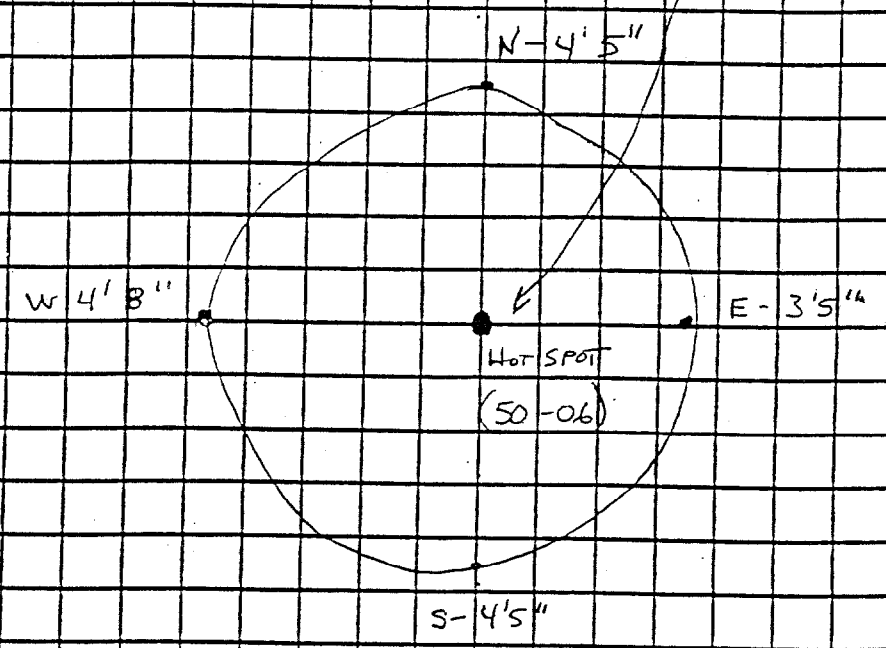
*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' X 1'

| | | | | |
|---|---|---|---|---|
| μR/HR = | 20 | | | ✓ |
| CPM β⁻ = | 77 | | | ✓ |
| CPM γ = | 18,200 | | | ✓ |
| CPM α = | 3 | | | ✓ |
| X = | - 60' | 0" | SLO 72 | ✓ |
| Y = | + 120' | 5" | SLO 72 | ✓ |




1/10/95

SLO

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Remarks ① EACH SQUARE = 1' X 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Charlie G. Shawers 12-13-94

DATE: 08 DEC 94

WALKOVER GAMMA SCAN DATA SHEET

Grid # 50-07 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR

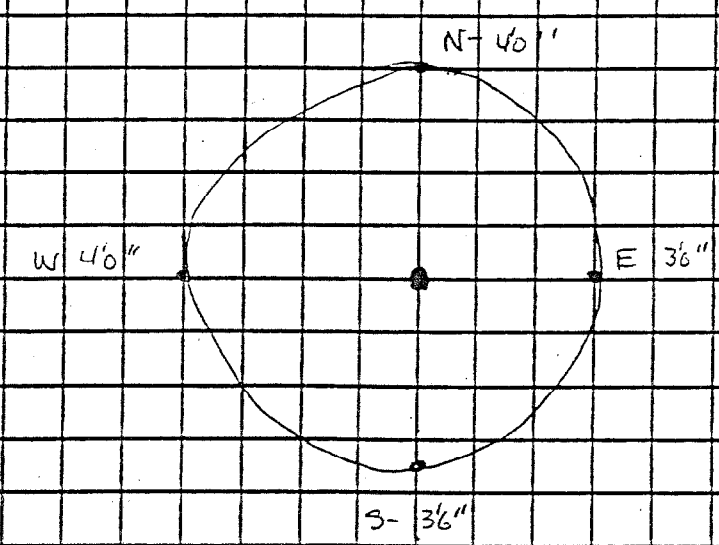
*2221 = 99136 + DETECTOR # 165 γ

*2221 = 117366 + DETECTOR # 116878 β⁻ γ

*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' X 1'

| | | | | |
|---|---|---|---|---|
| μR/HR = | 34 | | | ✓ |
| CPM β⁻ = | 454 | | | ✓ |
| CPM γ = | 52,100 | | | ✓ |
| CPM α = | 5 | | | ✓ |
| X = -50 | - | 5/10 | 72 | ✓ |
| Y = +69 | - | 5/10 | 72 | ✓ |

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PAGE 8 OF 16

Remarks ① EACH SQUARE = 1' X 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked G. J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SURVEY NO. N/A SITE: PSC-26 GRID # 50 PART II DATE: 04 JAN 95
TIME: N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116678 | 29.2 | 25.7 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

AWO 01-04-95

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta/~~Gamma cpm | Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 50-01 | 4 ✓ | 18.8 ✓ | 59 ✓ | 116 ✓ | 7500 ✓ | 70,868 ✓ | 12 ✓ |
| HOT SPOT 50-02 | 3 ✓ | 13.3 ✓ | 107 ✓ | 303 ✓ | 11,000 ✓ | 122,338 ✓ | 13 ✓ |
| HOT SPOT 50-03 | 1 ✓ | 2.2 ✓ | 156 ✓ | 493 ✓ | 16,200 ✓ | 198,809 ✓ | ~~1~~ 525 ✓ |
| HOT SPOT 50-04 SEE REMARKS | | | | | | | AWO 01-04-95 |
| HOT SPOT 50-05 | 1 ✓ | 2.2 ✓ | 91 ✓ | 240 ✓ | 13,700 ✓ | 162,044 ✓ | 15 ✓ |
| HOT SPOT 50-06 | 2 ✓ | 7.8 ✓ | 590 ✓ | 2182 ✓ | 91,200 ✓ | 1,301,750 ✓ | 150 ✓ |
| HOT SPOT 50-07 | 2 ✓ | 7.8 ✓ | 226 ✓ | 766 ✓ | 40,000 ✓ | 548,809 ✓ | 50 ✓ |
| HOT SPOT 50-08 | 1 ✓ | 2.2 ✓ | 78 ✓ | 190 ✓ | 11,750 ✓ | 133,368 ✓ | 20 ✓ |

Remarks (Notes): NOTE: HOT SPOT IDENTIFICATION # 50-04, WITHIN BOUNDARY OF CHARACTERIZED HOT SPOT IDENTIFICATION # 50-03

1/10/95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 04 JAN 95

PLOT II

Grid # 50 50-01 Detector: *See Below Technicians: J. Showers / G. Show

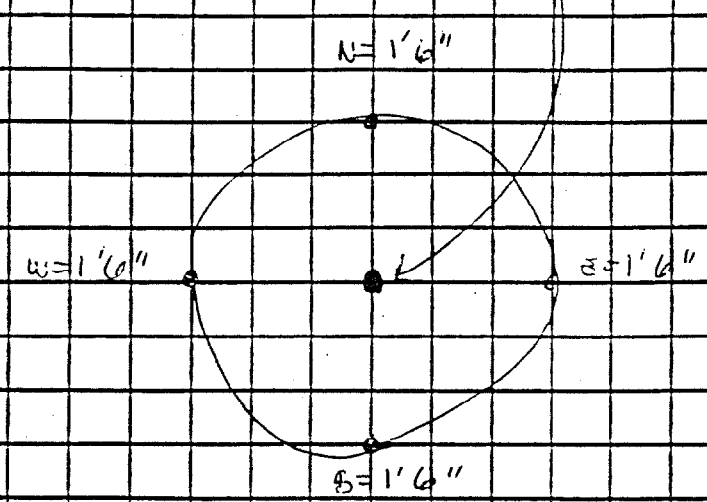
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

μR/HR = 12 ✓
CPM β⁻ = 59 ✓
CPM γ = 7500 ✓
CPM α = 4 ✓
x = -65 ✓
y = +148 ✓




DJR 1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

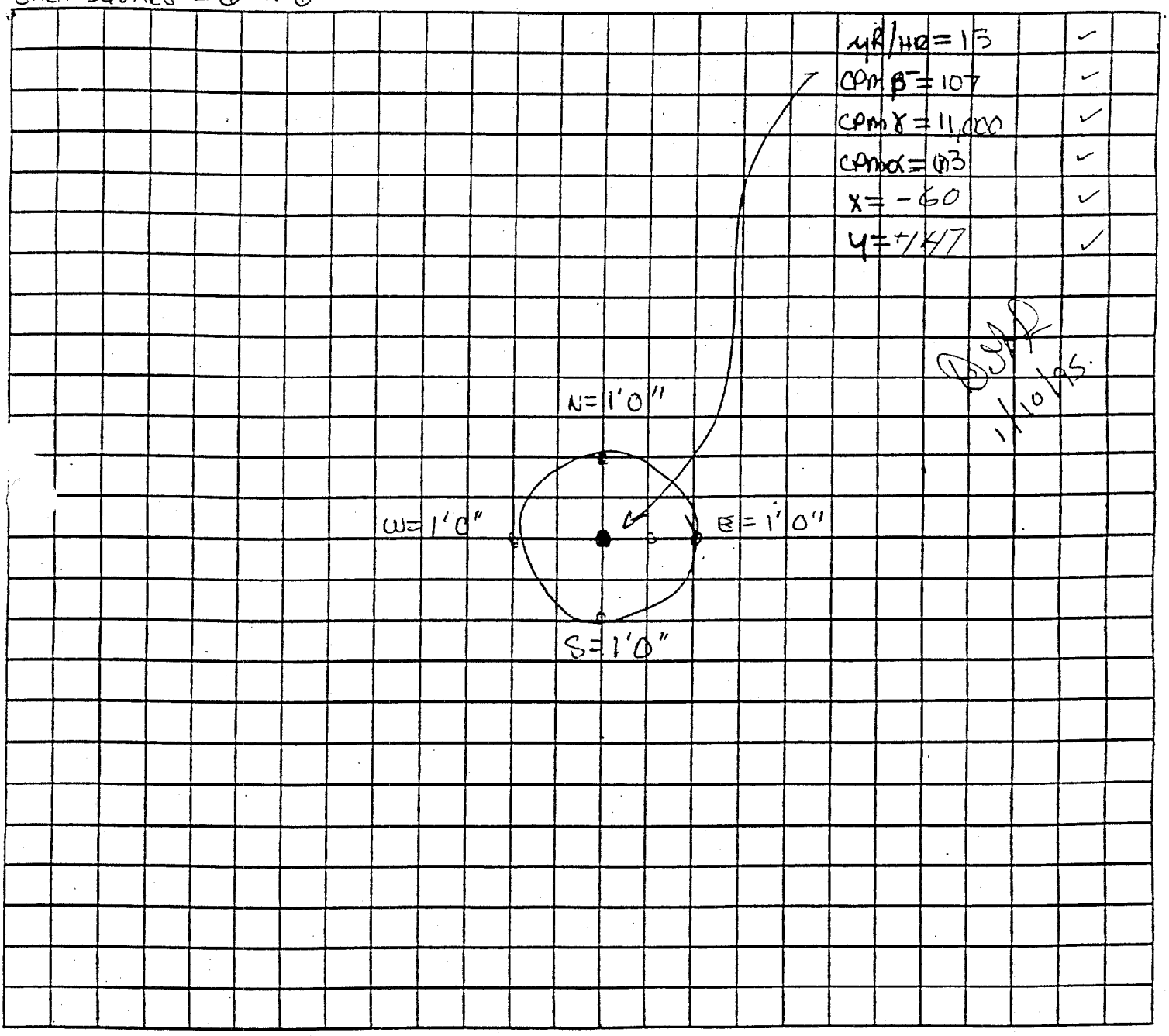


DATE: 29 DEC 94 PART II

'rid # 50 50-02 Detector: *See Below Technicians: J. Showers / G. Showers
ler: LUDLUM 2221/m19 BKG N/A R. PARRISH / S. HAGSE
version: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = X ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: ~~Dec 94~~ PART II

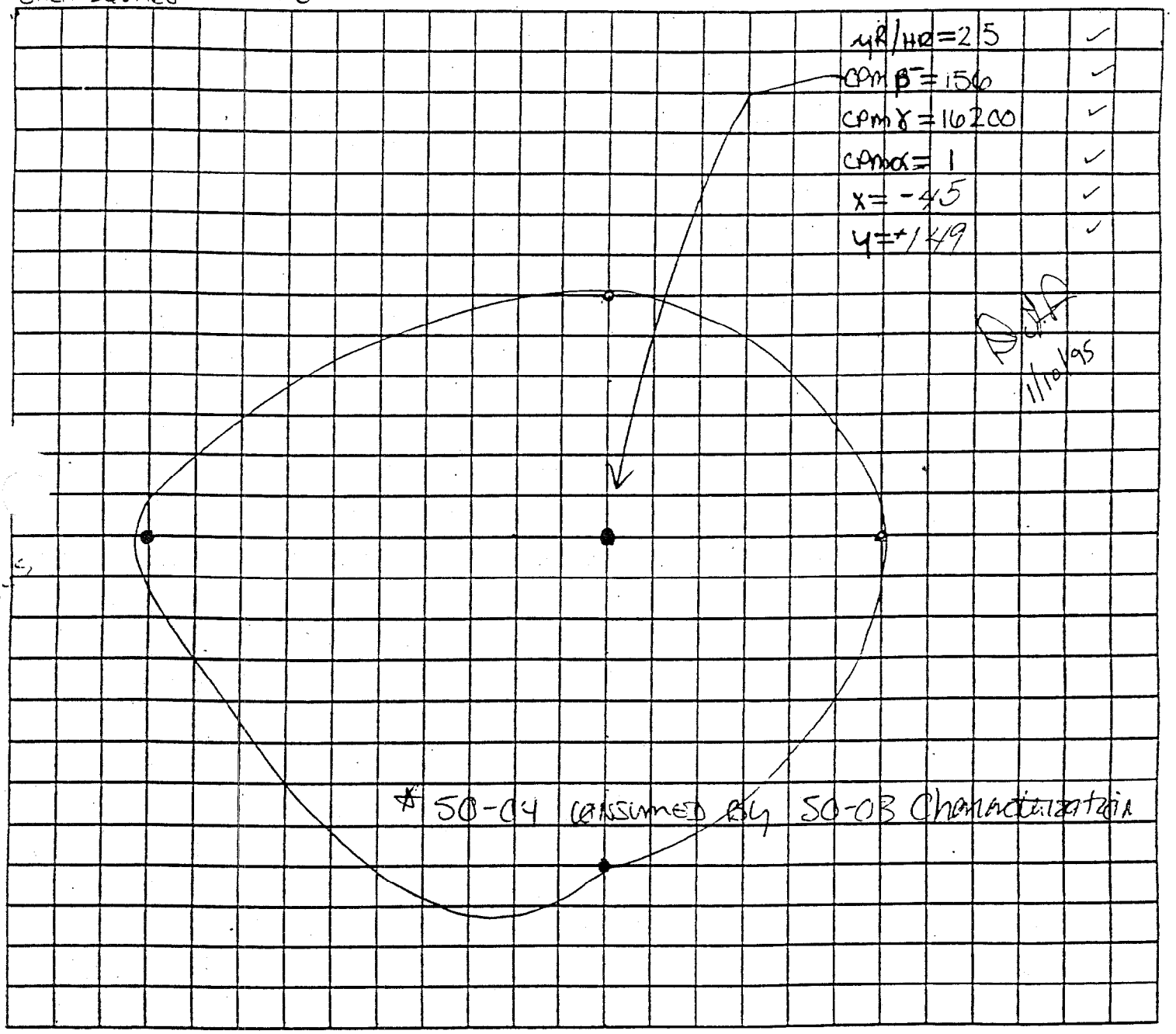
Grid # 50 50-03 Detector: *See Below Technicians: J. Showers / G. Showers

Meter: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = 6" x 6' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95

Grid # SO 50-05 PART II Detector: *See Below Technicians: J. Showers / G. Shaw
R. PARRISH / S. HAESE
W. C. May

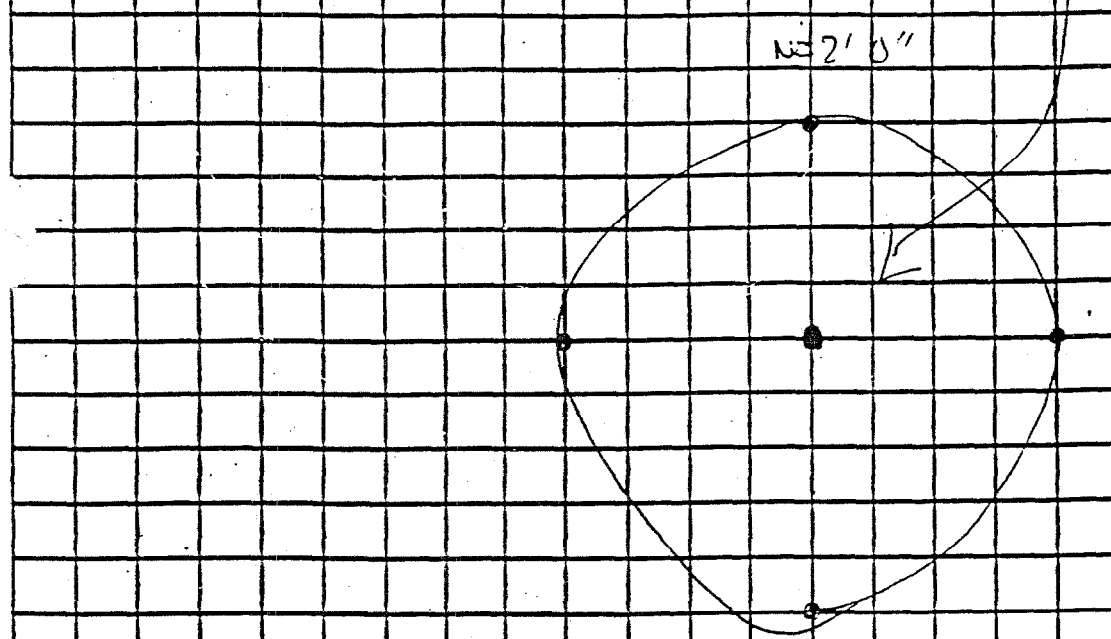
Scaler: LUDLUM 2221/M19 BKG N/A

Conversion: N/A S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6' x 6"

| | |
|---|---|
| μR/HR = 15 | ✓ |
| CPM β⁻ = 91 | ✓ |
| CPM γ = 13700 | ✓ |
| CPM α = 1 | ✓ |
| x = -30 | ✓ |
| y = +138 | ✓ |




1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95

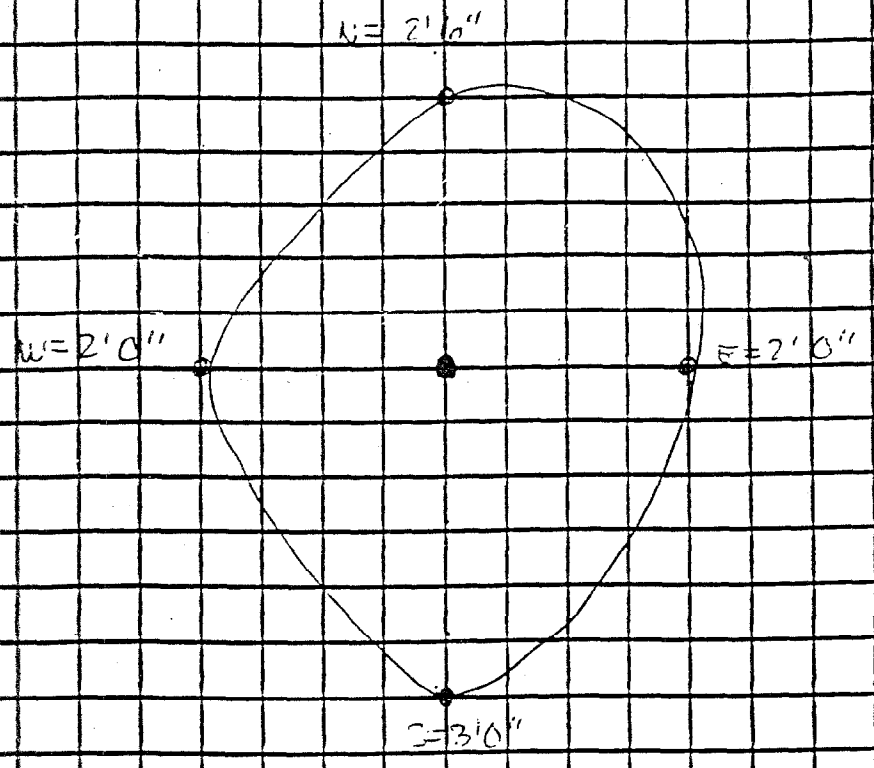
Grid # 50-06 PARTY
Detector: *See Below
Technicians: J. Showers / G. Shaw
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM 2221/M19
BKG N/A
Conversion: N/A
S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = 150 | ✓ |
| CPM β⁻ = 590 | ✓ |
| CPM γ = 91200 | ✓ |
| CPM α = 2 | ✓ |
| x = -60 | ✓ |
| y = +108 | ✓ |

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Remarks ① EACH SQUARE = X ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

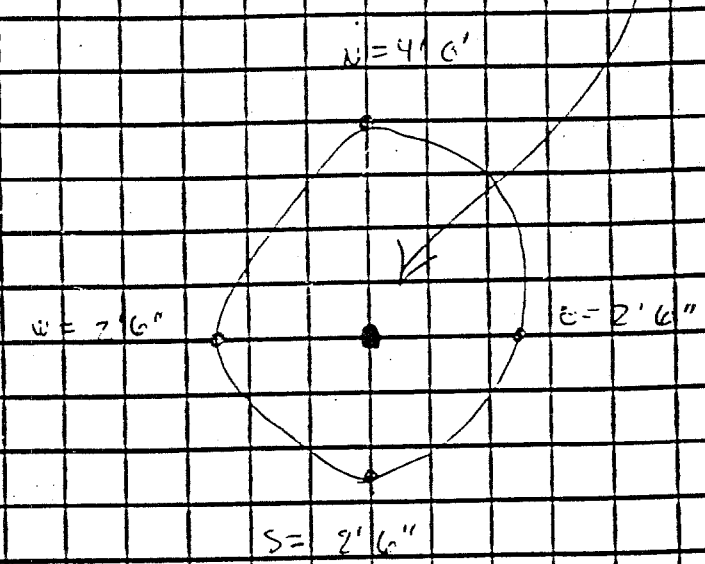
DATE: 04 JAN 95

Grid # 50-07 PART II  Detector: *See Below  Technicians: J. Showers / G. Shaw
Scaler: LUDLUM 2221/M19  BKG N/A  R. PARRISH / S. HAESE
Conversion: N/A  S/N: N/A  W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'

| | |
|---|---|
| μR/HR = 50 | ✓ |
| CPM β⁻ = 226 | ✓ |
| CPM γ = 40000 | ✓ |
| CPM α = 2 | ✓ |
| x = -60 | ✓ |
| y = +124 | ✓ |

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Remarks ① EACH SQUARE = 1' x 1'  ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

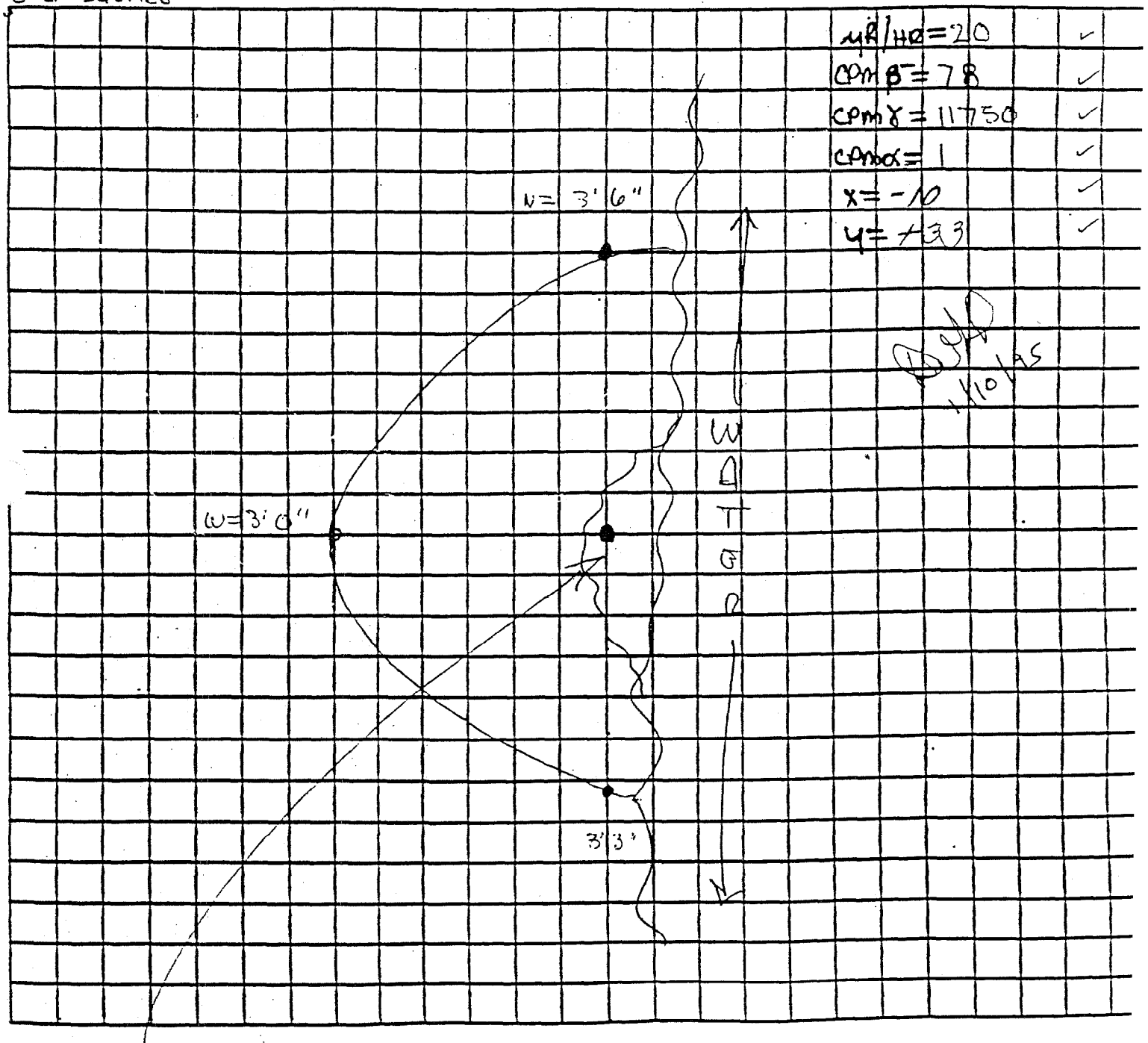
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95

Grid # 50 50-08 PART II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = X




*Source under 1" of water @ MEAT EDGE

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Remarks ① EACH SQUARE = X ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

JU Y NO. N/A SITE: PSC-26 Grid # 09 PART II DATE: 03 JAN 95
IN N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2173 | 6.94 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116678 | 27.9 | 26.2 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.1 | 19.66 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| 09-01 - SEE NOTE BELOW | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

1/10/95

Remarks (Notes): 09-01 DID NOT MEET CRITERIA (2) TIMES BACKGROUND UPON HOT SPOT CHARACTERIZATION

PAGE____ OF ____

FIELD DATA ACQUISITION FORM.
HOT SPOT CHARACTERIZATION DATA SHEET

PAGE # 111

TE. TIME: 02 FEB 95
TE: PSC-26
OCATION: GRID # 58 PART III
ECHNICIAN(S): Steve Haese
J. Shewey
G. Shewey
W. Co May

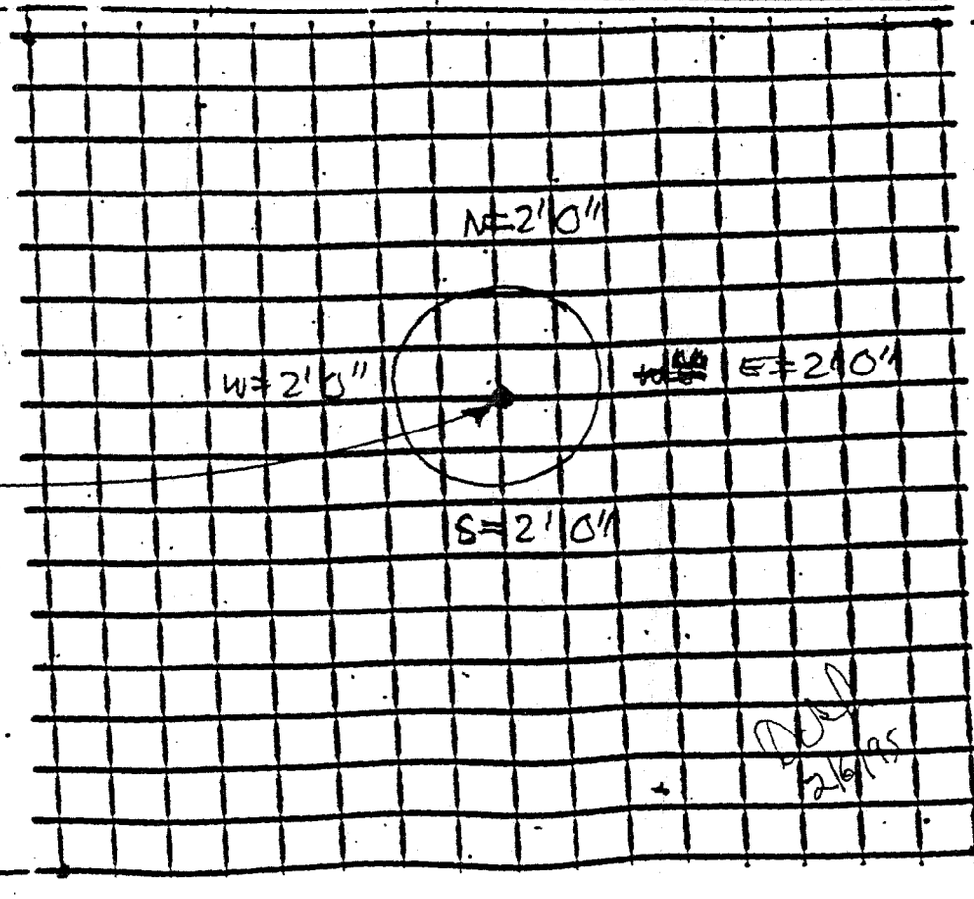
INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| Ludlum 19 | 95487 | NA | NA | 4 | NA | 10-20-94 |
| Ludlum 2221 | 108881 | 44-9 | 116881 | 30 | 28.6 | 10-21-94 |
| Ludlum 2221 | 117348 | 43-65 | 089765 | 1.1 | 18.8 | 10-25-94 |
| Ludlum 2221 | 97826 | 44-10 | 118371 | 3472 | 7.9 | 10-12-94 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

DIRECT CONTAMINATION SURVEY DATA

| HOT SPOT I.D. # | ALPHA CPM | ALPHA DPM | BETA CPM | BETA DPM | GAMMA CPM | GAMMA DPM | MICRO R/HR |
|---|---|---|---|---|---|---|---|
| 58-01 (Part III) | 10 | 47 | 53 | 80 | 8640 | 65417 | 8 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

X = 2'
Y = -131'




Highest Readings

SCALE: 6' x 6'

Remarks (Notes):

TABLE OF CONTENTS FIELD LOGBOOK NUMBER Jx-WG-002 Page 1 of 4

| Date | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 1-7-95 | # 111 | GRID # 52 | J.D. Showers |
| -7-95 | # 112 | GRID # 52 | J.D. Showers |
| 1-7-95 | # 113 | GRID # 52-W | J.D. Showers |
| 1-7-95 | # 114 | GRID # 52-W | J.D. Showers |
| 1-7-95 | # 115 | GRID # 53 | J.D. Showers |
| 1-7-95 | # 116 | GRID # ~~54~~ 53 | J.D. Showers |
| 1-7-95 | # 117 | GRID # 53 | J.D. Showers |
| 1-7-95 | # 118 | GRID # 53 | J.D. Showers |
| 1-7-95 | # 119 | GRID # 53 | J.D. Showers |
| 1-7-95 | # 120 | GRID # 53 | J.D. Showers |
| 1-7-95 | # 121 | GRID # 53 PART II | J.D. Showers |
| 1-7-95 | # 122 | GRID # 53 PART II | J.D. Showers |
| 1-7-95 | # 123 | GRID # 53 PART II | J.D. Showers |
| 1-7-95 | # 124 | GRID # 53 PART II | J.D. Showers |
| 1-7-95 | # 125 | GRID # 54 | J.D. Showers |
| 1-7-95 | # 126 | GRID # 54 | J.D. Showers |
| 1-7-95 | # 127 | GRID # 54 | J.D. Showers |
| 1-7-95 | # 128 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 129 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 130 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 131 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 132 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 133 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 134 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 135 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 136 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 137 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 138 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 139 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 140 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 141 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 142 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 143 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 144 | GRID 54 PART II | J.D. Showers |
| 1-7-95 | # 145 | GRID 54 PART II | J.D. Showers |

DJH 1/10/95

Log & Checked By J. Showers Sr.

FM_0017

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-002 Page 2 of 4

| ate | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| -7-95 | # 146 | GRID # 54 PART II | J.D. Showers |
| -7-95 | # 147 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 148 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 149 | GRID # 54 PART II | J.D. Showers |
| 1-7-95 | # 150 | GRID # 54-A-1 | J.D. Showers |
| 1-7-95 | # 151 | GRID # 54-A-1 | J.D. Showers |
| 1-7-95 | # 152 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 153 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 154 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 155 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 156 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 157 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 158 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 159 | GRID # 55 | J.D. Showers |
| 1-7-95 | # 160 | GRID # 55 PART II | J.D. Showers |
| 1-7-95 | # 161 | GRID # 55 PART II | J.D. Showers |
| 1-7-95 | # 162 | GRID # 55 PART II | J.D. Showers |
| 1-7-95 | # 163 | GRID # 55 PART II | J.D. Showers |
| 1-7-95 | # 164 | GRID # 55 PART II | J.D. Showers |
| 1-7-95 | # 165 | GRID # 56 | J.D. Showers |
| 1-7-95 | # 166 | GRID # 56 | J.D. Showers |
| 1-7-95 | # 167 | GRID # 60 | J.D. Showers |
| 1-7-95 | # 168 | GRID # 60 | J.D. Showers |
| 1-7-95 | # 169 | GRID # 61 | J.D. Showers |
| 1-7-95 | # 170 | GRID # 61 | J.D. Showers |
| 1-7-95 | # 171 | GRID # 61 | J.D. Showers |
| 1-7-95 | # 172 | GRID # 61 | J.D. Showers |
| 1-7-95 | # 173 | GRID # 61-W | J.D. Showers |
| 1-7-95 | # 174 | GRID # 61-W | J.D. Showers |
| 1-7-95 | # 175 | GRID # 62 | J.D. Showers |
| 1-7-95 | # 176 | GRID # 62 | J.D. Showers |
| 1-7-95 | # 177 | GRID # 62 | J.D. Showers |
| 1-7-95 | # 178 | GRID # 62 | J.D. Showers |
| 1-7-95 | # 179 | GRID # 62 | J.D. Showers |
| -7-95 | # 180 | GRID # 62 | J.D. Showers |

DWS 1/10/95

Log & Checked By J. Showers Jr.

FM_0017

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WB-002 Page 3 of 4

| ate | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| -7-95 | # 181 | GRID # 62 | J.D. Showers |
| -7-95 | # 182 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 183 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 184 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 185 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 186 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 187 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 188 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 189 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 190 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 191 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 192 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 193 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 194 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 195 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 196 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 197 | GRID # 63 | J.D. Showers |
| -7-95 | # 198 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 199 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 200 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 201 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 202 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 203 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 204 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 205 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 206 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 207 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 208 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 209 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 210 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 211 | GRID # 63 | J.D. Showers |
| 1-7-95 | # 212 | GRID # 63 | J.D. Showers |
| -7-95 | # 213 | GRID # 63 | J.D. Showers |
| -7-95 | # 214 | GRID # 64 | J.D. Showers |
| -7-95 | # 215 | GRID # 64 | J.D. Showers |

DUB 1/10/95

Log & Checked By J. Showers

TABLE OF CONTENTS FIELD LOGBOOK NUMBER JX-WG-002 Page 4 of 4

| ate | Sequence Numbers Used | Location Identification | Name of Data Logbook User |
|---|---|---|---|
| 7-95 | # 216 | GRID # 65 | J.D. Shower |
| 7-95 | # 217 | GRID # 65 | J.D. Shower |
| 1-7-95 | # 218 | GRID # 68 | J.D. Shower |
| 1-7-95 | # 219 | GRID # 68 - A-1 | J.D. Shower |
| 1-7-95 | # 220 | GRID # 69 | J.D. Shower |
| 1-7-95 | # 221 | GRID # 69 | J.D. Shower |
| 1-7-95 | # 222 | GRID # 69 | J.D. Shower |
| 1-7-95 | # 223 | GRID # 69 | J.D. Shower |
| 1-7-95 | # 224 | GRID # 69 - A1 | J.D. Shower |
| 1-7-95 | # 225 | GRID # 70 - W | J.D. Shower |
| 1-7-95 | # 226 | GRID # 70 - W | J.D. Shower |
| 1-7-95 | # 227 | GRID # 71 | J.D. Shower |
| 1-7-95 | # 228 | GRID # 71 | J.D. Shower |
| 1-7-95 | # 229 | GRID # 71 | J.D. Shower |
| 1-7-95 | # 230 | GRID # 72 | J.D. Shower |
| 1-7-95 | # 231 | GRID # 72 | J.D. Shower |
| 1-7-95 | # 232 | GRID # 72 | J.D. Shower |
| -7-95 | # 233 | GRID # 72 | J.D. Shower |
| 1-7-95 | # 234 | GRID # 72 | J.D. Shower |
| 1-7-95 | # 235 | GRID # 73 | J.D. Shower |
| 1-7-95 | # 236 | GRID # 73 | J.D. Shower |
| 1-7-95 | # 237 | GRID # 77 A-1 | J.D. Shower |
| 1-7-95 | # 238 | GRID # 77 A-1 | J.D. Shower |
| 1-7-95 | # 239 | GRID # 80 | J.D. Shower |
| 1-7-95 | # 240 | GRID # 80 | J.D. Shower |
| 1-7-95 | # 241 | GRID # 81 | J.D. Shower |
| 1-9-95 | # 242 | GRID # 88 | J.D. Shower |
| 1-9-95 | # 243 | GRID # 88 | J.D. Shower |
| 1-9-95 | # 244 | GRID # 88 | J.D. Shower |
| | | | |
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| | | | |

1/10/95

Log & Checked By J. Shower

FM_0017
October 27, 1994 8:50am

# DIRECT SURFACE CONTAMINATION READINGS

EY NO. N/A SITE: PSC-26 GRID #52 DATE: 08 DEC 94

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICROR | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ...ation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ gs/Gamma cpm | ~~Beta~~ gs/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 52-01 | 0 ✓ | 12-21-94 < 0.4 ✓ | 124 ✓ | 354.2 ✓ | 21900 ✓ | 281000 ✓ | 28 ✓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

DCH 4/10/95

Remarks (Notes): Checked by J. Showers 12-13-95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 08 DEC 94

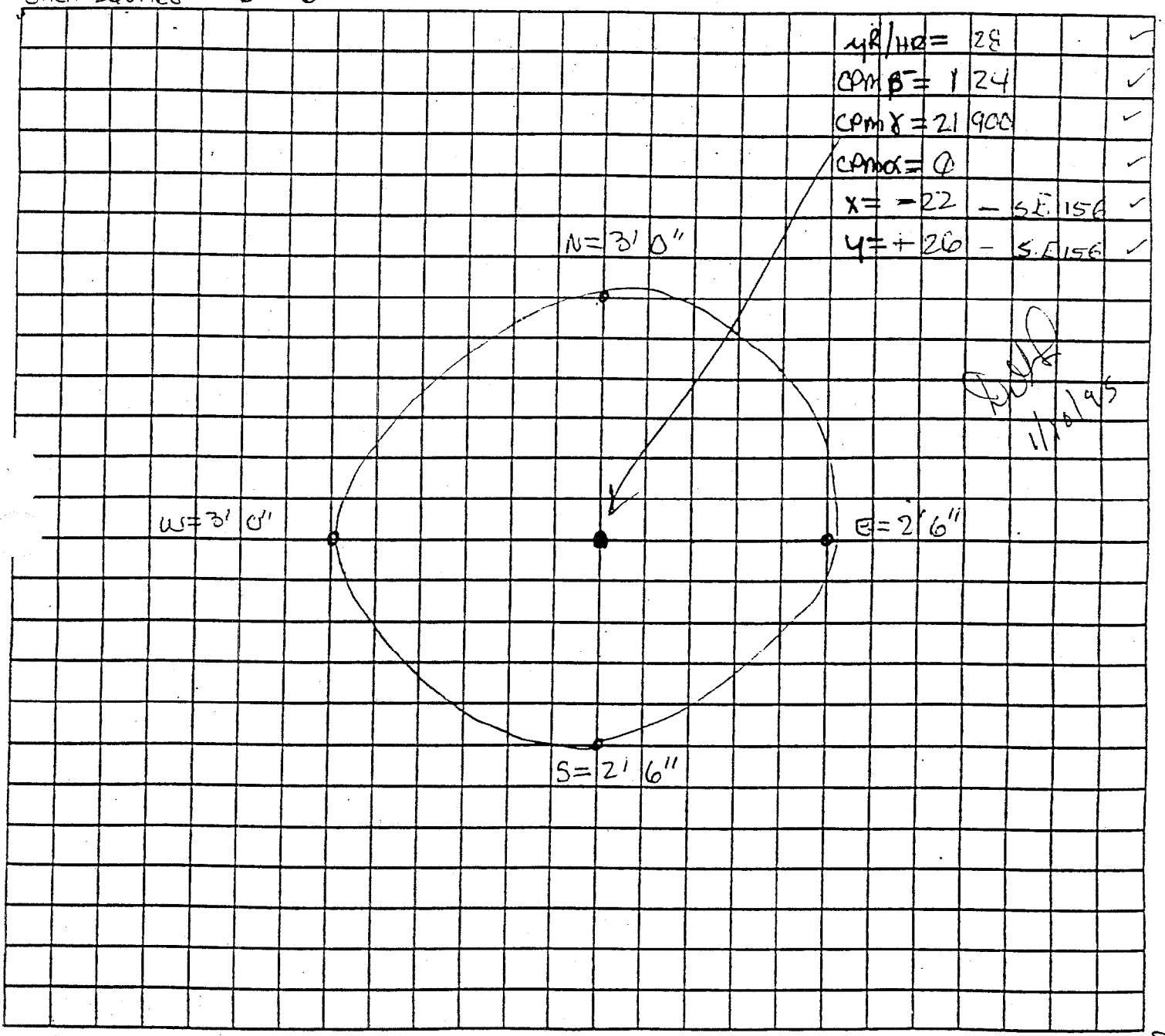
Grid # 52 52-01 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: LUDLUM 2221/m19 BKG: N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




11/10/95

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PAGE 2 OF 4

Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Charlotte J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

S[illegible]EY NO. N/A SITE: PSC-26 Grid # 52 DATE: 12 DEC 94

[illegible] N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2147 | .0687 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 36 | .277 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .173 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description Hot Spot | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ .88/Gamma cpm | ~~Beta~~ .88/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 52-01-W | 1 | 2.3 | 802 | 2765 | 162630 | 2335997 | 280 |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |

[illegible] 1/10/95

Remarks (Notes): [illegible] 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

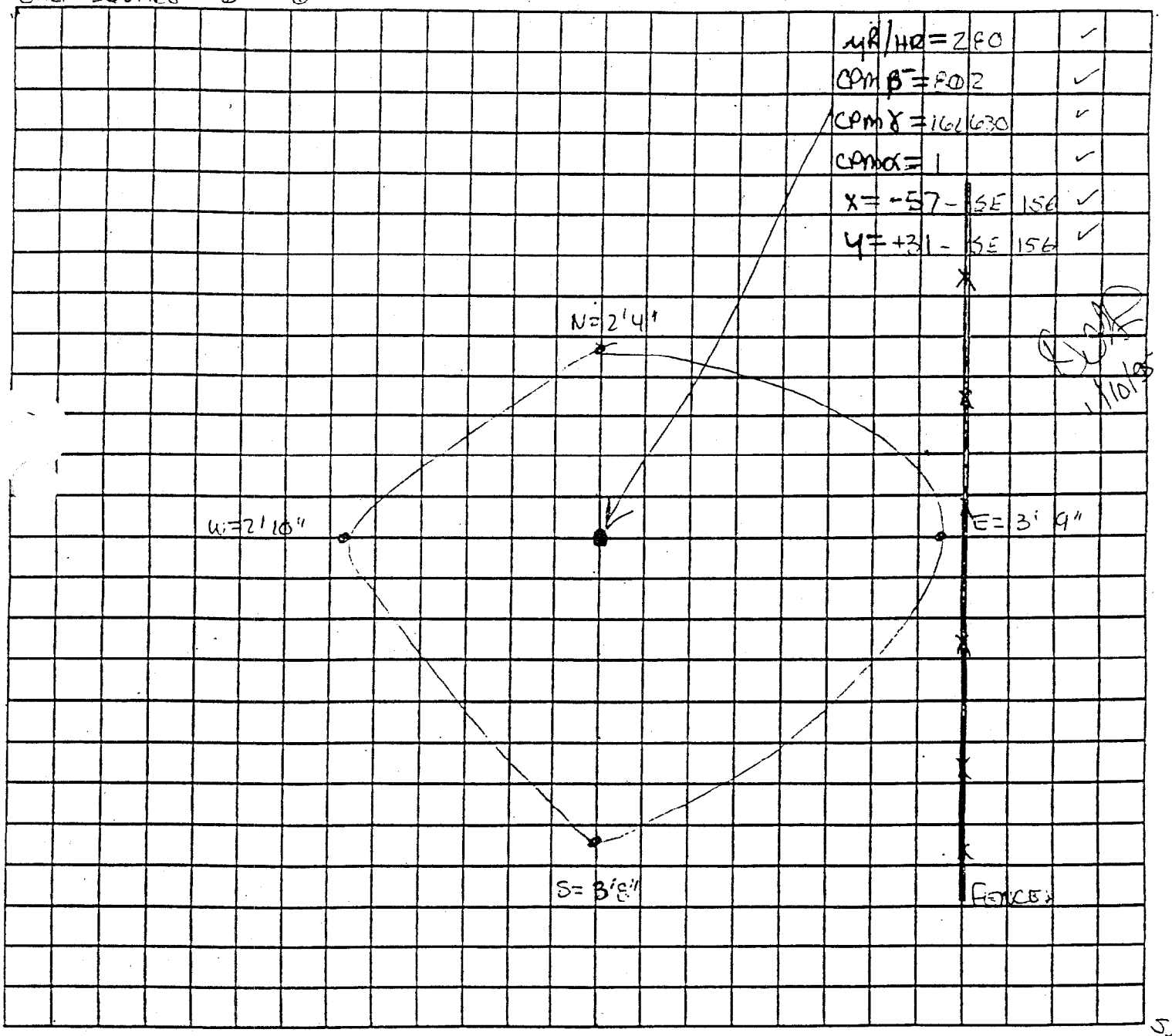
PAGE 114

DATE: 12 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| 1# 52 | 52-01-W | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/m19 | BKG | N/A | | R. PARRISH / S. HAESE |
| nversion: | N/A | S/N: | N/A | | W. C. May |

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




SE156

PAGE 4 OF 4

Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA — [signature] 12-13

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 53 DATE: 06 Dec 94
N/A

STRUMENTS

JS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| SODIUM M19 1100R | 95487 | N/A | N/A | 3 | N/A | 4/2/95 |
| SODIUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/9 |
| SODIUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/9 |
| SODIUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/9 |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ JS/Gamma cpm | ~~Beta~~ JS/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| HOT SPOT 53-01 | 1 | < 0.625 | 636 | 2160.7 | 81950 | 1173882.3 | 110 |
| HOT SPOT 53-04 | 1 | < 0.625 | 44 | 46.4 | 8181 | 88544.1 | 9 |
| HOT SPOT 53-02 | 2 | 5.46 ~~5.46~~ | 45 | 50 | 11670 | 139852.9 | 8 ~~45~~ |
| HOT SPOT 53-05 | 2 | 5.46 ~~5.46~~ | 92 | 217.8 | 6702 | 66794.1 | 23 |
| HOT SPOT 53-03 | 2 | 12-21-94 ~~5.46~~ 5.46 | 50 | 67.8 | 8776 | 97294.1 | 10 |

JS 12-21-94

1/10/95

Remarks (Notes): K = 1000

Shelly J Stowers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

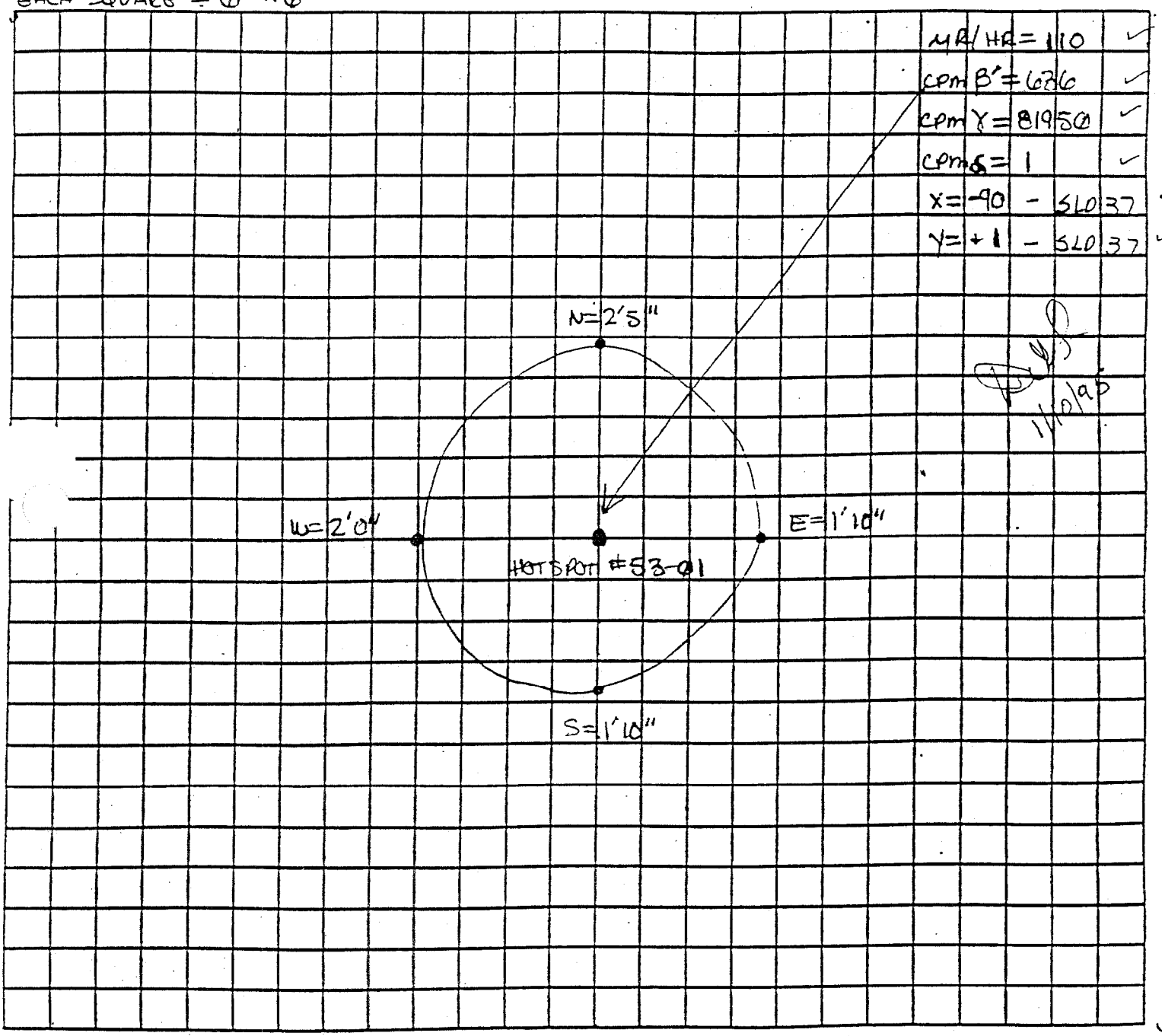


DATE: 06 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| # 53 | 53-01 | Detector: | *See below | Technicians: | J. Showers / G. Showers |
| : | LUDLUM2221/m19 | BKG | N/A | | S. HAESE / R. PARRISH |
| version: | N/A | S/N: | N/A | | W.C. MAY |

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO3

PAGE 2 OF 10

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. S. Howers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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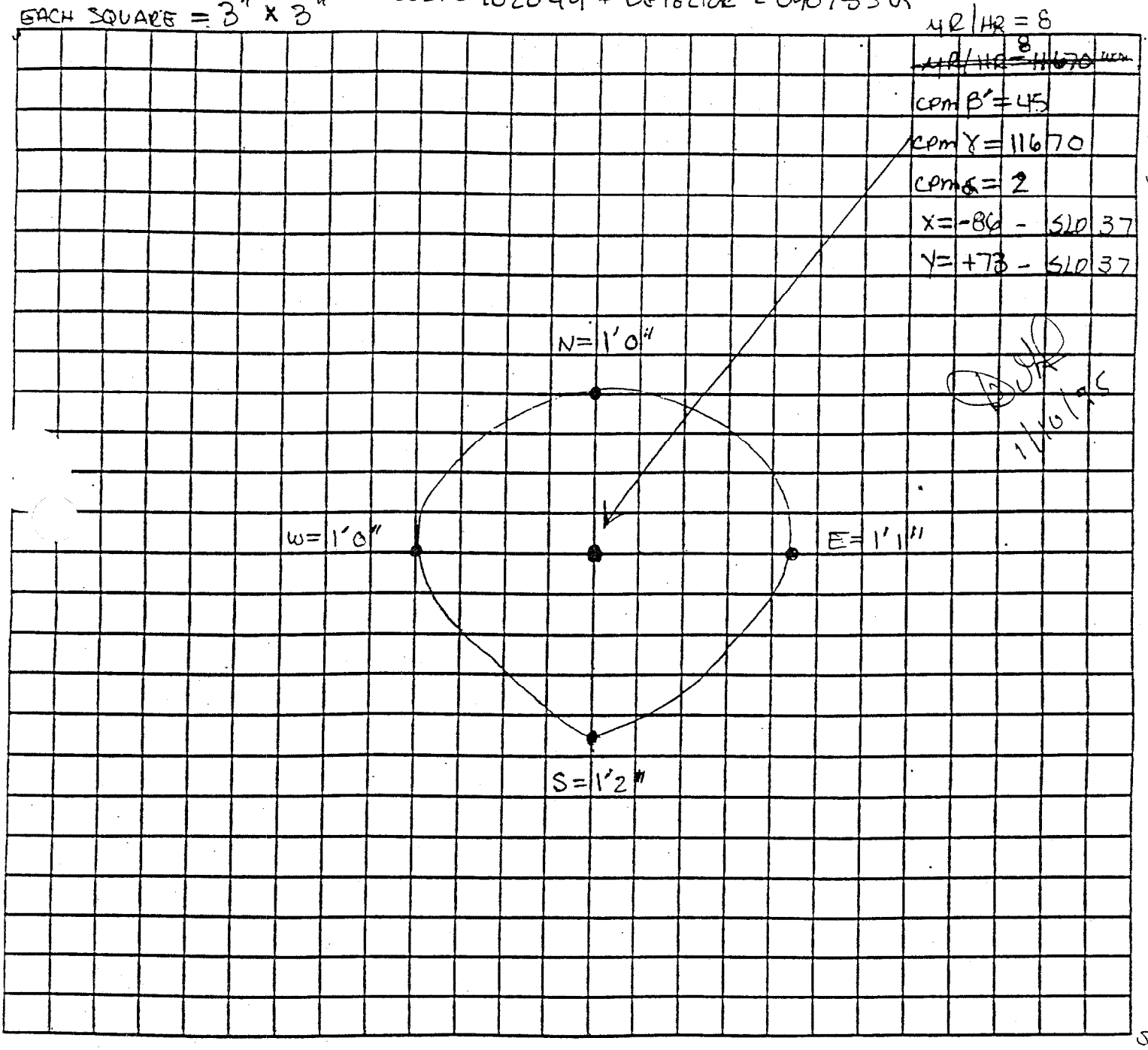
DATE: 06 DEC 94

# 53 53-02 Detector: * See Below Technicians: J. Showers / G. Showers
r: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
ersion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"

μR/HR = 8
~~μR/HR = 11670~~ 8
cpm β' = 45
cpm γ = 11670
cpm α = 2
X = -86 - SLD 37
Y = +73 - SLD 37




SLD37

PAGE 3 OF 10

Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

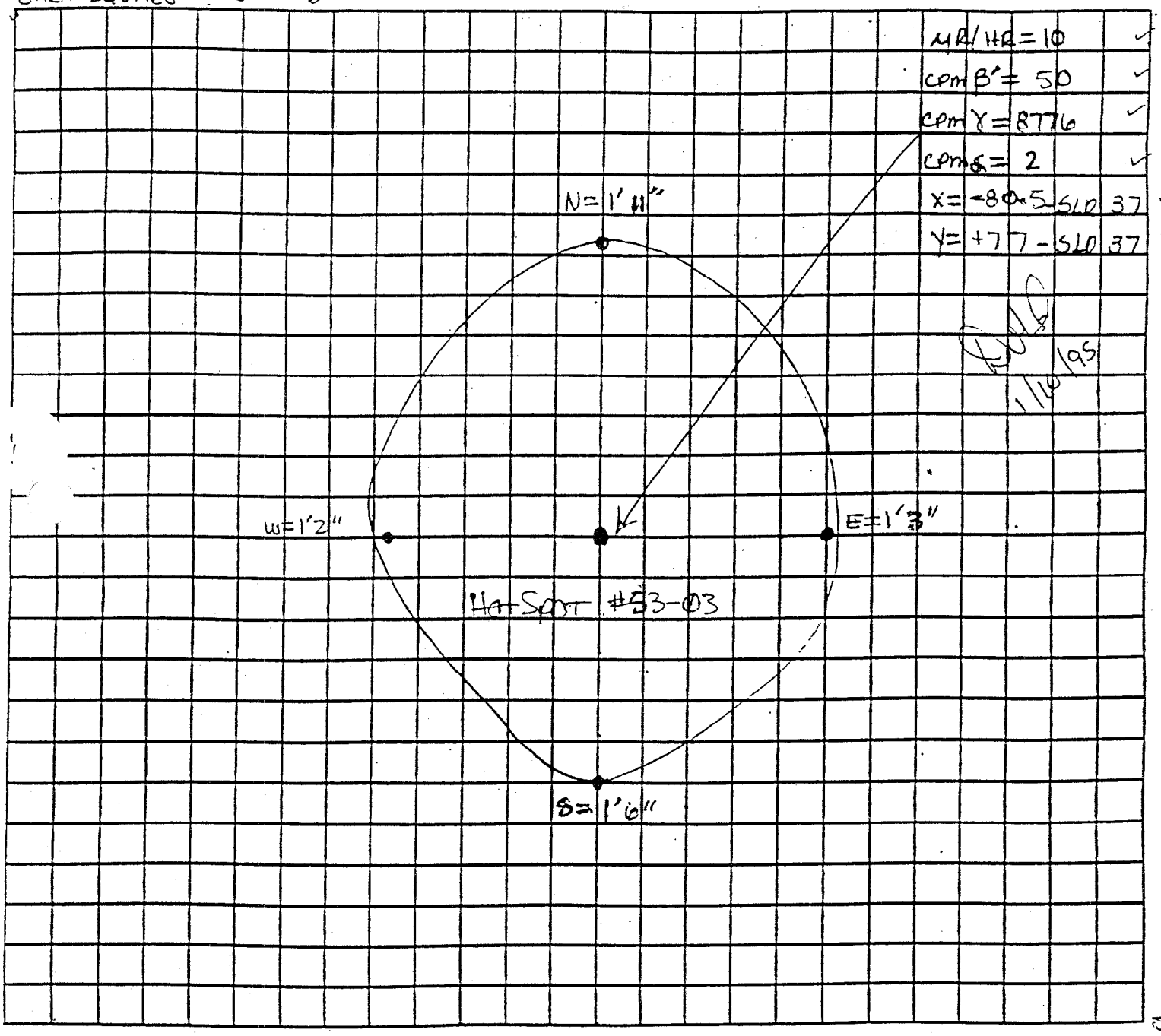


DATE: 04 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| # 53 | 53-03 | Detector: | *See below | Technicians: | J. Showers / G. Showers |
| r: | LUDLUM 2221/M19 | BKG | N/A | | S. HAESE / R. PARRISH |
| ersion: | N/A | S/N: | N/A | | W.C. MAY |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 3" X 3"




PAGE 4 OF 10

Remarks ① EACH SQUARE = 3" X 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

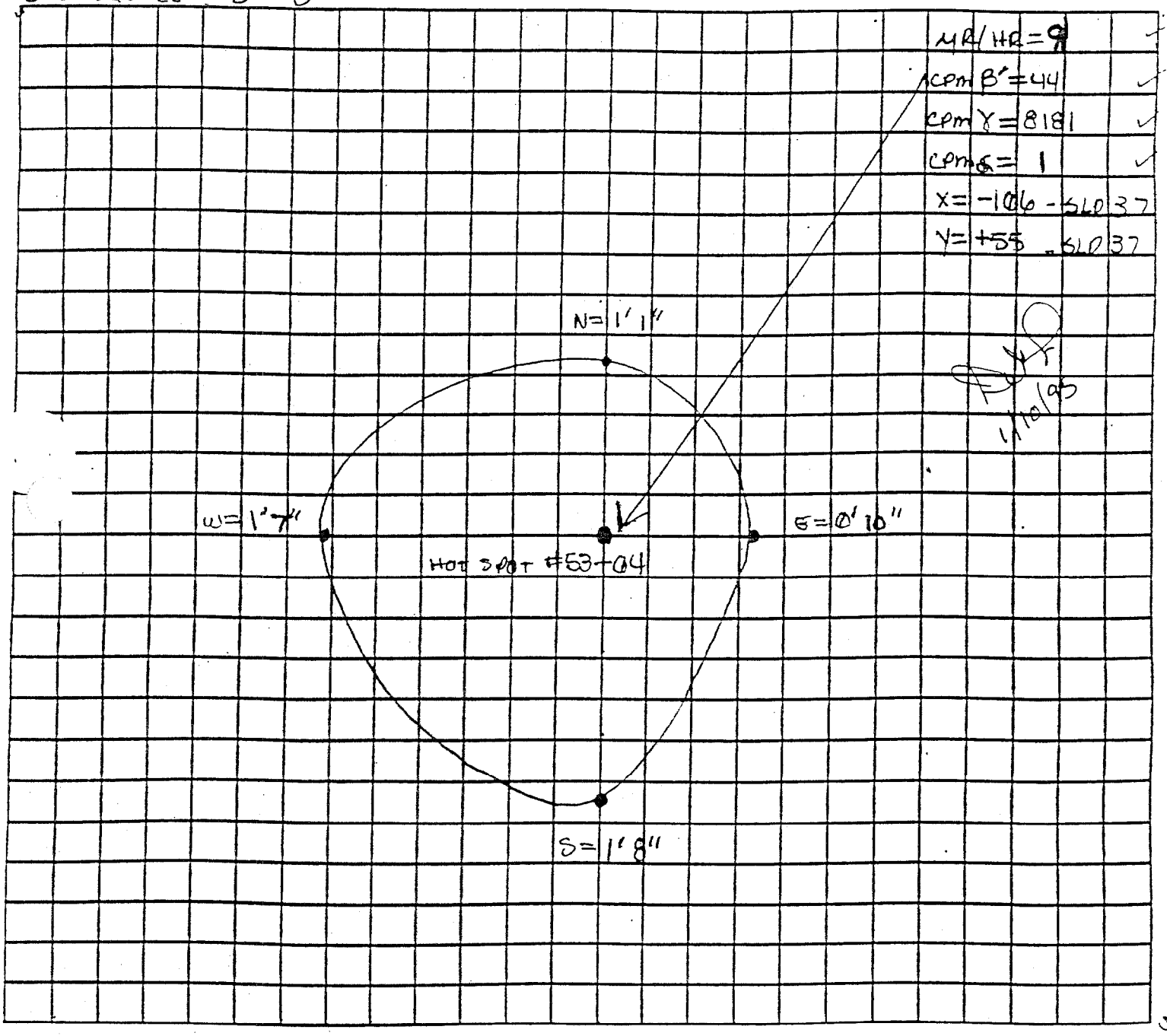
PAGE 119

DATE: 06 DEC 94

'# 53 53-04 Detector: * Bee Below Technicians: J. Showers / G. Showers
ır: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
version: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"




SLD 3

PAGE 5 OF 10

Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

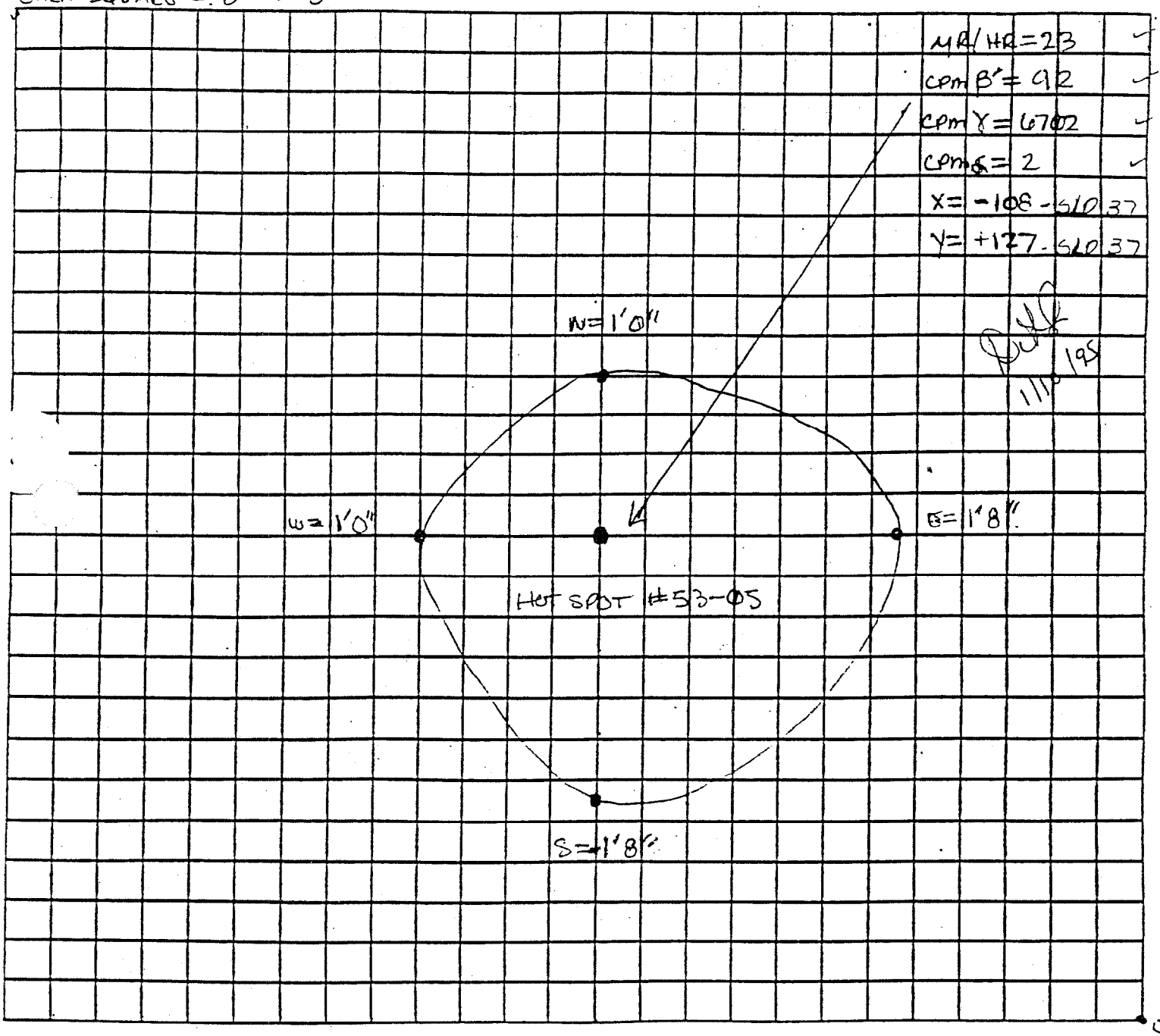


DATE: 06 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| ...#53 | 53-05 | Detector: | *See below | Technicians: | J. Showers / G. Showers |
| ...er: | LUDLUM2221/M19 | BKG | N/A | | S. HAESE / R. PARRISH |
| C...ersion: | N/A | S/N: | N/A | | W.C. MAY |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" X 3"




SLD 37

PAGE 6 OF 10

Remarks ① EACH SQUARE = 3" X 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-10-94

# DIRECT SURFACE CONTAMINATION READINGS

JR NO. N/A SITE: PSC-26 Grid # 53 DATE: 04 JAN 95
ME N/A Part II

ISTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | WCM | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ WCM/Gamma cpm | ~~Beta~~ WCM/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 53-01 | 2 ✓ | 7.76 ✓ | 60 ✓ | 119.8 ✓ | 6500 ✓ | 56161 ✓ | 10 ✓ |
| 53-02 DID NOT MEET HOT SPOT CRITERIA → | | | | | | | → |
| 53-03 | 1 ✓ | 2.22 ✓ | 389 ✓ | 1400 ✓ | 47000 ✓ | 651750 ✓ | 70 ✓ |
| 53-04 | 4 ✓ | 18.84 ✓ | 135 ✓ | ~~425.3~~ 411 | 13800 ✓ | 163514 ✓ | 35 ✓ |
| | | | | DJF 1/10/95 | | | |
| | WCM | | | | | | |
| | | | | | | DJF 1/10/95 | |
| | | | | | | | |

Remarks (Notes):

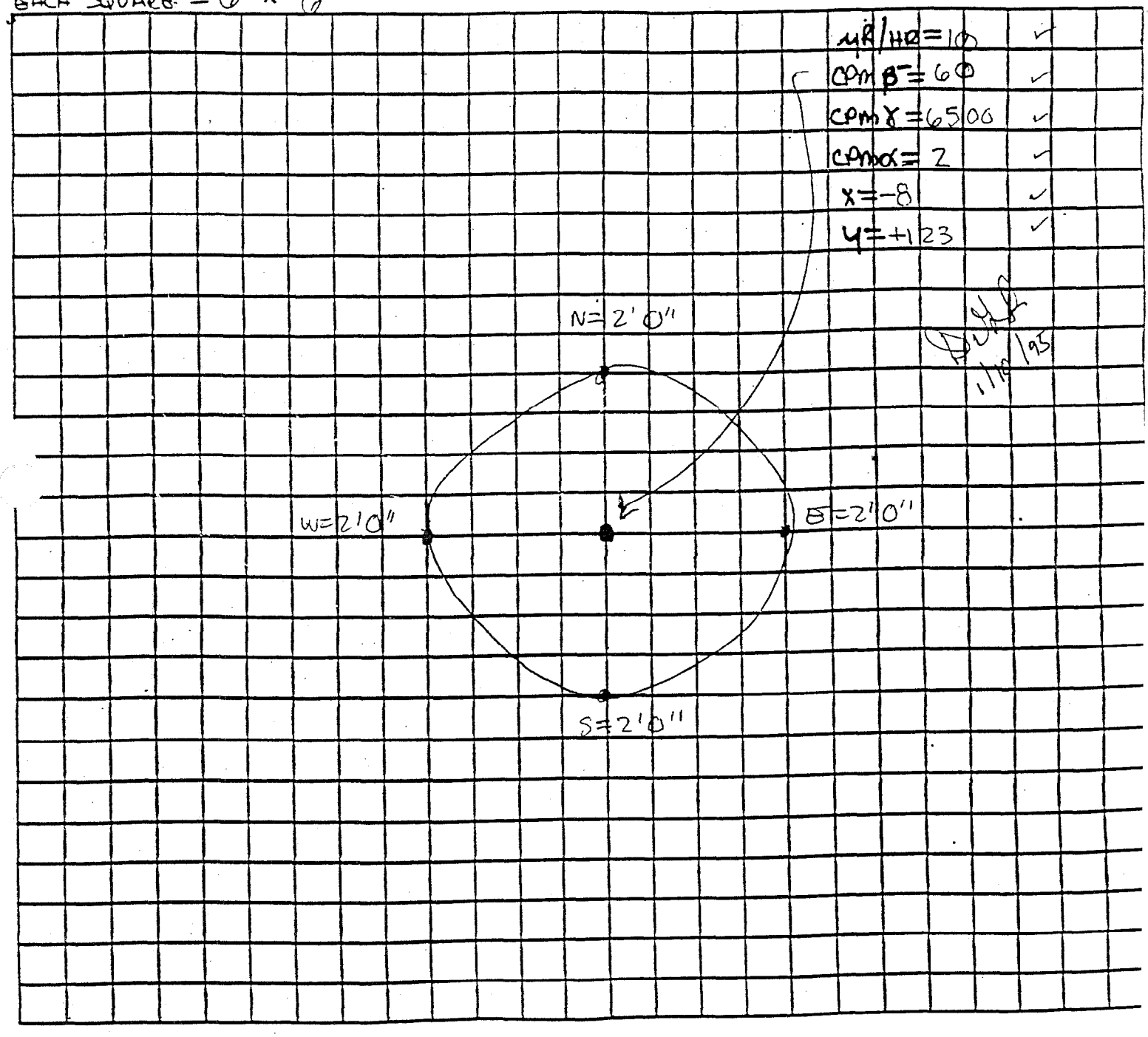
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 04 JAN 95

Grid # 53 53-01 Part II Detector: *See Below Technicians: J. Showers / G. Showe
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"






Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE [illegible]

DATE: 04 JAN 95

Grid # 53 53-03 Part II Detector: *See Below Technicians: J. Showers / G. Show[illegible]

Scaler: WDLum2221/m19 BKG N/A R. PARRISH / S. HAESE

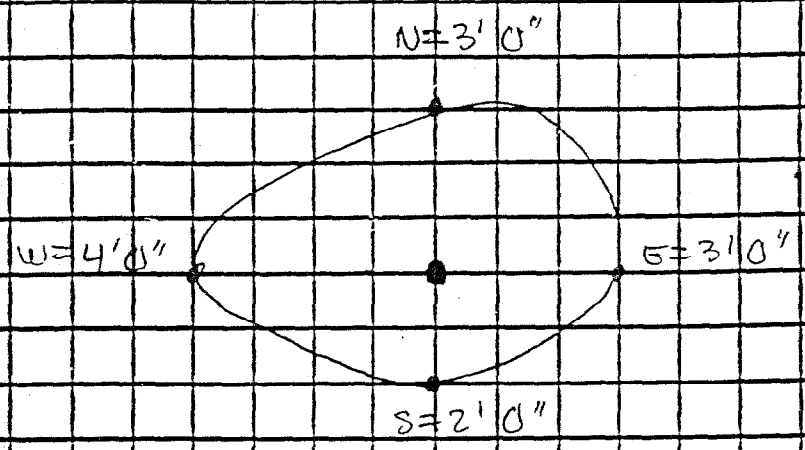
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'

μR/HR = 70 ✓
CPM β⁻ = 389 ✓
CPM γ = 47000 ✓
CPM α = 1 ✓
X = -18 ✓
Y = +137 ✓

1/10/95




PAGE 9 OF 10

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

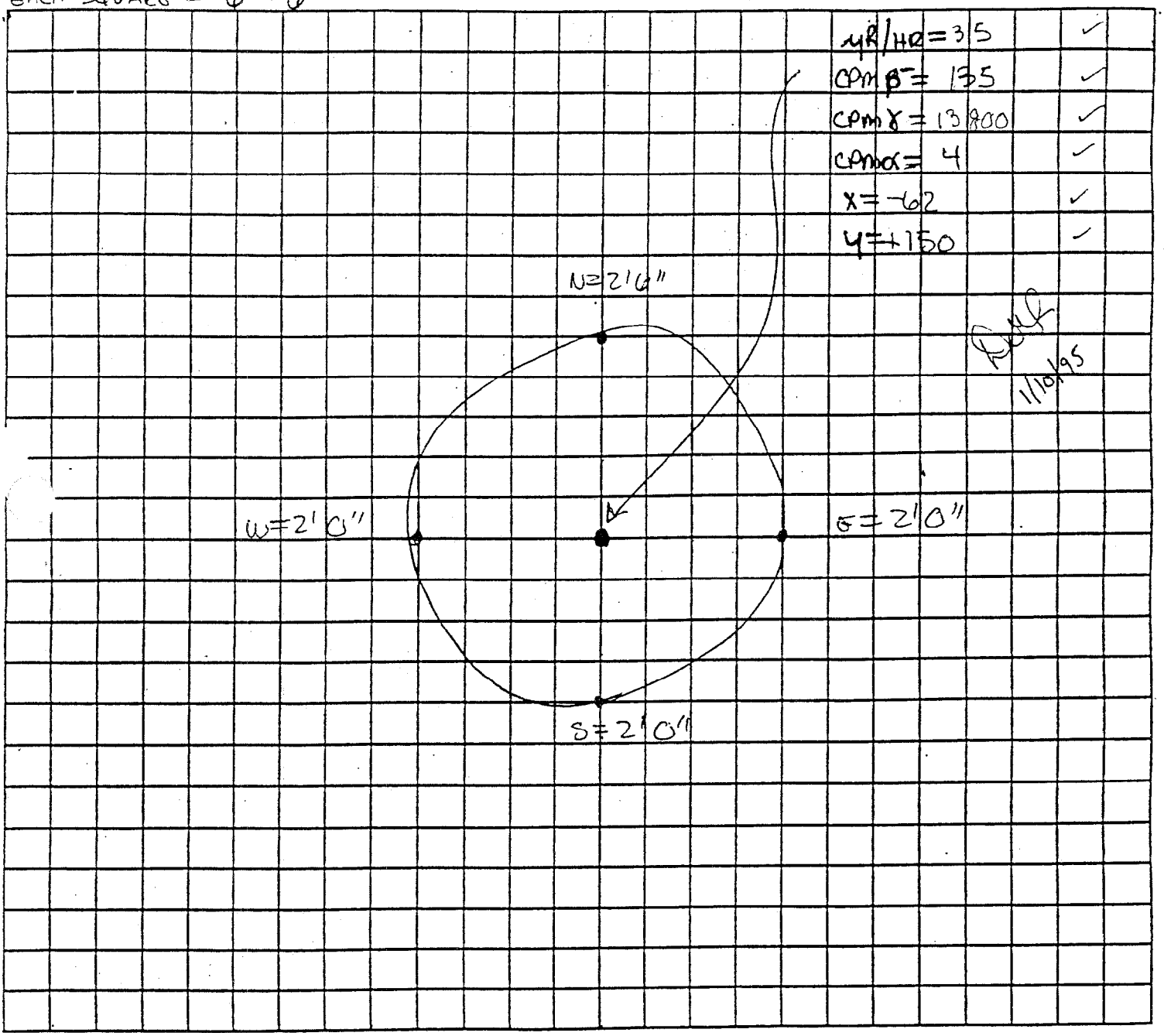


DATE: ~~WA DEC 94~~ 04 JAN 95

rid # 53 53-04 Part II Detector: *See Below Technicians: J. Showers / G. Showers
ler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
version: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"






Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 54 DATE: 06 Dec 94

N/A

STRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| UDLUM M19 NICOR | 95487 | N/A | N/A | 3 | N/A | 4/2/9 |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/9 |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/ |
| UDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| HOT SPOT 54-01 | 0 | < 0.625 | 107 | 271.4 | 10823 | 127397.0 | 21 |
| | | | | | | | |
| | | | | | | | |
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DWP 1/10/95

Remarks (Notes): Checked by J. Stevens 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

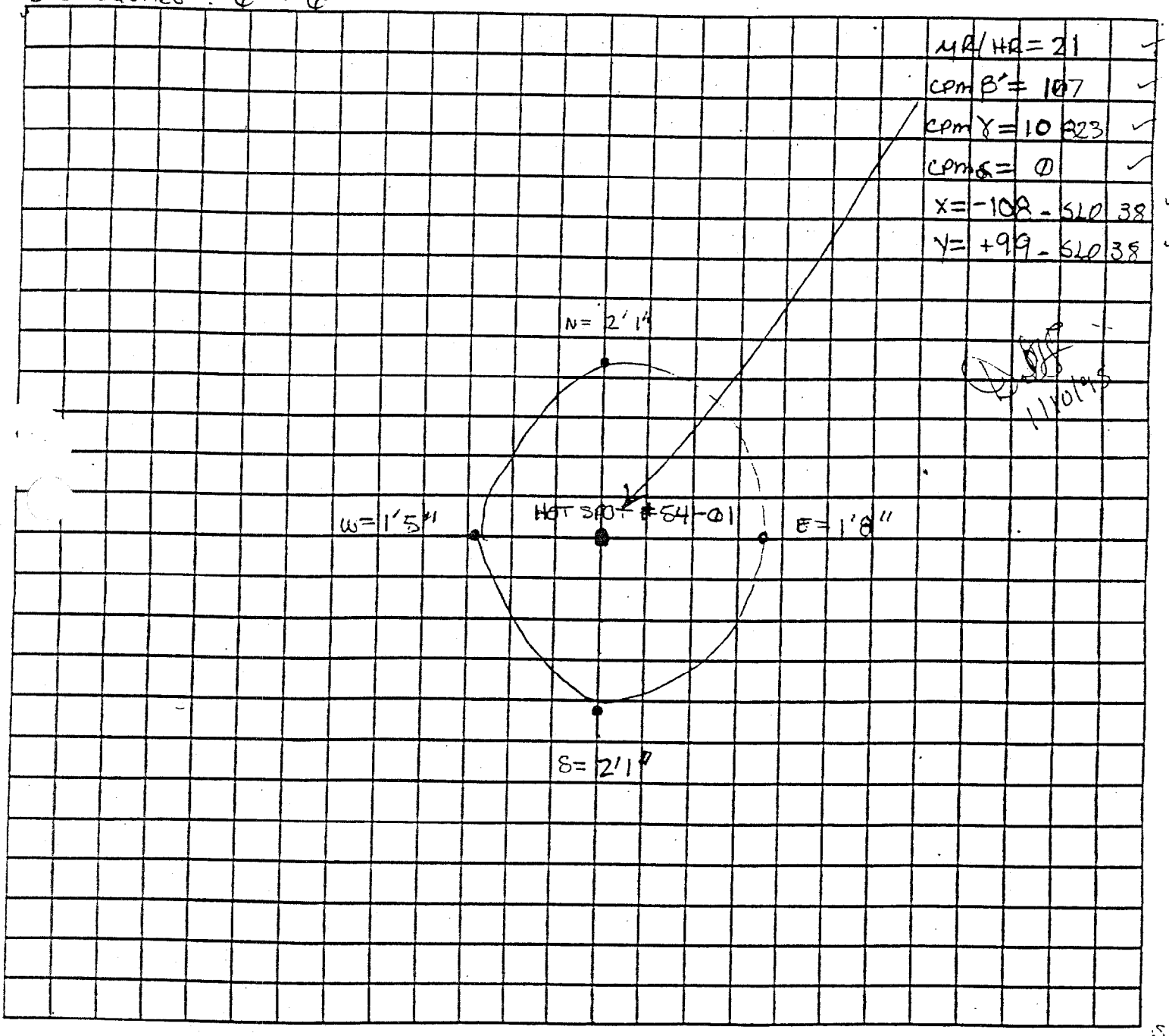


DATE: 06 DEC 94

... # 54 54-01 Detector: *See Below Technicians: J. Showers / G. Showers
...r: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
...version: N/A S/N: N/A W.C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO 38



Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

Y NO. N/A SITE: PSC-26 GRID #54 DATE: 07Dec94
N/A

STRUMENTS

12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibrat Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICOR | 95487 | N/A | N/A | 4 | N/A | 4/2/9 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2215 ~~2260 Oven~~ | .069 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 32.8 | .26 | 10/21/ |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .1 | .17 | 4/20/ |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Gamma cpm | Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| HOT SPOT 54-02 | 4 | 22.9 | 243 | 808.4 | 65000 | 909727.5 | 100 |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/10/95

Remarks (Notes): Michelle L. Stowers 12-13-94

DATE: 07 DEC 94

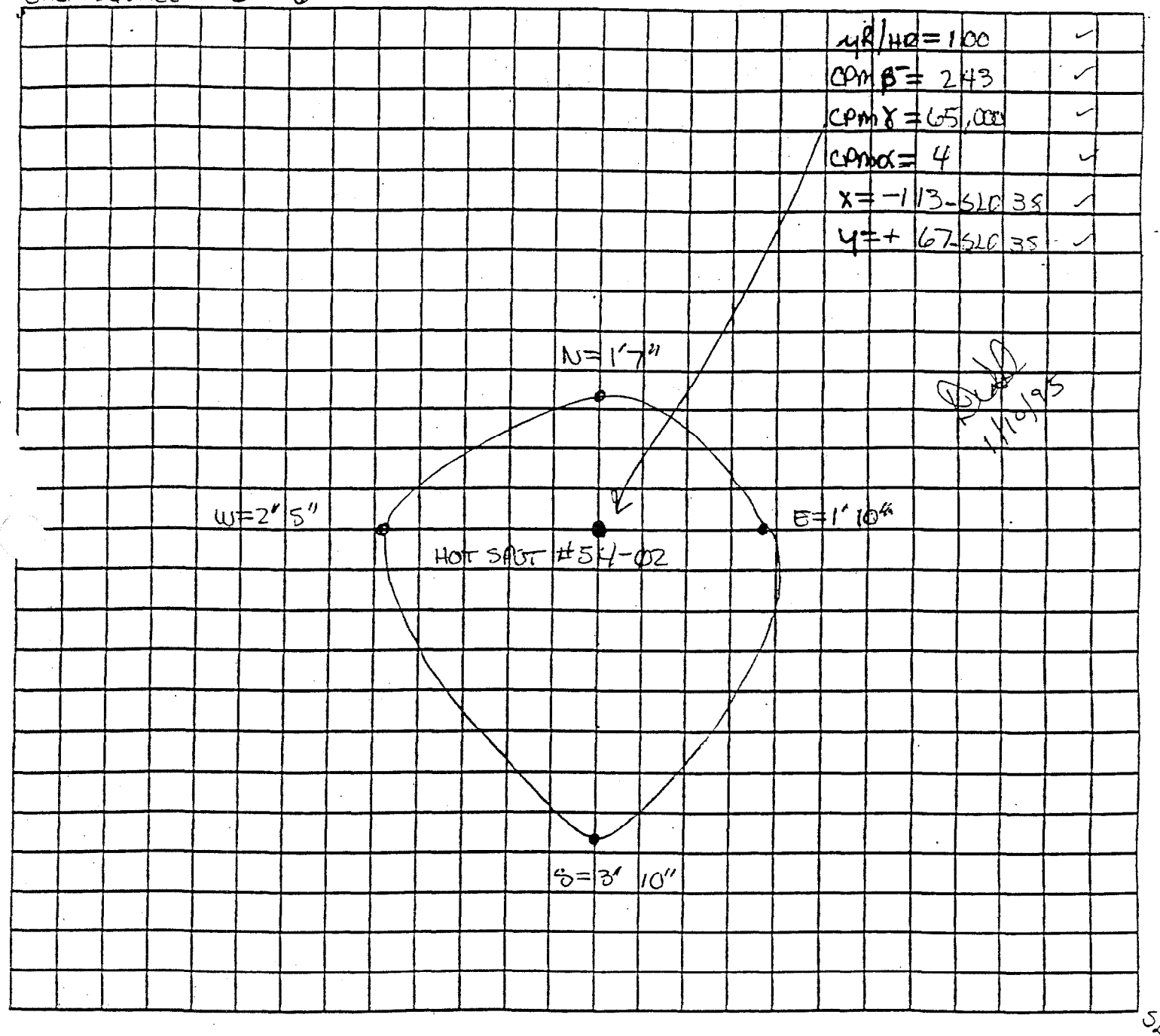
Grid # 54 54-02 Detector: *See Below Technicians: J. Shawers / G. Shawers

Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




PAGE 4 OF 28

Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by J. Shawers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SU[illegible]Y NO. N/A SITE: PSC-26 Grid #54 Part II DATE: 03 JAN 95
IN[illegible] N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| Ludlum M14 micro R | 95487 | N/A | N/A | 4 uR/hr | N/A | 4/2/95 |
| Ludlum 2221 | 99136 | 44-10 | #165 | 2173 | 6.94 | 4/20/95 |
| Ludlum 2221 | 117366 | 44-9 | #116878 | 27.9 | 26.2 | 10/21/95 |
| Ludlum 2221 | 102049 | 43-65 | #090753 | .1 | 19.66 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Beta/Gamma cpm | ~~Beta~~ Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 54-01 | 3 | 14.8 | 193 | 630 | 11168 | 129610 | 30 |
| 54-02 | 2 | 9.7 | 120 | 351 | 7191 | 72305 | 20 |
| 54-03 | 2 | 9.7 | 311 | 1080 | 17029 | 214063 | 60 |
| 54-04 | 3 | 14.8 | 660 | 2412 | 41350 | 564510 | 90 |
| 54-05 | 2 | 9.7 | 92 | 244 | 8000 | 83962 | 20 |
| 54-06 | 2 | 9.7 | 59 | 118 | 9300 | 102694 | 13 |
| 54-07 | 2 | 9.7 | 61 | 126 | 8600 | 92608 | 10 |
| 54-08 | 2 | 9.7 | 62 | 130 | 9500 | 105576 | 13 |

Remarks (Notes):

1/10/96

# DIRECT SURFACE CONTAMINATION READINGS

SU .Y NO. N/A SITE: PSC-26 GRID #54 PART II DATE: 03 JAN 95
IN. N/A

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 μR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2173 | 6.94 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 27.9 | 26.2 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .1 | 19.66 | 4/20/95 |
| | | | | | | |
| | | WAM | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta/Gamma~~ WAM cpm | ~~Beta/Gamma~~ WAM dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 54-09 | 3 | 14.8 | 345 | 1210 | 34500 | 465806 | 90 |
| 54-10 | 2 | 9.7 | 174 | 557 | 11110 | 128775 | 40 |
| 54-11 | 2 | 9.7 | 321 | 1118 | 13600 | 164654 | 45 |
| 54-12 | 1 | 4.6 | 142 | 435 | 17400 | 219409 | 40 |
| 54-13 | 2 | 9.7 | 75 | 179 | 9300 | 102694 | 15 |
| 54-14 DID NOT MEET HOT SPOT CRITERIA | | | | | | | |
| 54-15 | 1 | 4.6 | 413 | 1469 | 35200 | 475893 | 80 |
| 54-16 | 2 | 9.7 | 95 | 256 | 14500 | 177622 | 26 |

Remarks (Notes):

RDH 1/10/95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

DATE: 03 JAN 95

Grid # #54-54-01 HOT SPOT PART II

Detector: *See Below

Technicians: J. Showers / G. Sha
R. PARRISH / S. HAES
W. C. May

Scaler: LUDLUM 2221/M19

BKG N/A

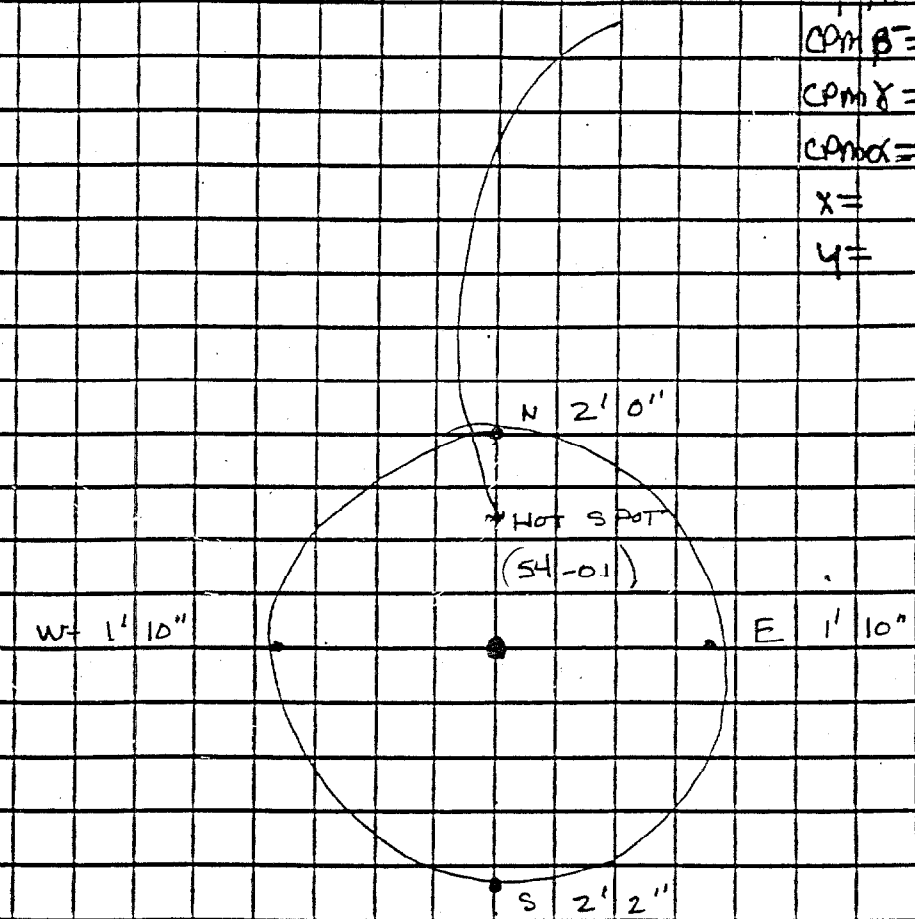
Conversion: N/A

S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | | 30 |
| CPM β⁻ = | | 193 |
| CPM γ = | | 11,168 |
| CPM α = | | 3 |
| x = | − | 13' 0" |
| y = | + | 106' 0" |




1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA o/ INTEREST IS OUT to EDGE o/ ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE [illegible]

DATE: 03 JAN 95

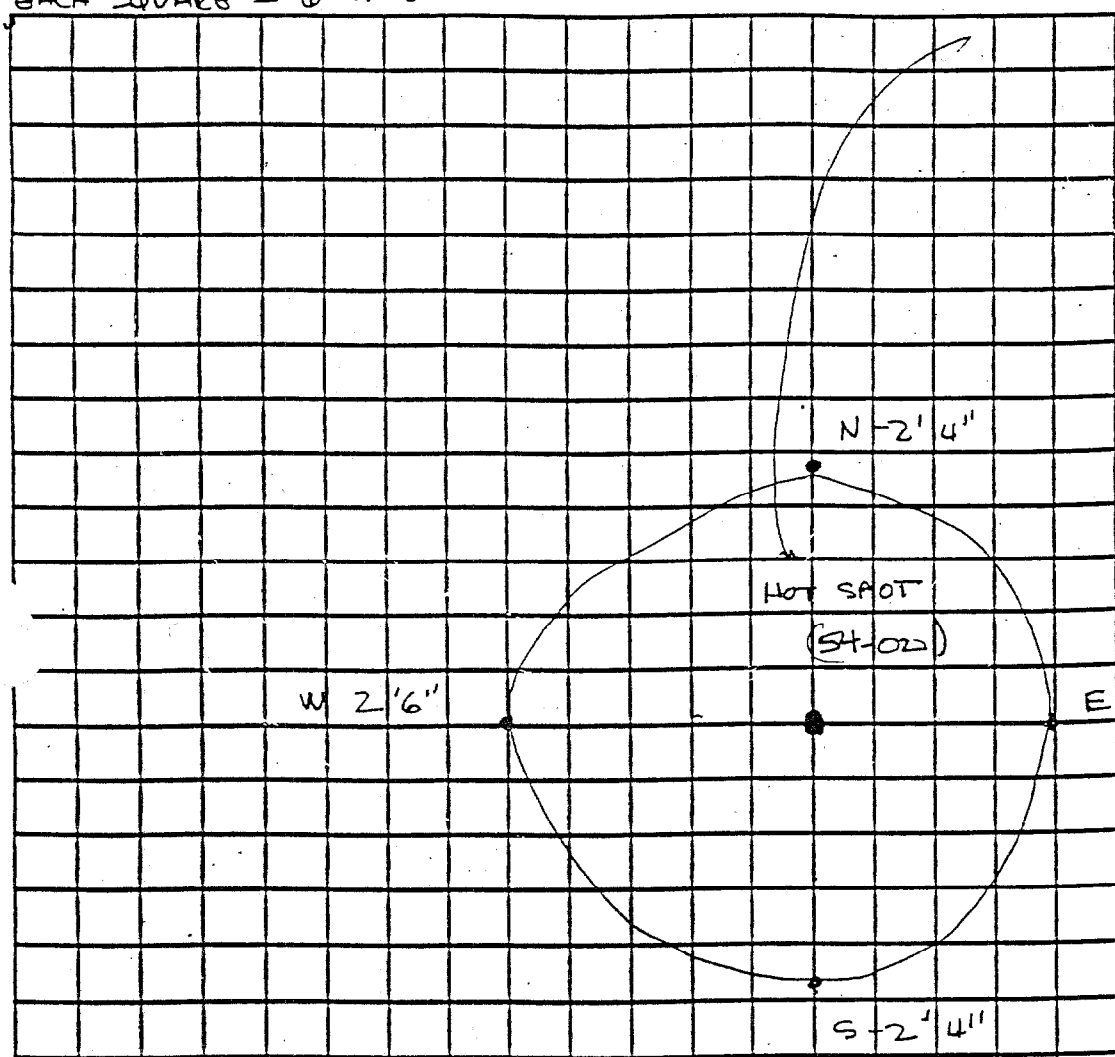
Grid # 54-02 PART II
Detector: *See Below
Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM 2221/M19
BKG N/A
Conversion: N/A
S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 20 | ✓ |
| CPM β⁻ = | 120 | ✓ |
| CPM γ = | 7,191 | ✓ |
| CPM α = | 2 | ✓ |
| X = | − 12' 0" | ✓ |
| Y = | + 112' 0" | ✓ |




(b) [illegible] 1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 03JAN95

Grid # 54-03 PART II
Scaler: LUDLUM2221/M19
Conversion: N/A

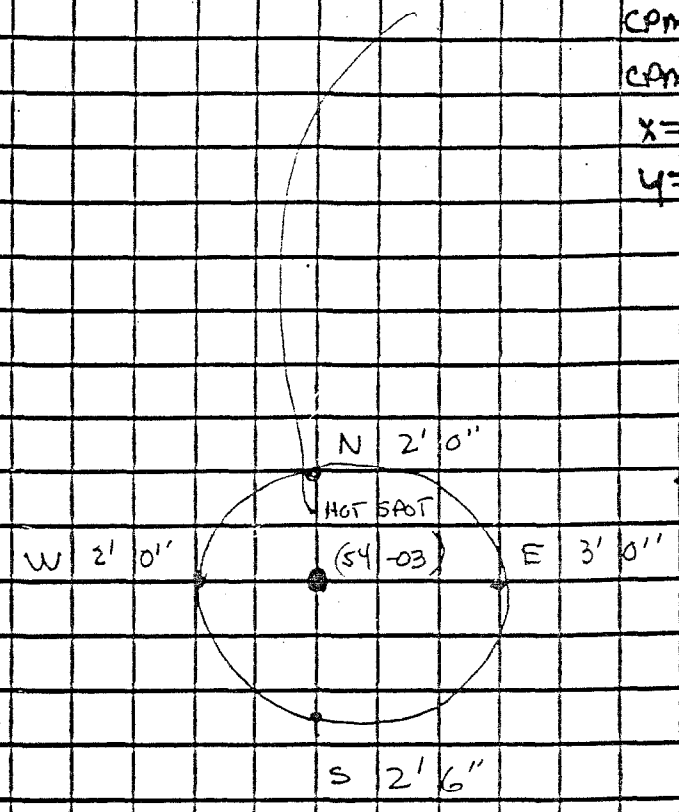
Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 60 | ✓ |
| CPM β⁻ = | 311 | ✓ |
| CPM γ = | 17,029 | ✓ |
| CPM α = | 2 | ✓ |
| X = | − 18' 0" | ✓ |
| Y = | + 121' 0" | ✓ |

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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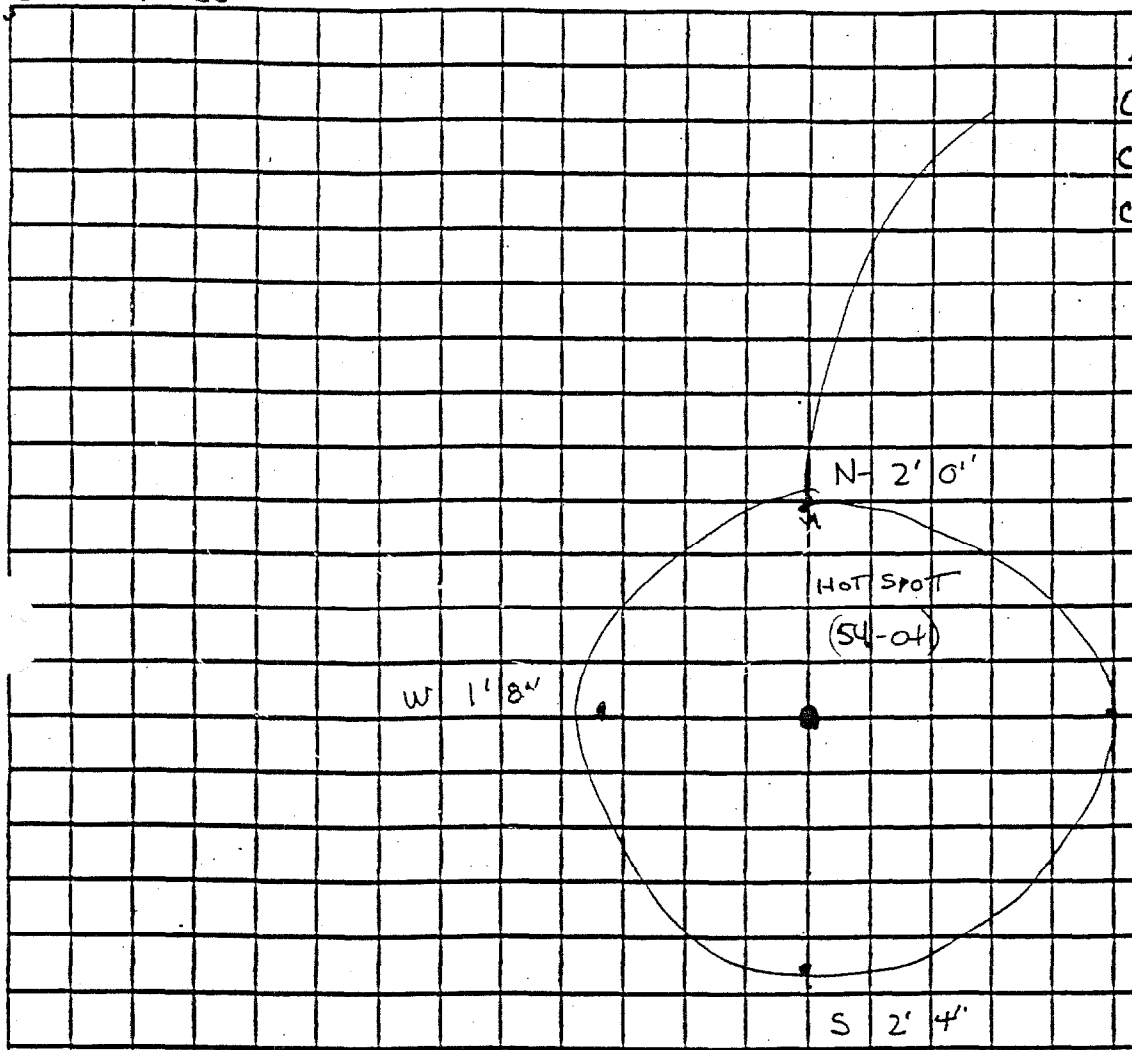
DATE: 03JAN95

Grid # 54-04 PART II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | | | |
|---|---|---|---|---|
| μR/HR = | | 90 | | ✓ |
| CPM β⁻ = | | 660 | | ✓ |
| CPM γ = | | 41,350 | | ✓ |
| CPM α = | | 3 | | ✓ |
| X = | - | 31' | 0" | ✓ |
| Y = | + | 86' | 0" | ✓ |

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ CENTER POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 03JAN95

Grid # 54-05 PART II
Detector: *See Below
Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

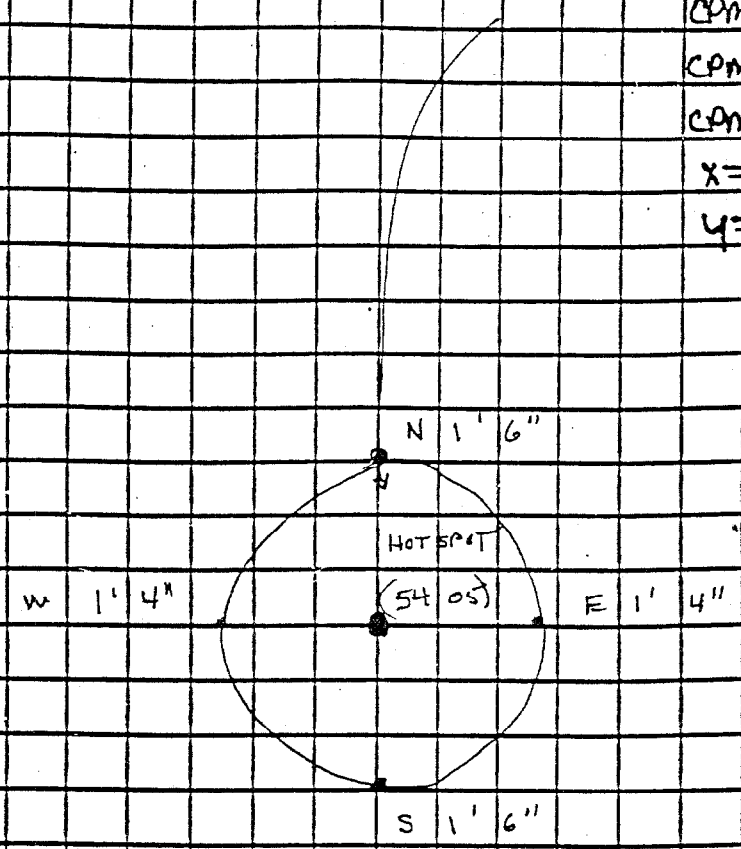
Scaler: LUDLUM2221/M19
BKG N/A
Conversion: N/A
S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6'

| | | |
|---|---|---|
| μR/HR = | 20 | ✓ |
| CPM β⁻ = | 92 | ✓ |
| CPM γ = | 8000 | ✓ |
| CPM α = | 2 | ✓ |
| X = | − 36' 0" | ✓ |
| Y = | + 98' 0" | ✓ |

1/10/95

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Remarks ① EACH SQUARE = 6" x 6' ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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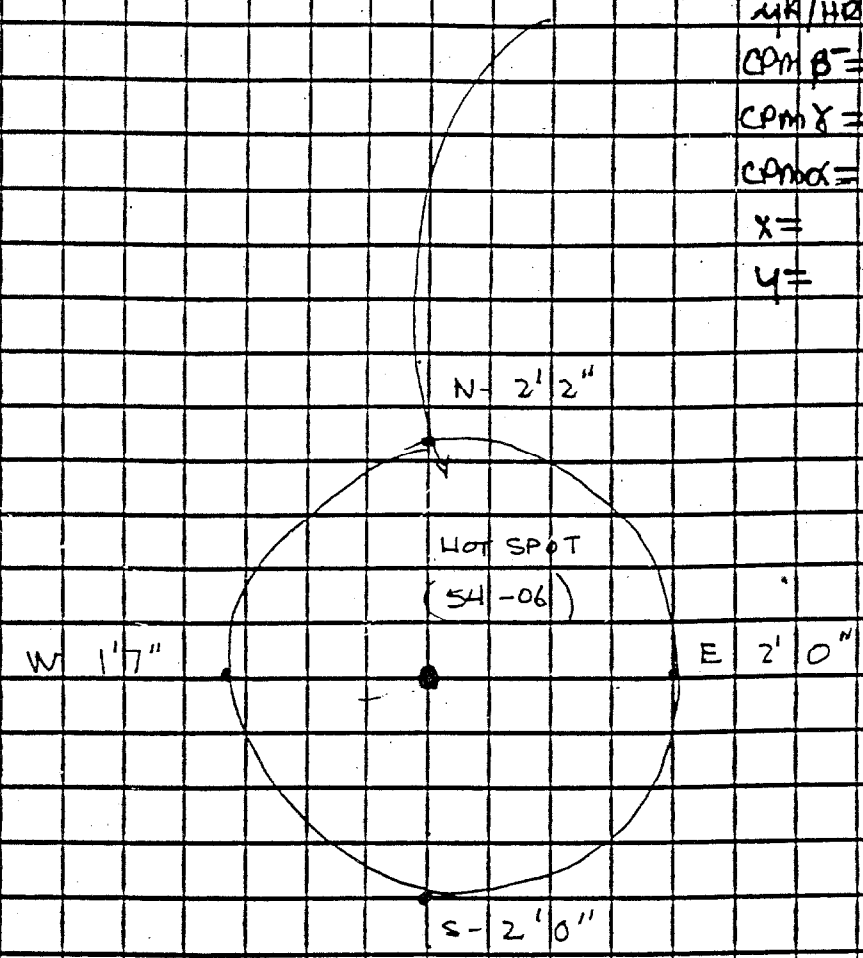
DATE: 03JAN95

Grid # 54-06 PART II Detector: *See Below Technicians: J. Showers / G. Shaw
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | | |
|---|---|---|---|---|
| μR/HR = | | 13 | | ✓ |
| CPM β⁻ = | | 59 | | ✓ |
| CPM γ = | | 9 | 300 | ✓ |
| CPM α = | | 2 | | ✓ |
| X = | − | 44' | 0" | ✓ |
| Y = | + | 130' | 0" | ✓ |

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE [illegible]

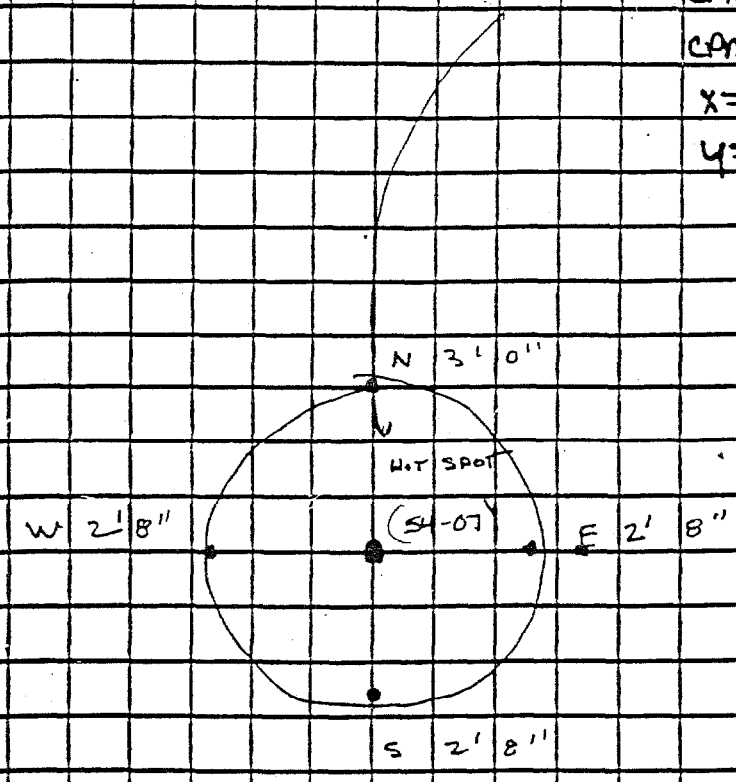
DATE: 03 JAN 95

Grid # 54-07 PART II Detector: *See Below Technicians: J. Showers / G. Sha[illegible]
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAES
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 12" x 12"

| | | | |
|---|---|---|---|
| μR/HR = | | 10 | ✓ |
| CPM β⁻ = | | 61 | ✓ |
| CPM γ = | | 8,600 | ✓ |
| CPM α = | | 2 | ✓ |
| X = | − | 33' 0" | ✓ |
| Y = | + | 129' 0" | ✓ |

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Remarks ① EACH SQUARE = 12" x 12" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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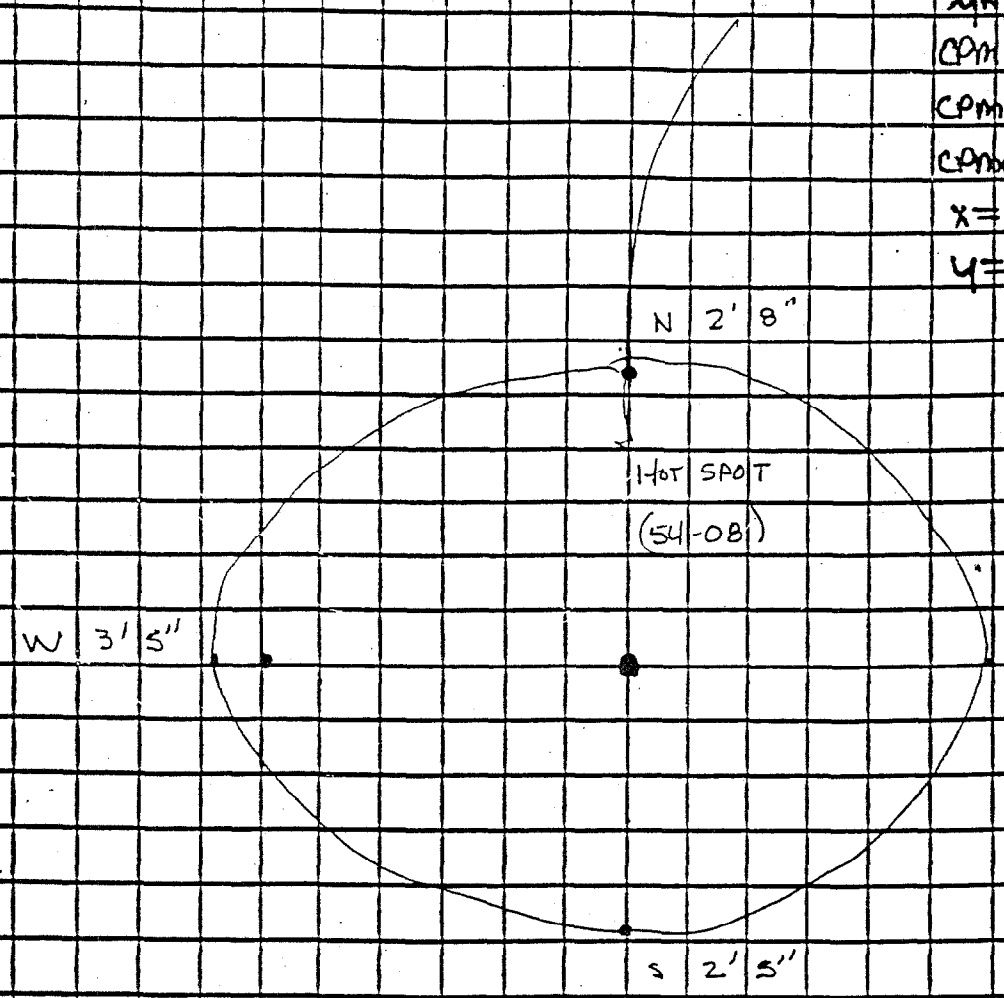
DATE: 03JAN95

Grid # 54-08 PART II Detector: *See Below Technicians: J. Showers / G. Shaw
Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 13 | ✓ |
| CPM β⁻ = | 62 | ✓ |
| CPM γ = | 9,500 | ✓ |
| CPM α = | 2 | ✓ |
| x = | − 39' 0" | ✓ |
| y = | + 109' 0" | ✓ |

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 1.20

DATE: 03JAN95

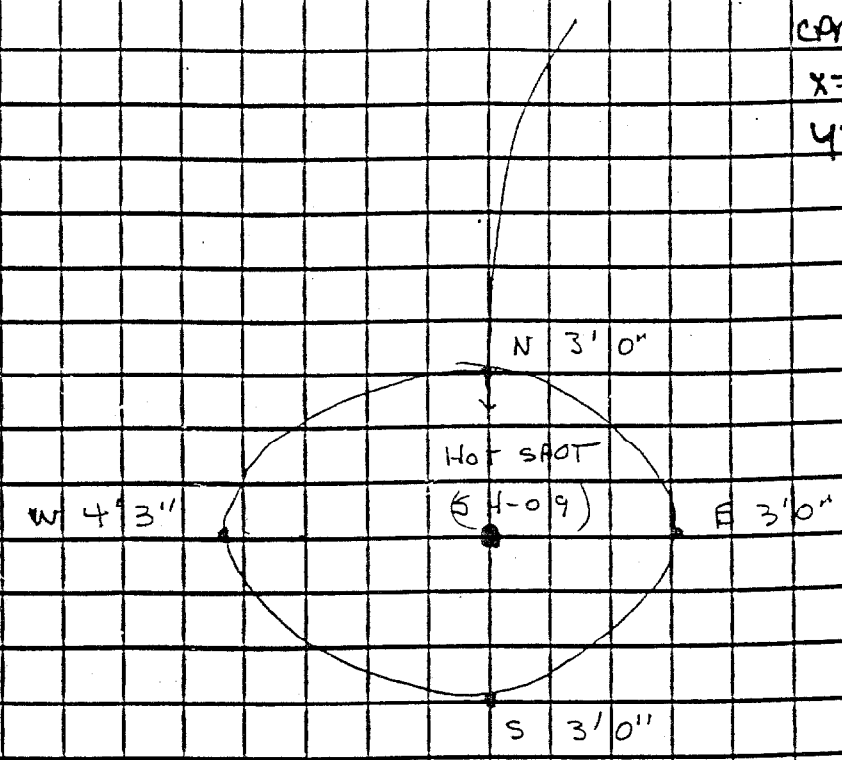
Grid # 54-09 PART II Detector: *See Below Technicians: J. Showers / G. Show
-aler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
nversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 12" x 12"

| | | |
|---|---|---|
| μR/HR = | 90 | ✓ |
| CPM β⁻ = | 345 | ✓ |
| CPM γ = | 34,500 | ✓ |
| CPM α = | 3 | ✓ |
| X = | − 52' 0" | ✓ |
| Y = | + 103' 0" | ✓ |

1/10/95

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Remarks ① EACH SQUARE = 12" x 12" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 03JAN95

Grid # 54-10 PART II
Scaler: LUDLUM2221/M19
Conversion: N/A

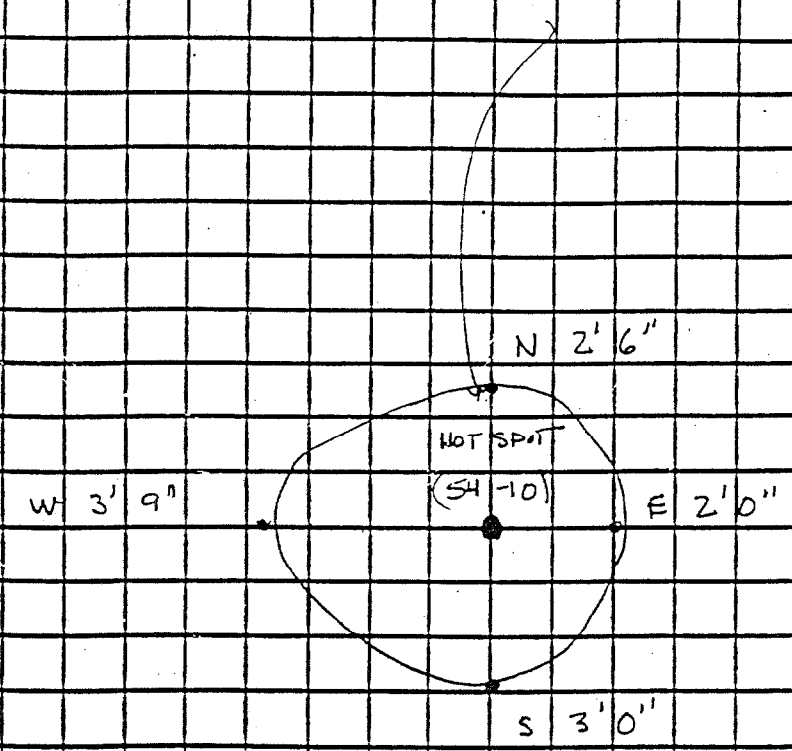
Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 12" x 12"

| | | | |
|---|---|---|---|
| μR/HR = | ~~174~~ 40 | | ✓ |
| CPM β⁻ = | 174 | | ✓ |
| CPM γ = | 11,110 | | ✓ |
| CPM α = | 2 | | ✓ |
| X = | − 48' | 0" | ✓ |
| Y = | + 132' | 0" | ✓ |




DJK 1/10/95

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Remarks ① EACH SQUARE = 12" x 12" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

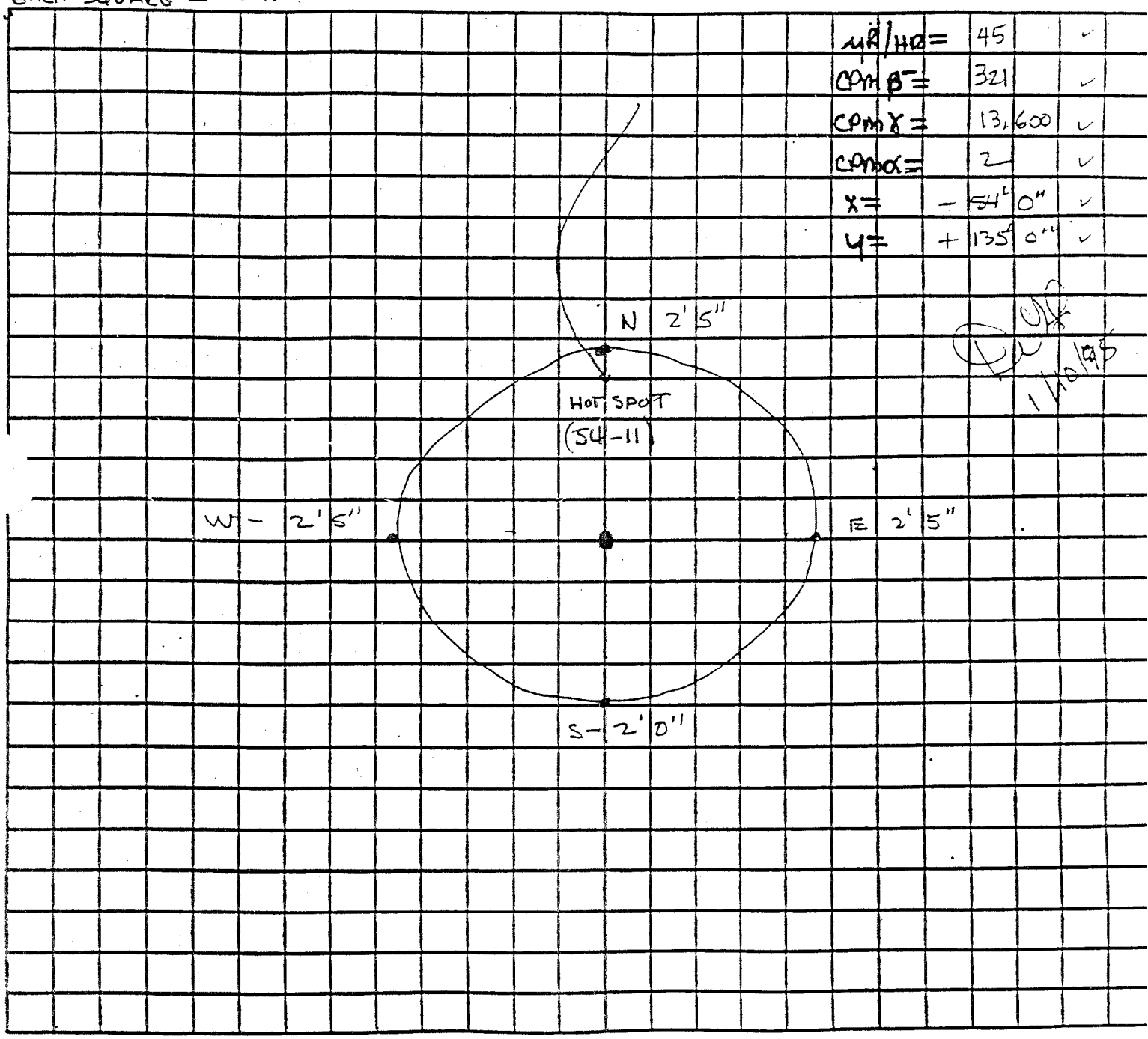
PAGE ___

DATE: 03 JAN 95

Grid # 54-11 PART II Detector: *See Below Technicians: J. Shawen / G. Shaw
Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = 6" x 6" ② Peak Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 03 JAN 95

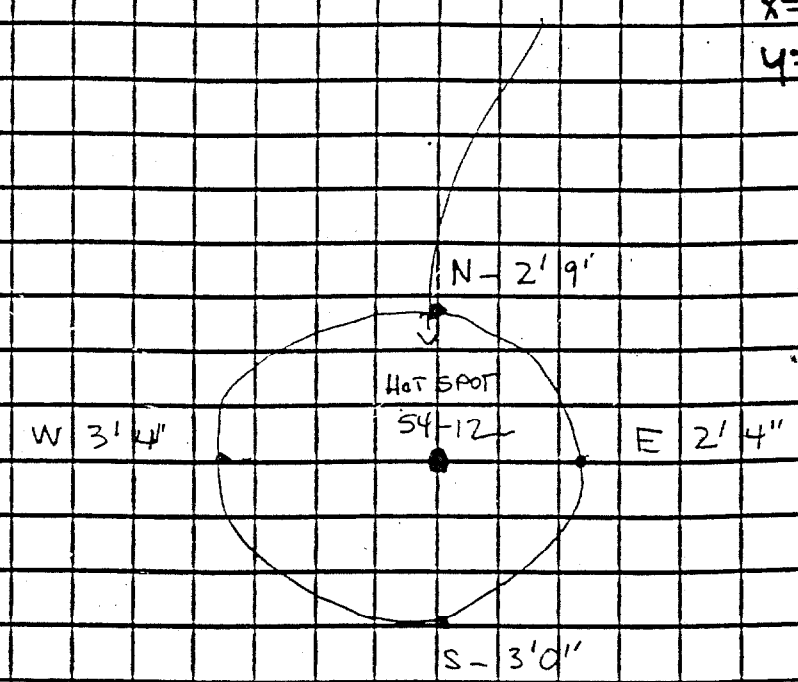
Grid # 54-12 PART II
Detector: *See Below
Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM 2221/M19
BKG N/A
Conversion: N/A
S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 12" x 12"

| | | |
|---|---|---|
| μR/HR = | 40 | ✓ |
| CPM β⁻ = | 142 | ✓ |
| CPM γ = | 17,400 | ✓ |
| CPM α = | ↓ | ✓ |
| X = | − 65' 0" | ✓ |
| Y = | + 117' 0" | ✓ |




1/10/95



Remarks ① EACH SQUARE = 12" x 12" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

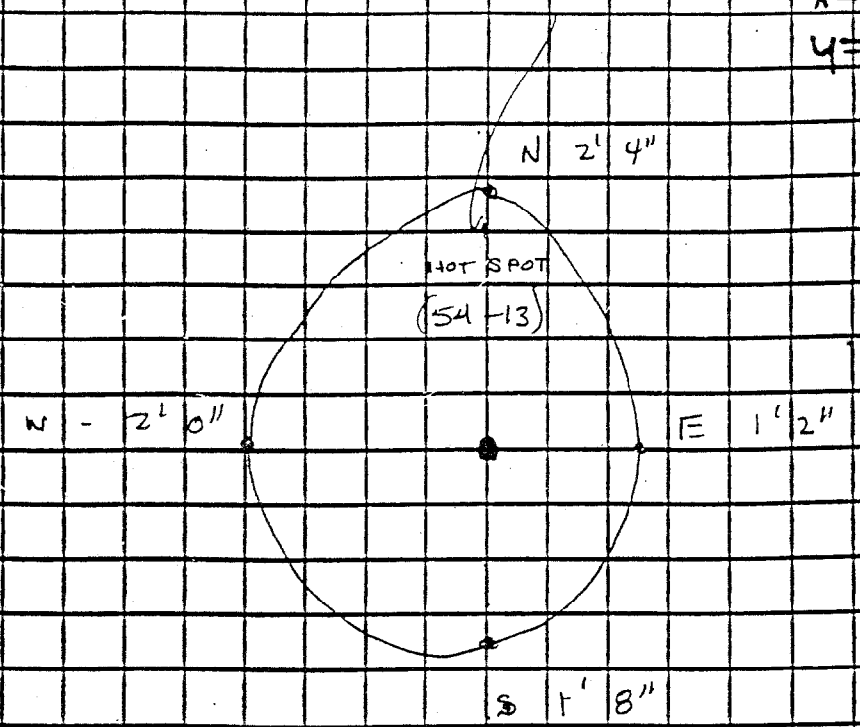
DATE: 03JAN95

Grid # 54-13 PART II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 15 | ✓ |
| CPM β⁻ = | 75 | ✓ |
| CPM γ = | 9,300 | ✓ |
| CPM α = | 2 | ✓ |
| x = | -64 | ✓ |
| y = | +105 | ✓ |




1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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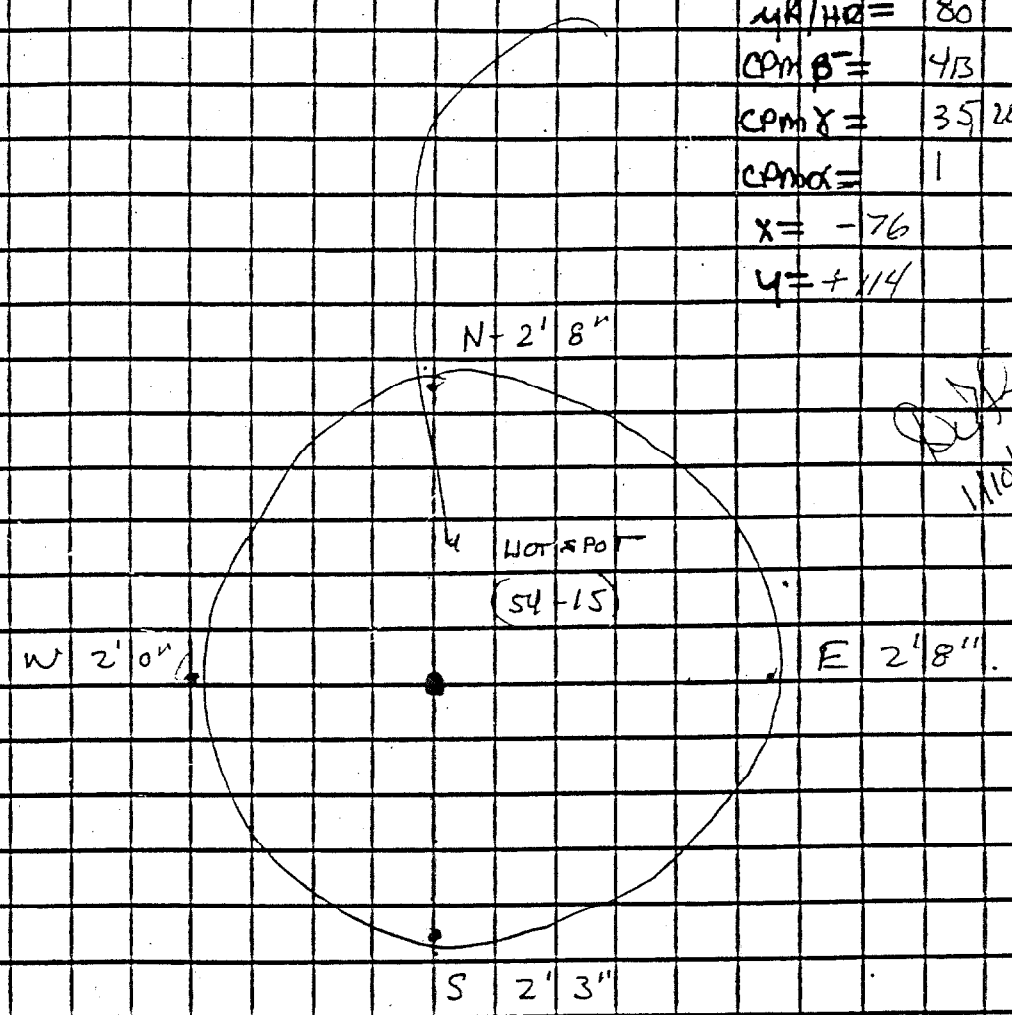
DATE: 03JAN95

Grid # 54-15 PART II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | |
|---|---|---|---|
| μR/HR = | 80 | | ✓ |
| CPM β = | 413 | | ✓ |
| CPM γ = | 35 | 200 | ✓ |
| CPM α = | 1 | | ✓ |
| X = | -76 | | ✓ |
| Y = | +114 | | ✓ |

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Ø3JAN95
DATE: ~~Ø4JAN95~~ MCM

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

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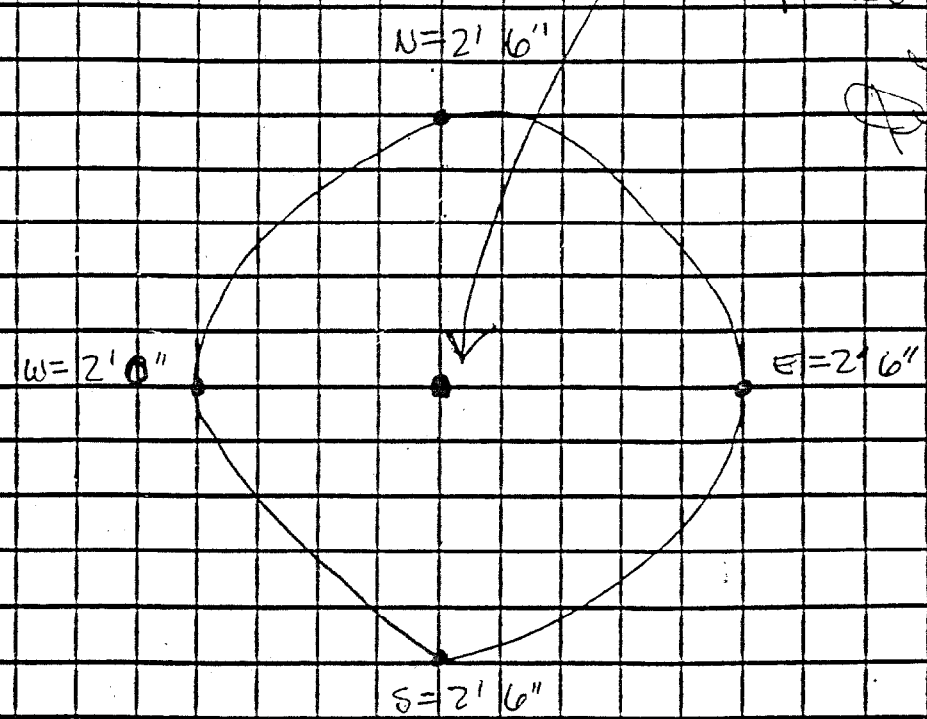
Grid # 54 54-16 Part II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: * See below W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

μR/HR = 26 ✓
CPM β⁻ = 95 ✓
CPM γ = 14500 ✓
CPM α = 2 ✓
x = −94 ✓
y = +128 ✓

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

:U .Y NO. N/A SITE: PSC-26 Grid #54 DATE: 04 JAN95
IN N/A Part II

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Gamma cpm | ~~Beta~~ Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 54-17 | 2 | 7.76 | 55 | 100 | 7800 | 75279 | 15 |
| 54-18 | 1 | 2.22 | 225 | 761 | 337800 | 457338 | 50 |
| 54-19 | 2 | 7.76 | 115 | 333 | 17000 | 210573 | 24 |
| 54-20 | 1 | 2.22 | 558 | 2057 | 69500 | 982632 | 100 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/10/95

Remarks (Notes):

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

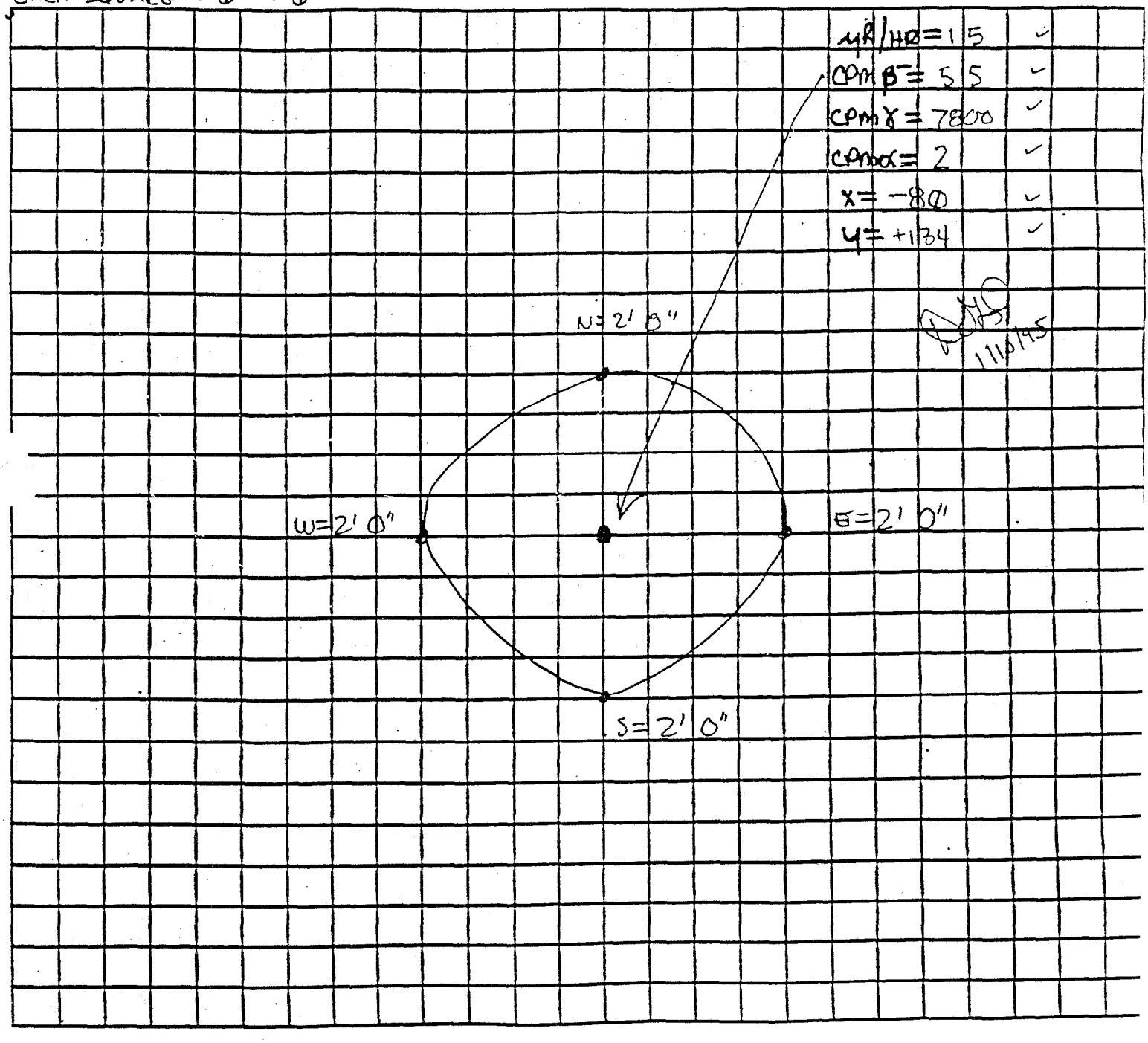
PAGE

DATE: 04JAN95

Grid # 54 54-17 Part II Detector: *See Below Technicians: J. Showers / G. Shaw
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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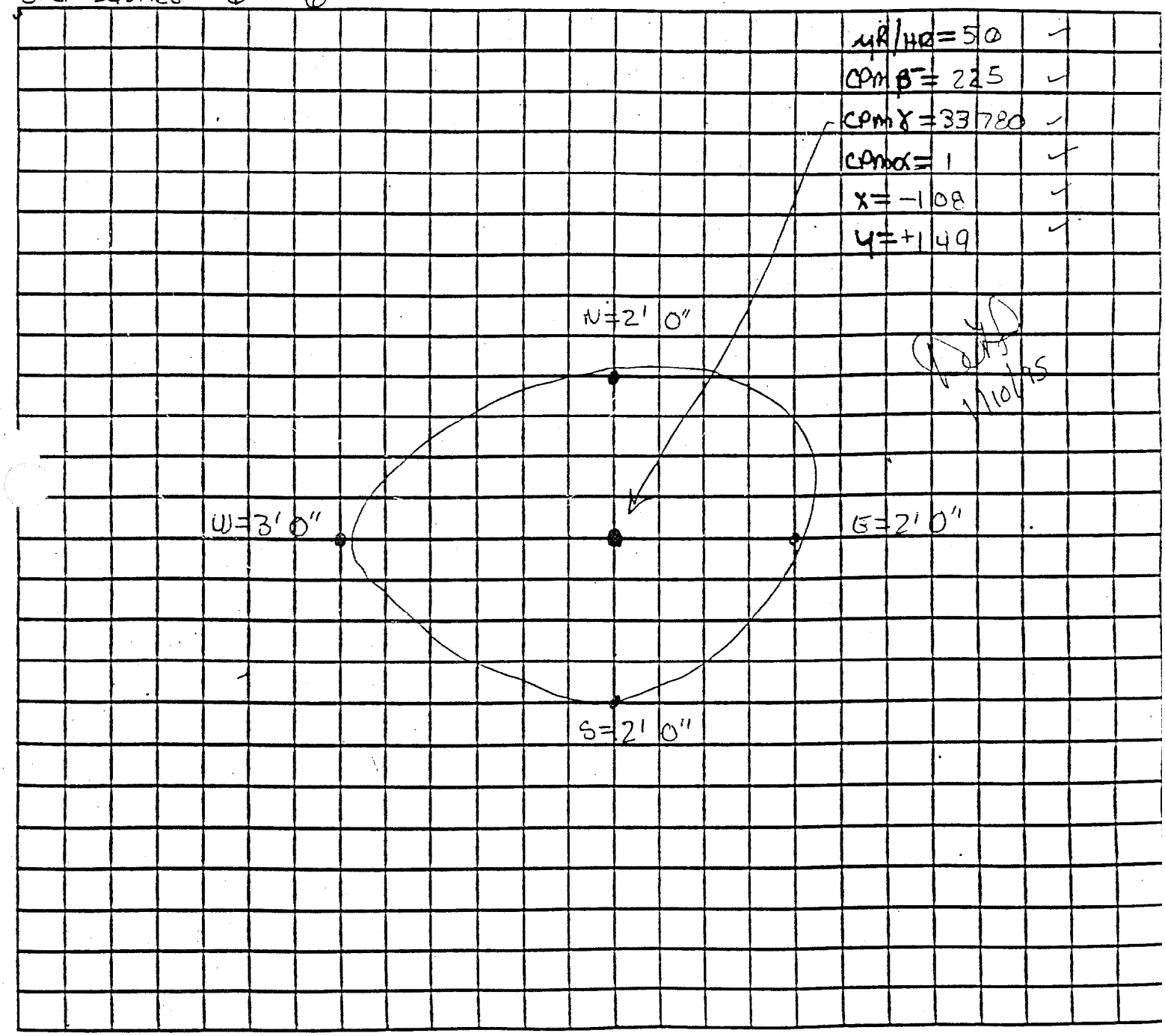
DATE: 04 JAN 95 Part II

Grid # 54 54-18 Detector: *See Below Technicians: J. Showers / G. Shaw
caler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
nversion: N/A S/N: *See below W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = 6' x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 178

DATE: 04 JAN 95

Part II

Grid # 54 54-19 Detector: *See Below Technicians: J. Showers / G. Show

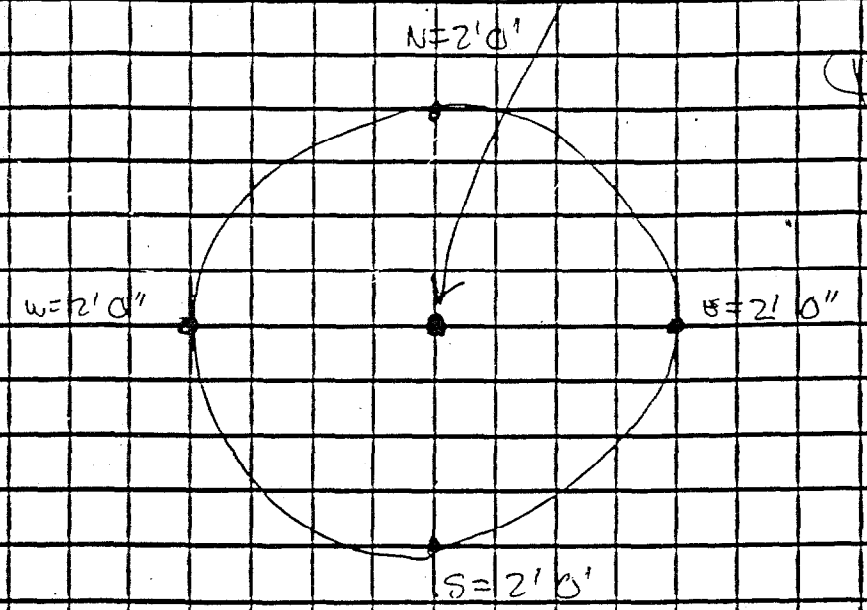
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

μR/HR = 24 ✓
CPM β⁻ = 115 ✓
CPM γ = 17,000 ✓
CPM α = 2 ✓
x = -116 ✓
y = +138 ✓




1/10/95

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

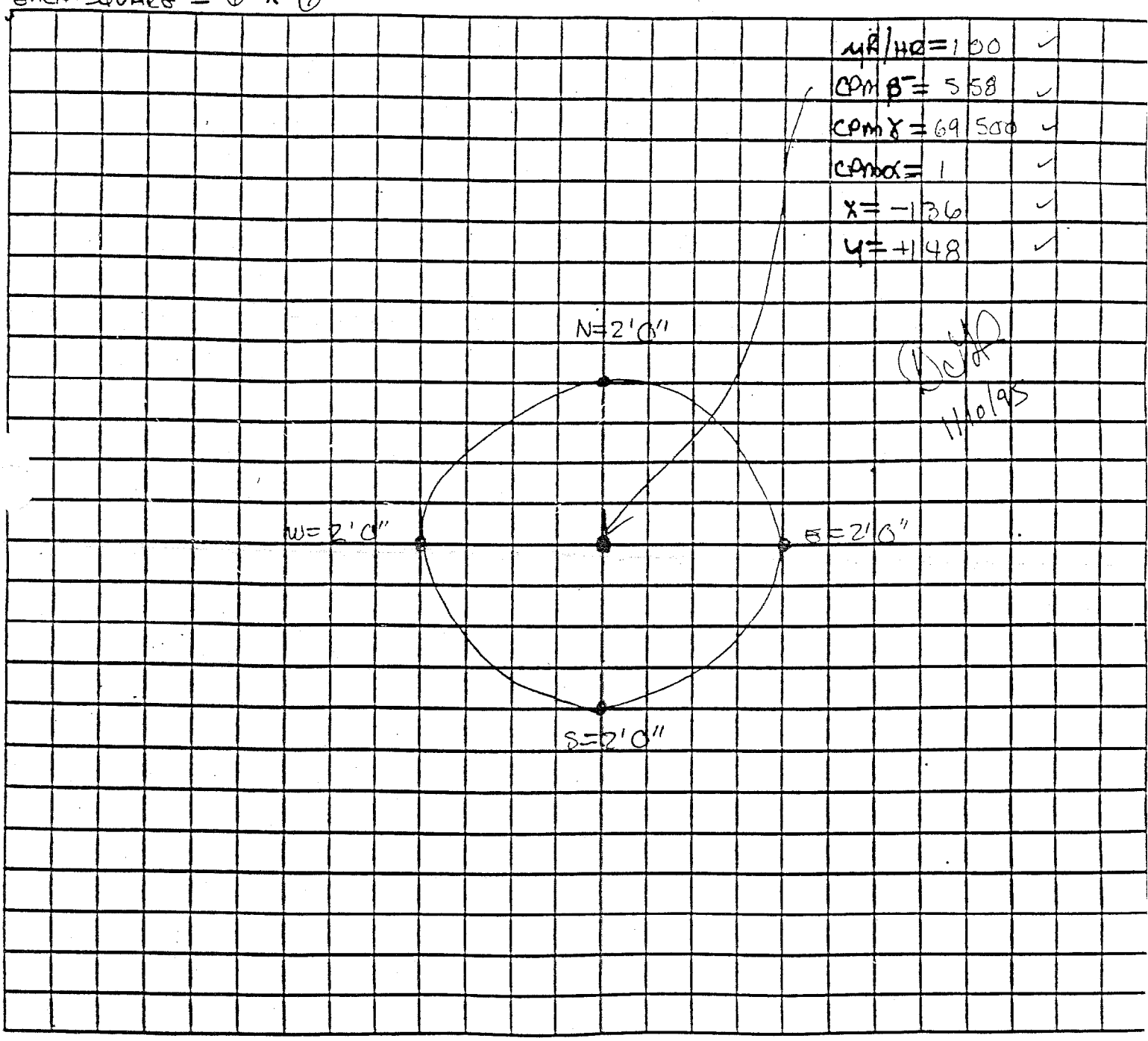
PAGE 1 / 1

DATE: 04 JAN 95

Grid # 54 54-20 Part II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

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Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID#54 DATE: 07Dec94

N/A

STRUMENTS

JB 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2215 ~~2260~~ Oven | .069 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 32.8 | .26 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .1 | .17 | 4/20/9 |

JB 12/21/94

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| HOT SPOT 54-A-1 | 10 | 58.2 | 437 | 1554 | 60680 | 247318 | 80 |

JB 1/10/95

Remarks (Notes): Checked by J. Stevens

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

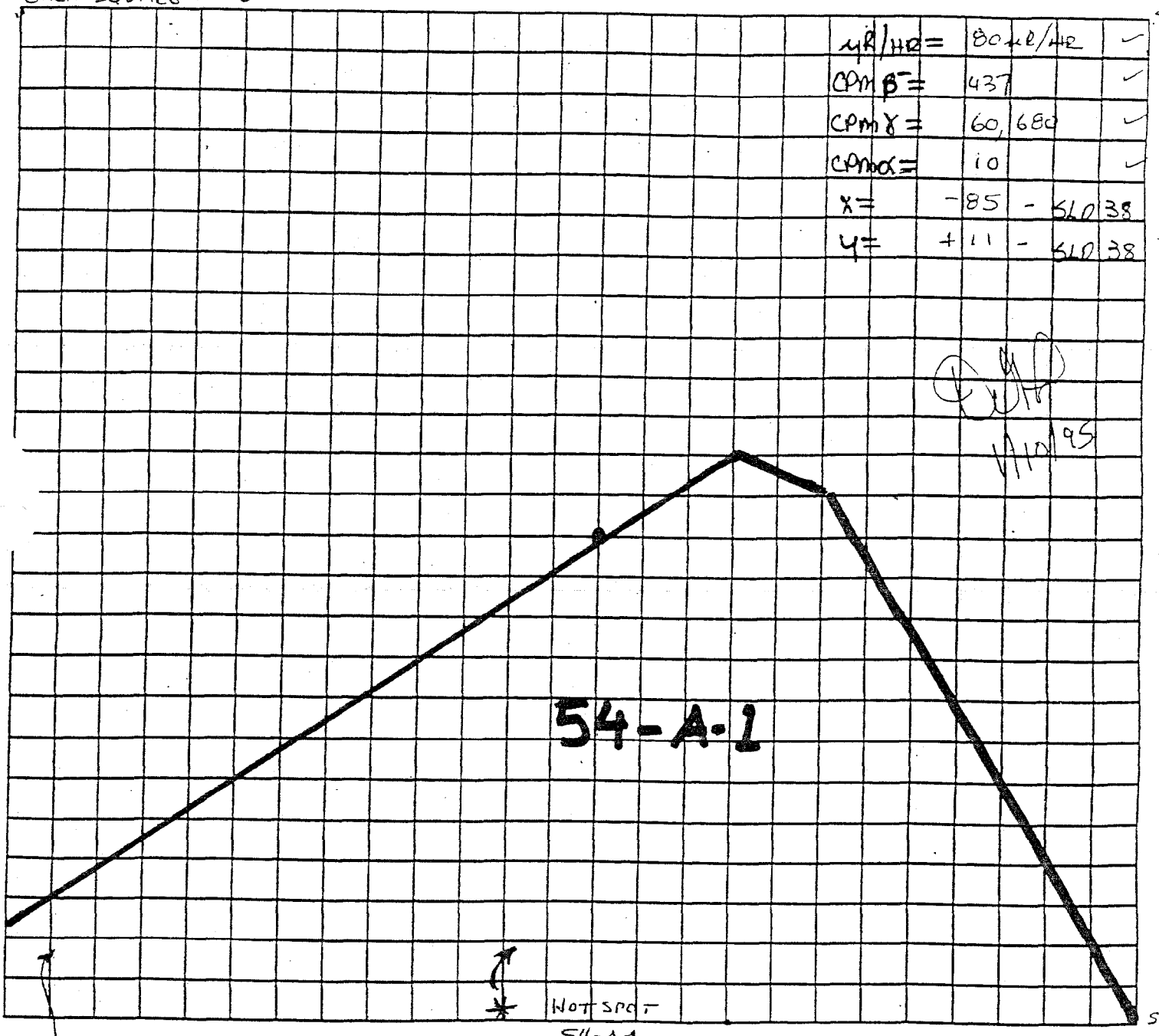
PAGE 7 of

DATE: 07 DEC 94

Grid # 54 Detector *See Below Technicians: J. Showers / G. Shawe
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6' X 6'




NOTE: ALL READINGS WITHIN THIS AREA 2 TIMES GREATER THAN BACKGROUND AND DESIGNATED AS 54-A-1 PAGE 28 OF 28

Remarks ① EACH SQUARE = 6' X 6' ② PEAK Reading is @ Center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

J. Showers 12-13

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID# 55 DATE: 06 Dec 94

N/A

STRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ JS 12-15-94 | Calibrati Date |
|---|---|---|---|---|---|---|
| UDLUM M19 MICROR | 95487 | N/A | N/A | 3 | N/A | 4/2/9 |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/9 |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/ |
| UDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ocation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ JS/Gamma cpm | ~~Beta~~ JS/Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| Hot Spot 55-02 | 1 | JS 12-21-94 ~~0~~ <.625 | 58 | 96.4 | 7675 | 81102.9 | 10 |
| 55-03 | 0 | JS 12-21-94 ~~0~~ <.625 | 117 | 307 | 13821 | 171485 | 33 |
| 55-04 | 1 | JS 12-21-94 ~~0~~ <.625 | 104 | 260.7 | 23750 | 317500 | 47 |
| 55-05 | 1 | JS 12-21-94 ~~0~~ <.625 | 46 | 53.5 | 7348 | 76294.1 | 9 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

DCH 1/10/95

Remarks (Notes): 55-01 ~~Bkt~~ JS WAS LESS THAN 2 TIMES BK. [signature] 12-13-9

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JS 1-7-95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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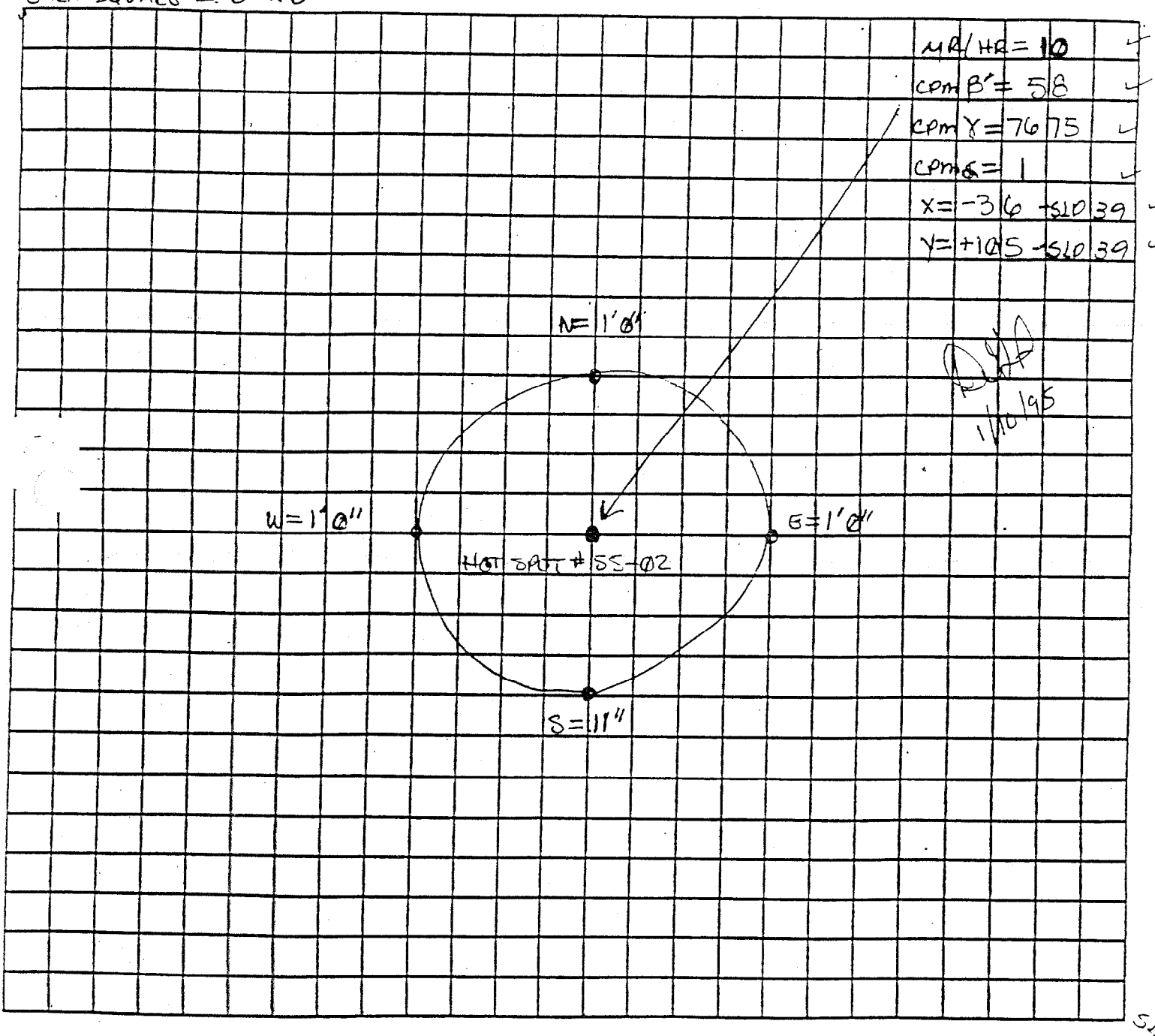
DATE: 06 DEC 94

... #55 55-02 Detector: *See below Technicians: J. Showers / G. Showers
... LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
...ersion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"




SLO 3

PAGE 2 OF ~~14~~ 13
1-7-95

Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-10-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

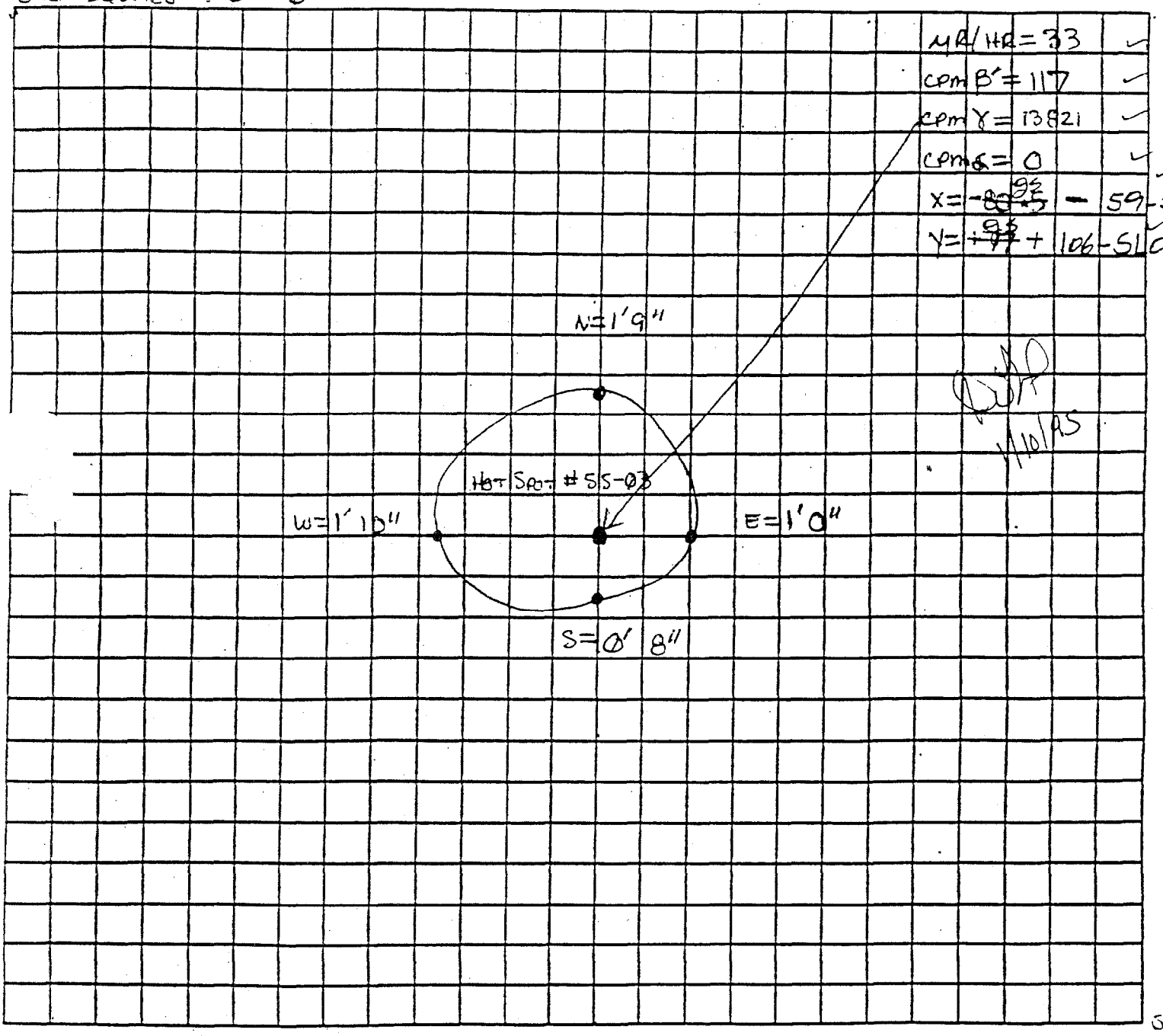
PAGE 154

DATE: 06 DEC 94

#55 55-03 Detector: *See Below Technicians: J. Showers / G. Showers
er: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
ersion: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO 39

PAGE 3 OF ~~14~~ 13 fs 1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12.13.94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

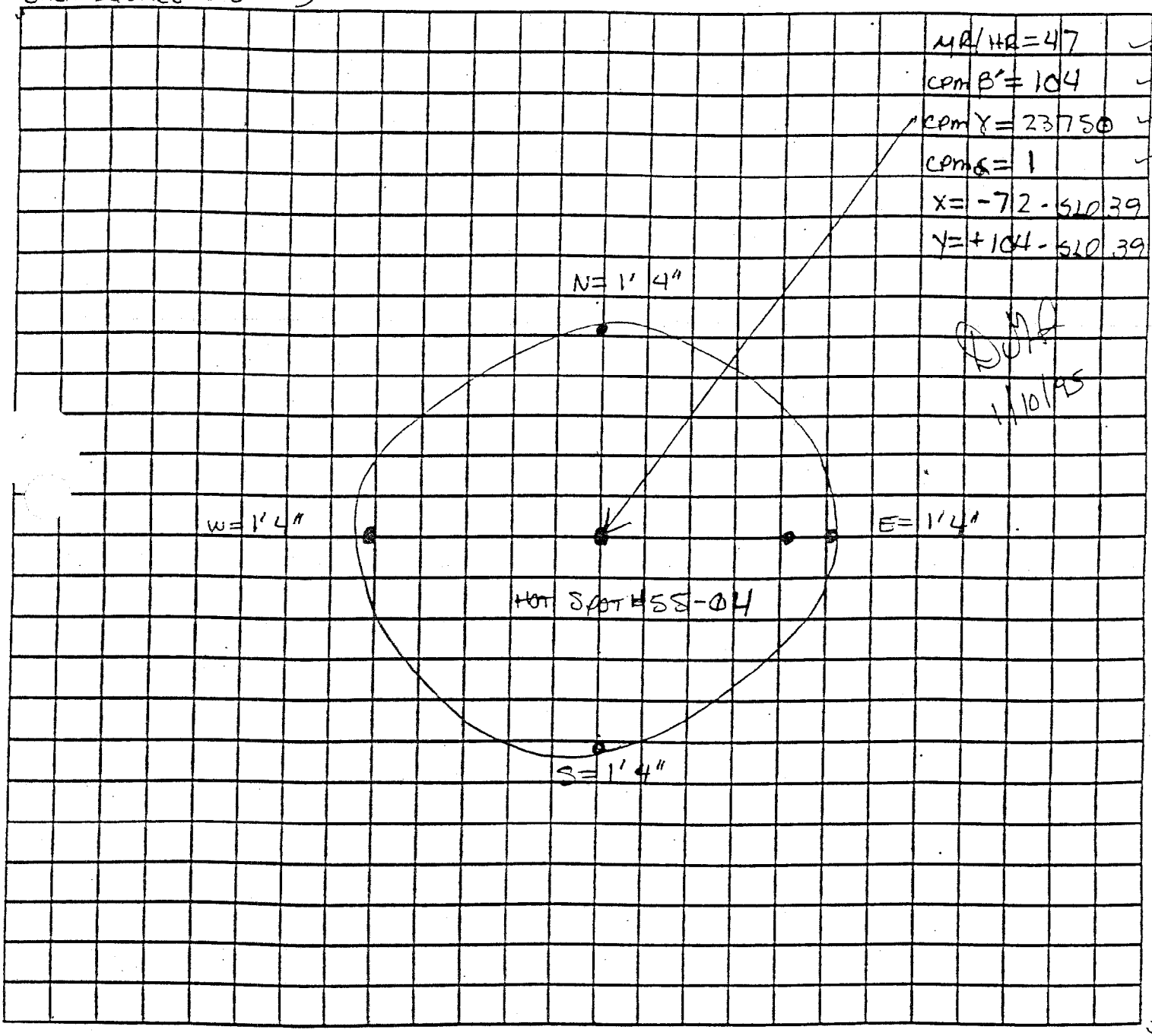


DATE: 06 DEC 94

#55 55-04 Detector: *See below Technicians: J. Showers / G. Showers
er: LUDLUM2221/m19 BKG N/A S. HAESE / R. PARRISH
version: N/A S/N: N/A W.C. MAY

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 3" x 3"




SLO 39

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Remarks ① EACH SQUARE = 3" x 3" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

Checked by G. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

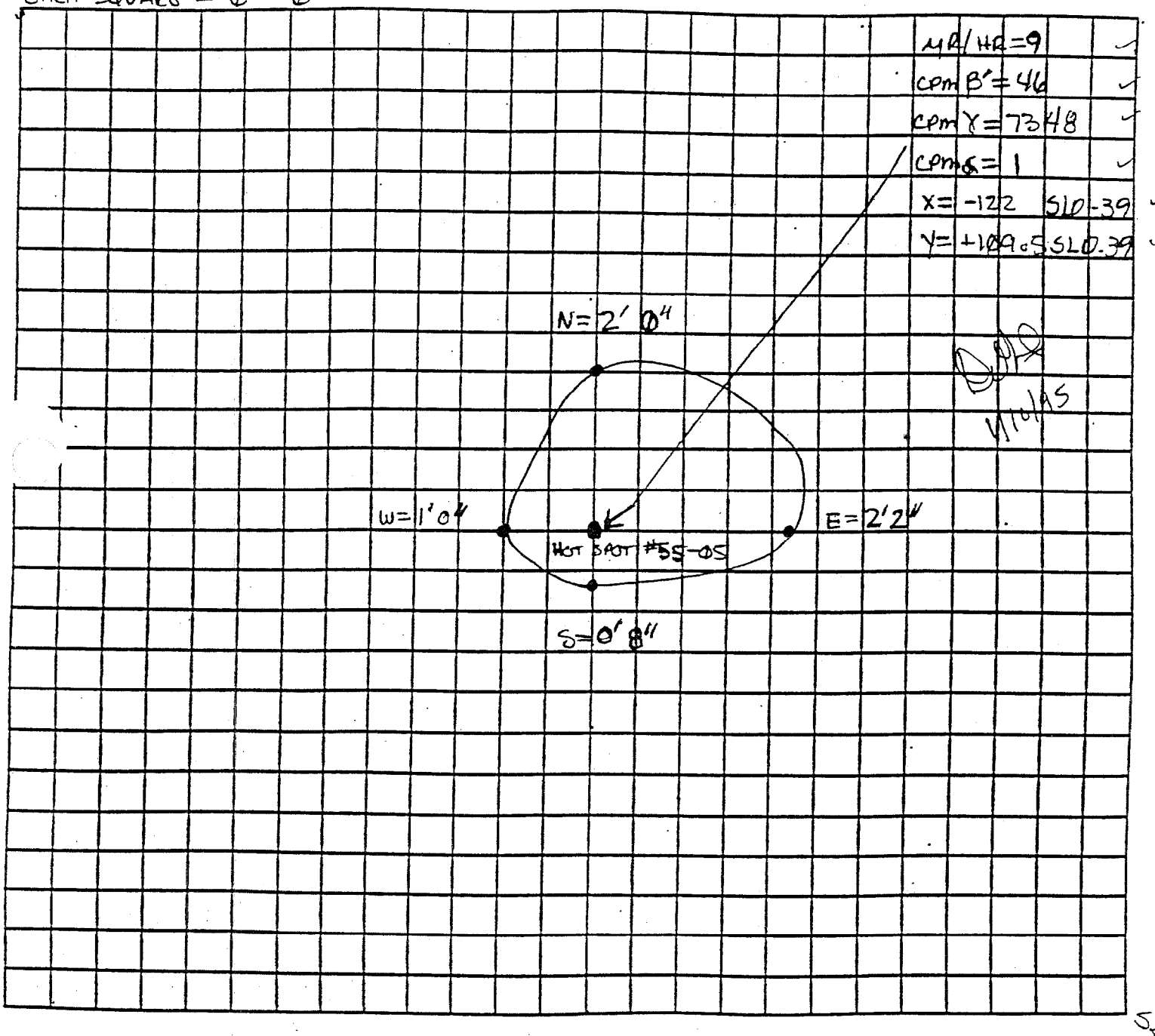


DATE: 06 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| # 55 | 55-05 | Detector: | * See Below | Technicians: | J. Showers / G. Showers |
| Meter: | LUDLUM2221/M19 | BKG | N/A | | S. HAESE / R. PARRISH |
| Conversion: | N/A | S/N: | N/A | | W.C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO

PAGE 5 OF ~~14~~ 13
JS 1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

[signature] J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A SITE: PSC-26 GRID#55 DATE: 06 Dec 94

N/A

STRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibrati Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 3 | N/A | 4/2/9 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/ |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/ |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/ |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| HOT SPOT 55-06 | 2 | 5.46 | 313 | 1007 | 21750 | 288088.2 | 44 |
| HOT SPOT 55-07 | 0 | 0.625 | 233 | 721 | 24200 | 324117.6 | 20 |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/10/95

Remarks (Notes): Checked by J. Showers 12-13-94

1-7-95

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 06 DEC 94

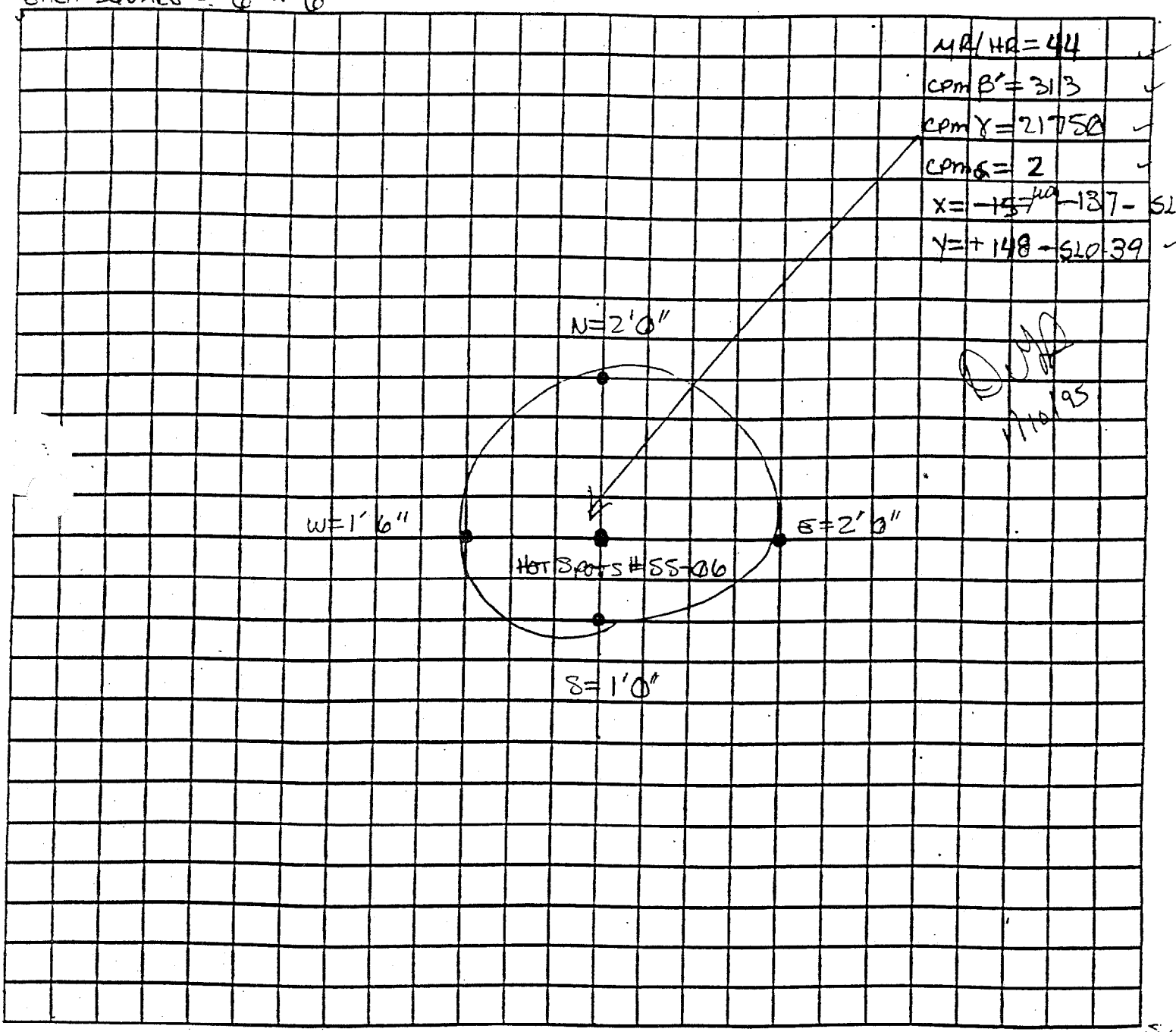
#55 SS-06 Detector: *See Below Technicians: J. Showers / G. Showers

: LUDLUM2221/m19 BKG N/A S. HAESE / R. PARRISH

ersion: N/A S/N: N/A W.C. May

*m19 = 95487 μR/HR
2221 = 99136 + DETECTOR #165 γ
2221 = 117366 + DETECTOR #116878 β γ
2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"





fo 1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. SHOWERS 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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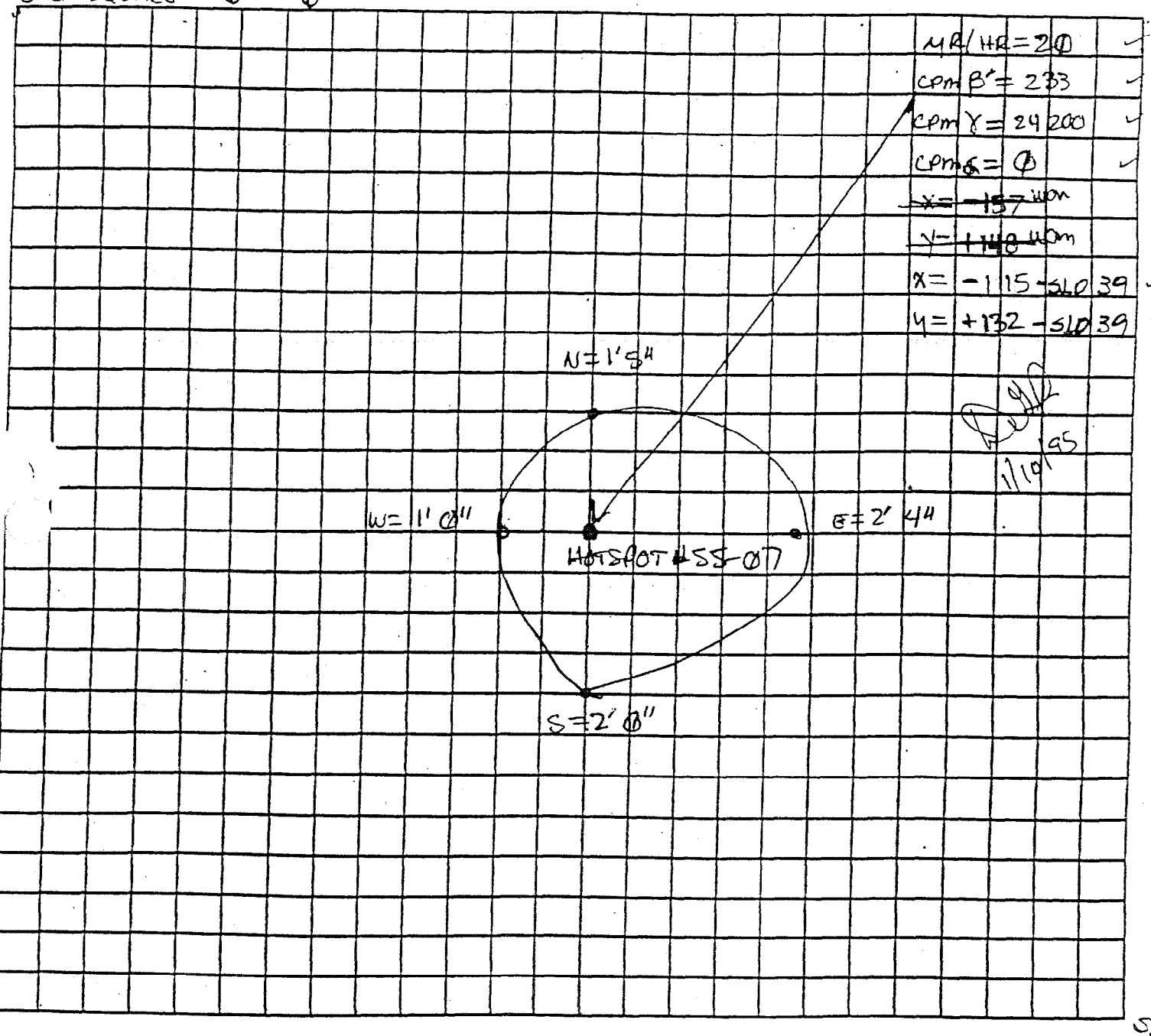
DATE: 06 DEC 94

Grid # 55 55-07 Detector: *See Below Technicians: J. Showers / G. Showers
ler: LUDLUM2221/m19 BKG N/A S. HAESE / R. PARRISH
nversion: N/A S/N: N/A W.C. MAY

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLO

PAGE 8 OF ~~14~~ 13
1-7-95

rks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SL ...Y NO. N/A SITE: PSC-26 Grid #55 DATE: 04JAN95
IM... N/A Part II

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | 18.04 | 4/20/9 |
| | | | | | | |
| | | wan | | | | |
| | | | | | | |
| | | | | | | |

| L...ion description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | wan ~~Beta~~/Gamma cpm | wan ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| 55-01 | 0 ✓ | <MDA 0 ✓ | 142 ✓ | 439 ✓ | 30720 ✓ | 412338 ✓ | 35 ✓ |
| 55-02 | 0 ✓ | <MDA | 87 ✓ | 225 ✓ | 10890 ✓ | 120720 ✓ | 17 ✓ |
| 55-03 | 1 ✓ | 2.2 ✓ | 153 ✓ | 481 ✓ | 40000 ✓ | 548808 ✓ | 50 ✓ |
| 55-04 | 1 ✓ | 2.2 ✓ | 10335 ✓ | 40100 ✓ | 126000 ✓ | 145867 ✓ ~~1813514~~ | 190 |
| | | | | | | Dwf 1/11/95 | |
| | wan | | | | | | |
| | | | | | | Dwf 1/11/95 | |
| | | | | | | | |

Remarks (Notes):


fs 1-7-95

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

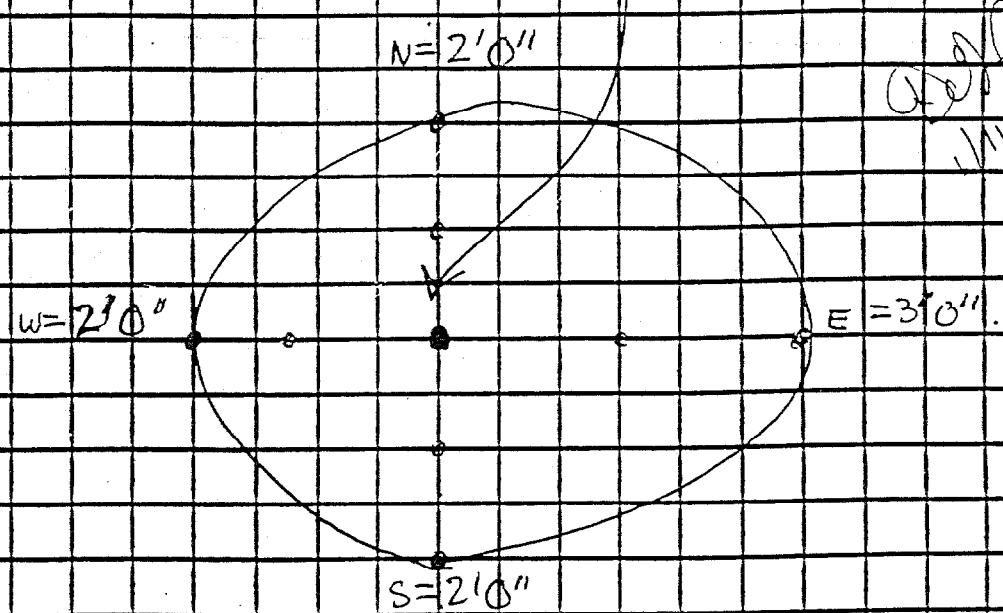
DATE: 04 JAN 95

Grid # 55 SS-01 PART II Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

μR/HR = 35 ✓
CPM β⁻ = 142 ✓
CPM γ = 30720 ✓
CPM α = 0 ✓
x = -149 ✓
y = +125 ✓




1/11/95

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1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

04 JAN 95

DATE: ~~Dec 94~~ WCM

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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Grid # 55 55-02 Part II

Detector: *See Below

Technicians: J. Showers / G. Showers
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM 2221/M19

BKG N/A

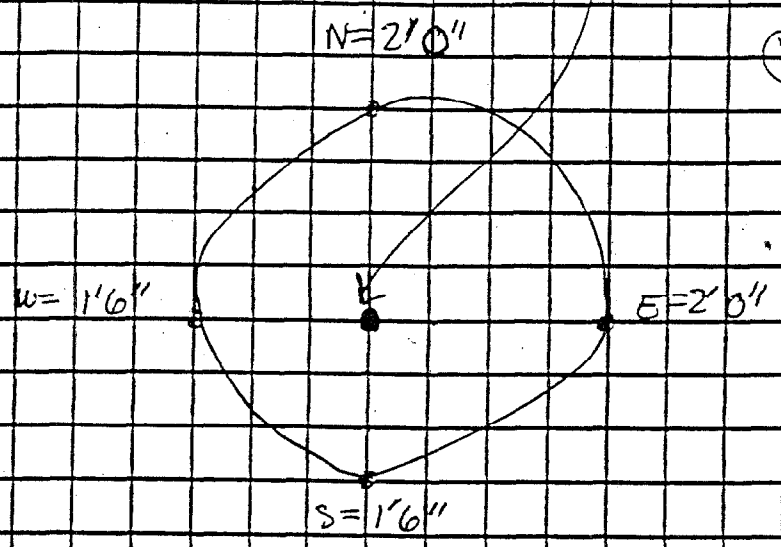
Conversion: N/A

S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = 1.7 | ✓ |
| CPM β⁻ = 8.7 | ✓ |
| CPM γ = 10.890 | ✓ |
| CPM α = 0 | ✓ |
| X = -136 | ✓ |
| Y = +143 | ✓ |




1/4/95

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1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 04JAN95 ~~DEC 94~~ WAM

Grid # 55 55-03 Part II

Detector: *See Below

Technicians: J. Showers / G. Shower
R. PARRISH / S. HAESE
W. C. May

Scaler: LUDLUM2221/M19

BKG N/A

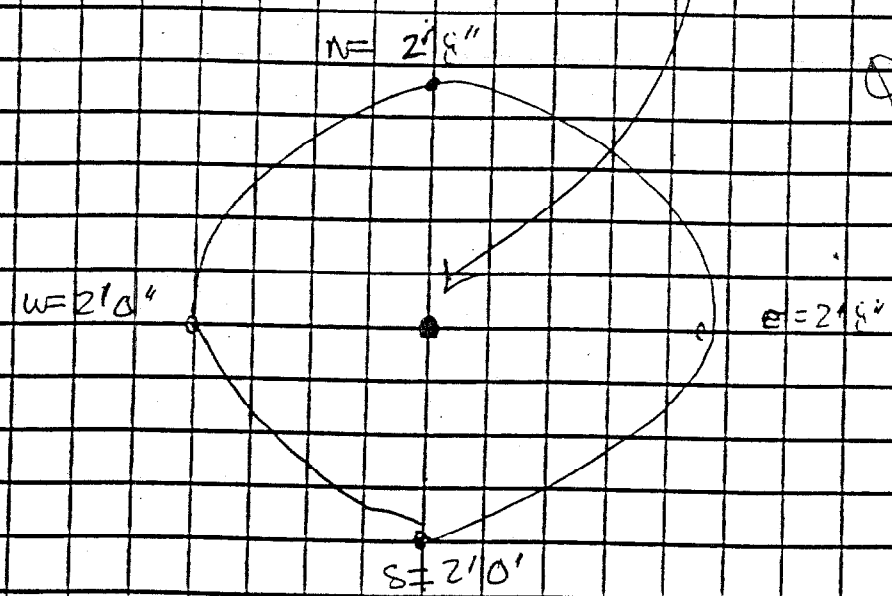
Conversion: N/A

S/N: N/A

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = 50 | ✓ |
| CPM β⁻ = 153 | ✓ |
| CPM γ = 40 000 | ✓ |
| CPM α = 1 | ✓ |
| X = -128 | ✓ |
| Y = +105 | ✓ |




DLF 1/11/95

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dp 1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

04-JAN-95

DATE: ~~Dec 94~~ WCM

# FIELD DATA ACQUISITION FORM
# WALKOVER GAMMA SCAN DATA SHEET



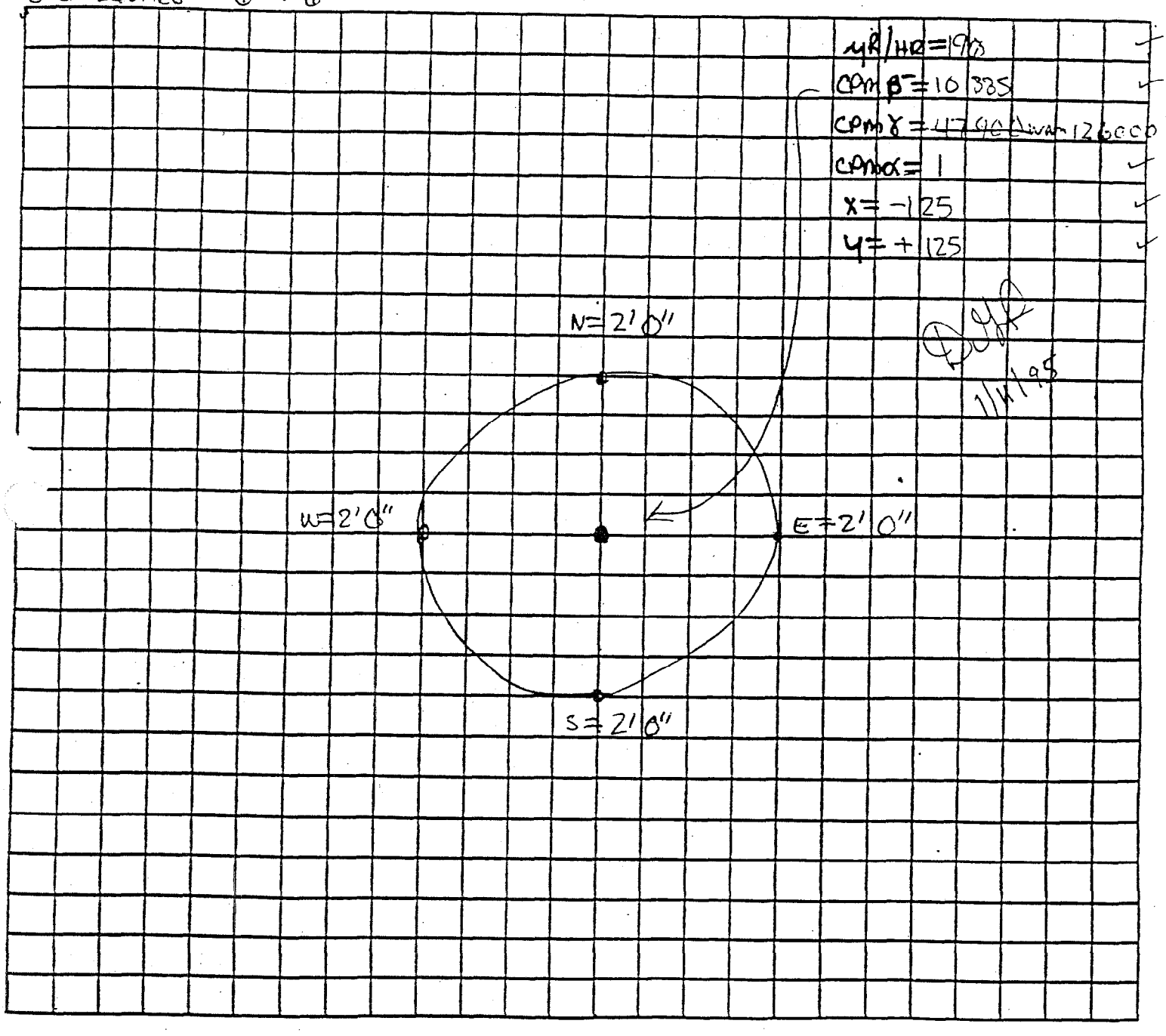
Grid # 55 55-04 Part II Detector: *See Below Technicians: J. Showers / G. Shawe

Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




PAGE 13 OF ~~14~~ 13 1-7-95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

NO. N/A N/A SITE: PSC-26 GRID#56 DATE: 06 Dec 94

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. (12-15-94) | Calibrat Date |
|---|---|---|---|---|---|---|
| UDLUM m19 micor | 95487 | N/A | N/A | 3 | N/A | 4/2/9 |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2160 | .068 | 4/20/ |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 31 | .28 | 10/21/ |
| UDLUM 2221 | 102049 | 43-65 | #090753 | 1 | .183 | 4/20/ |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Data~~ Gamma cpm | ~~Data~~ Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| Hot Spot 56-01 | 2 | 5.4 | 302 | 967.8 | 33431 | 459867.6 | 46 |

1/4/95

Remarks (Notes): Checked by J. Williams 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

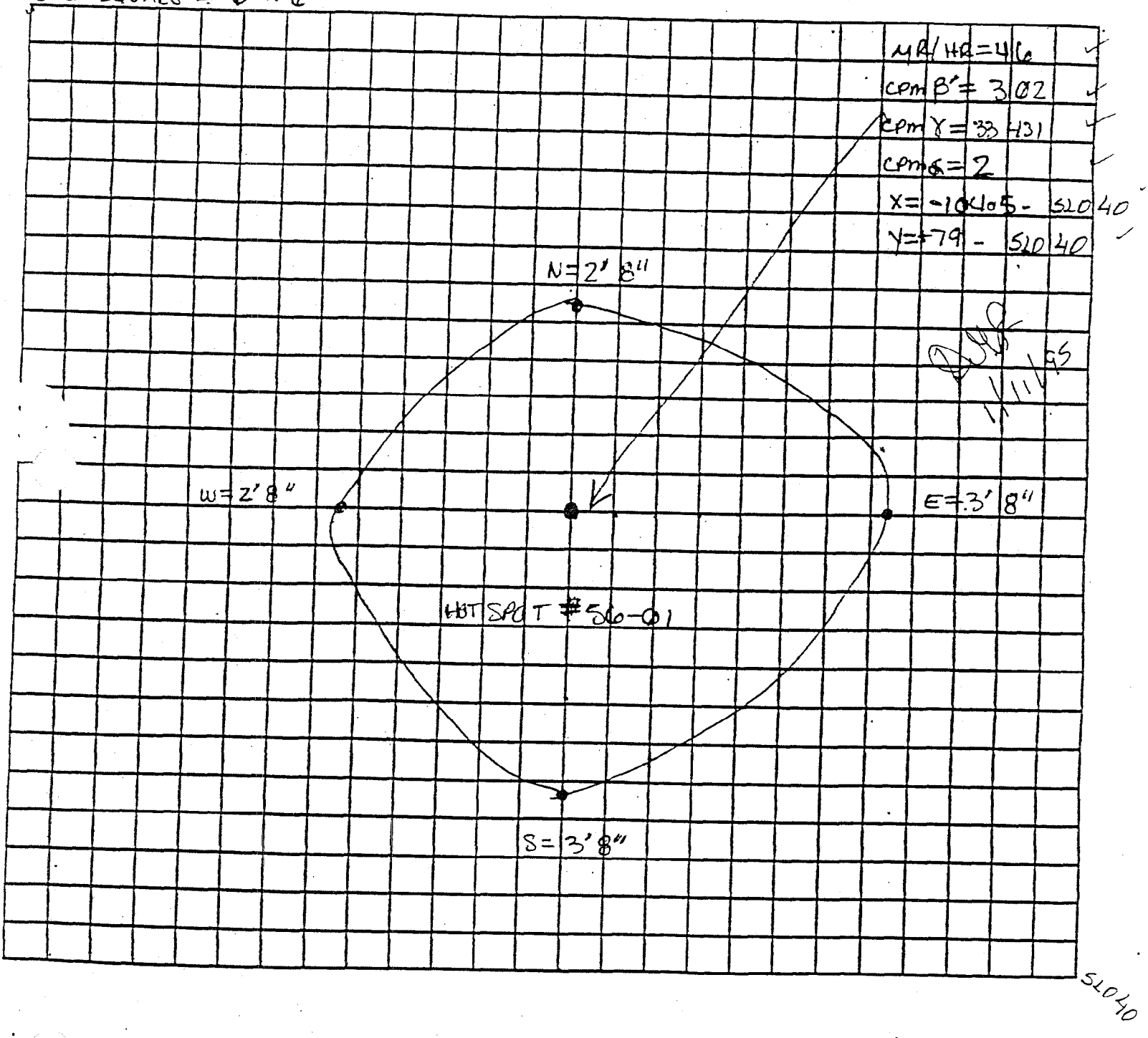


DATE: 06 DEC 94

#56 56-01 Detector: *See Below Technicians: J. Showers / G. Showers
er: LUDLUM2221/M19 BKG N/A S. HAESE / R. PARRISH
version: N/A S/N: N/A W.C. MAY

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




PAGE 2 OF 2

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

RV NO. N/A SITE: PSC-26A GRID #60 DATE: 12-20-94
IE: N/A

STRUMENTS

GS 12-20-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ EFF % | Calibration Date |
|---|---|---|---|---|---|---|
| Eberline Model 19 Micro | 95487 | N/A | N/A | 4uR | N/A | 4-2-95 |
| Ludlum 2221 | 99136 | 44-10 | 165 | 2178 | 6.93 | 4-20-95 |
| Ludlum 2221 | 117366 | 44-09 | 116878 | 32.8 | 27.3 | 10-21-95 |
| Ludlum 2221 | 102049 | 43.65 | 090753 | 1.4 | 19.5 | 4-20-95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta/Gamma~~ N/A cpm | ~~Beta/Gamma~~ N/A dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOTSPOT 60-01 | N/A | | | | | | |
| 60-02 | N/A | | | | | | |
| 60-03 | N/A | | | | | | |
| 60-04 | 2 ✓ | 3 ✓ | 80 ✓ | 173 ✓ | 8538 ✓ | 91,774 ✓ | 14 ✓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

DOP 1/11/95

Remarks (Notes): ① 60-01 + 60-02 + 60-03 are "NO HITS" (did not meet criteria.

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE 20 DEC 94

Grid # 60-04 Detector: *SEE BELOW Technicians: J. SHOWERS

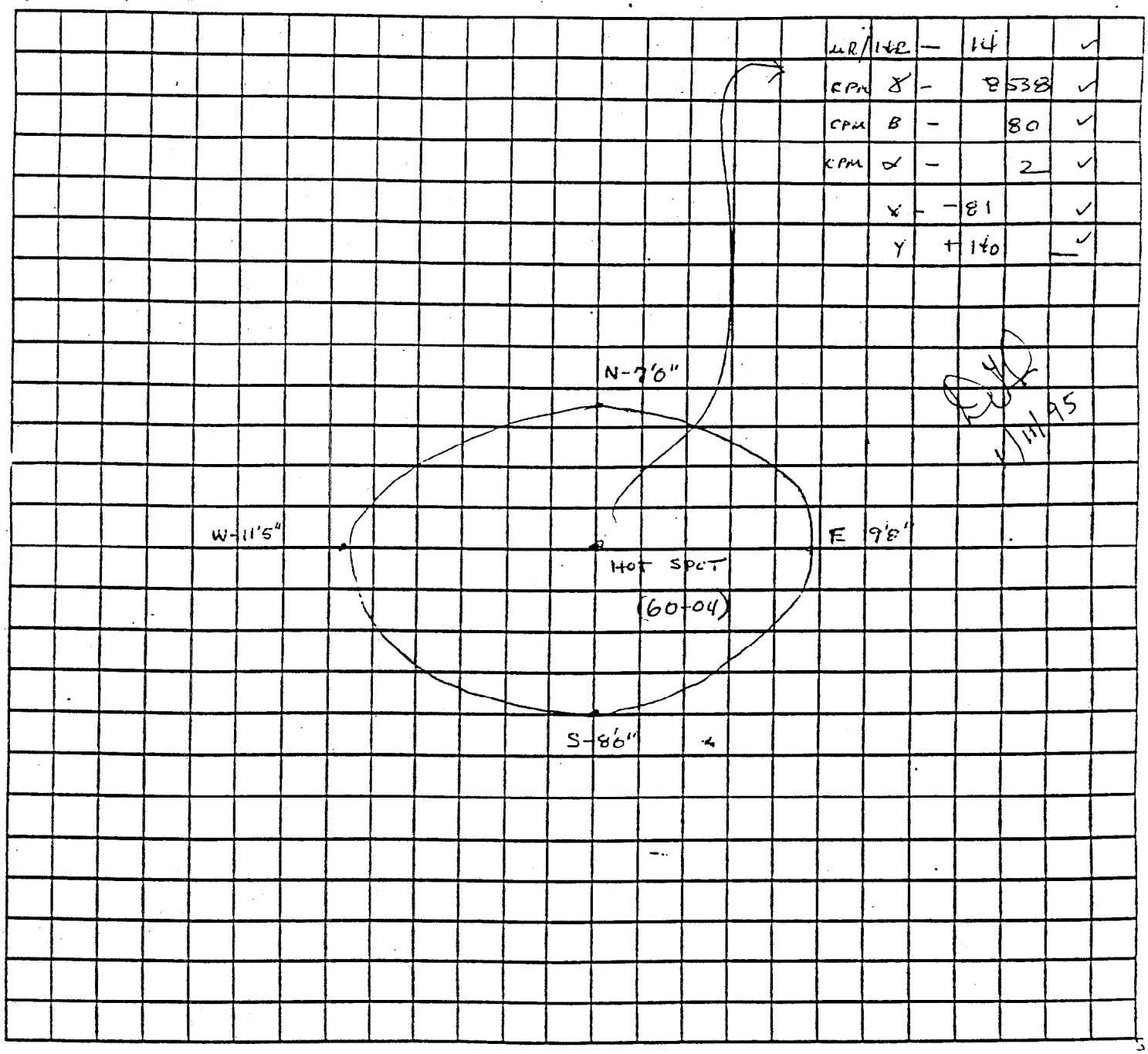
Scaler: LUDLUM 2221 BKG N/A S. HAESE

Conversion: N/A S/N: N/A N/A

LUDLUM 95487 - M 19
γ LUDLUM 2221 - 99136 - 44-09 DET 165
β LUDLUM 2221 117366 - 44-09 WDET 116678
α LUDLUM 2221 102649 - 4365 WDET 090753

SLO 79

SCALE 1/4" = 2'




| | | | | | |
|---|---|---|---|---|---|
| μR/HR | | – | 14 | | ✓ |
| CPM | γ | – | 8538 | | ✓ |
| CPM | β | – | | 80 | ✓ |
| CPM | α | – | | 2 | ✓ |
| | X | – | 81 | | ✓ |
| | Y | + | 140 | | ✓ |

1/11/95

PAGE 2 OF 2

Remarks

# DIRECT SURFACE CONTAMINATION READINGS

.Y NO. N/A SITE: OSC-26 GRID #61 DATE: 08 DEC 94

IL N/A

INSTRUMENTS

JB 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICRAR | 95487 | N/A | N/A | 4MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |

| IL on description | | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm (JB 12-21-94) | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|---|
| HOT SPOT | 61-01 | 1 | 2.3 | 145 | 435 | 15500 | 189571 | 19 |
| | 61-02 | 0 | (dm 12-21-94) <0.4 | 137 | 404.2 | 19600 | 248142 | 35 |
| | 61-03 | 4 | 20 | 160 | 492.6 | 16050 | 197428 | 23 |

1/11/95

Remarks (Notes): Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

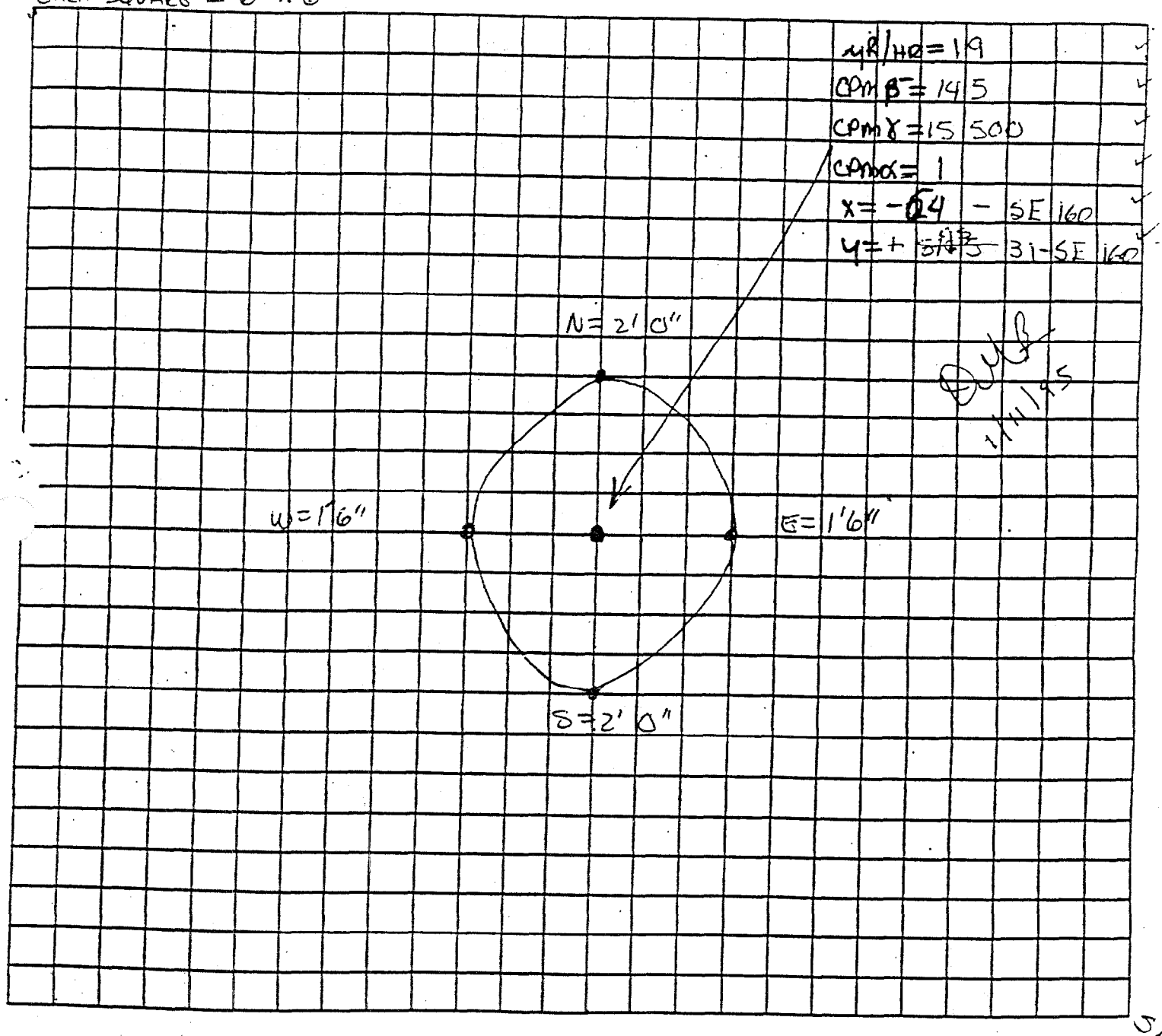
PAGE 770

DATE: 08 DEC 94

Grid # 61 61-01 Detector: *See Below Technicians: J. Showers / G. Shave
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAGSE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




PAGE 2 OF 6

Remarks ① EACH SQUARE = 6" x 6" ② Peak Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

Checked by G. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 111

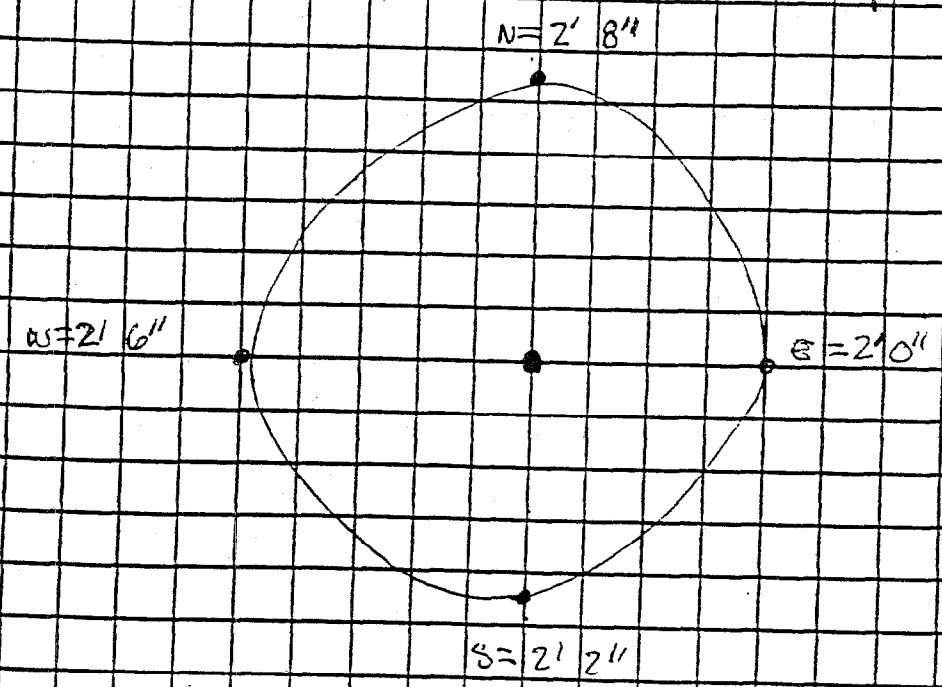
DATE: 08 DEC 94

Grid # 61 61-02 Detector: *See Below Technicians: J. Shavers / G. Shave
Scaler: LUDLUM 2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

μR/HR = 35
CPM β⁻ = 137
CPM γ = 19600
CPM α = 0
X = -28.5 - SE 160
Y = + 58.5 - SE 160




1/11/95

SE16

PAGE 3 OF 6

Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by J. Shavers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 08 DEC 94

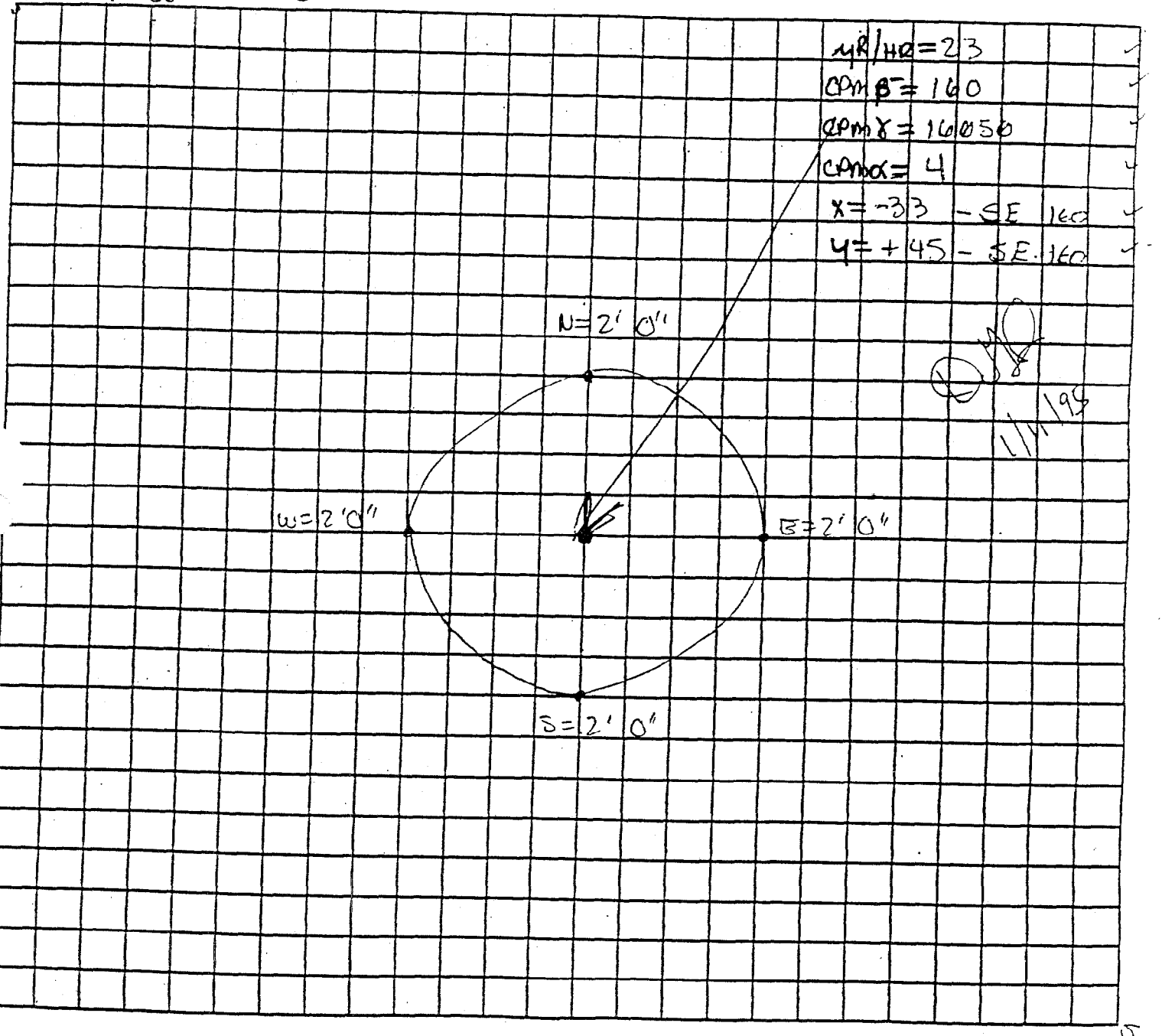
Grid # 61 — 61-03 — Detector: *See Below — Technicians: J. Showers / G. Shaw, R. Parrish / S. Hagee, W. C. May

Scaler: Ludlum 2221/m19 — BKG: N/A

Conversion: N/A — S/N: N/A

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"






Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS



Y NO. N/A SITE: PSC-26 Grid #61 DATE: 12 DEC 94

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ JS 12-15-94 | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM mig micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2147 | .0687 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 36 | .277 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .173 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| Hot spot 61-01-W | 0 | 0.68 JLW 12-21-94 | 228 | 693.1 | 35436 | 484556 | 100 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remarks (Notes): 61-02-W DOES NOT MEET HOT SPOT CHARACTERIZATION. - J. S. Howard 12-13-9

Checked by

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

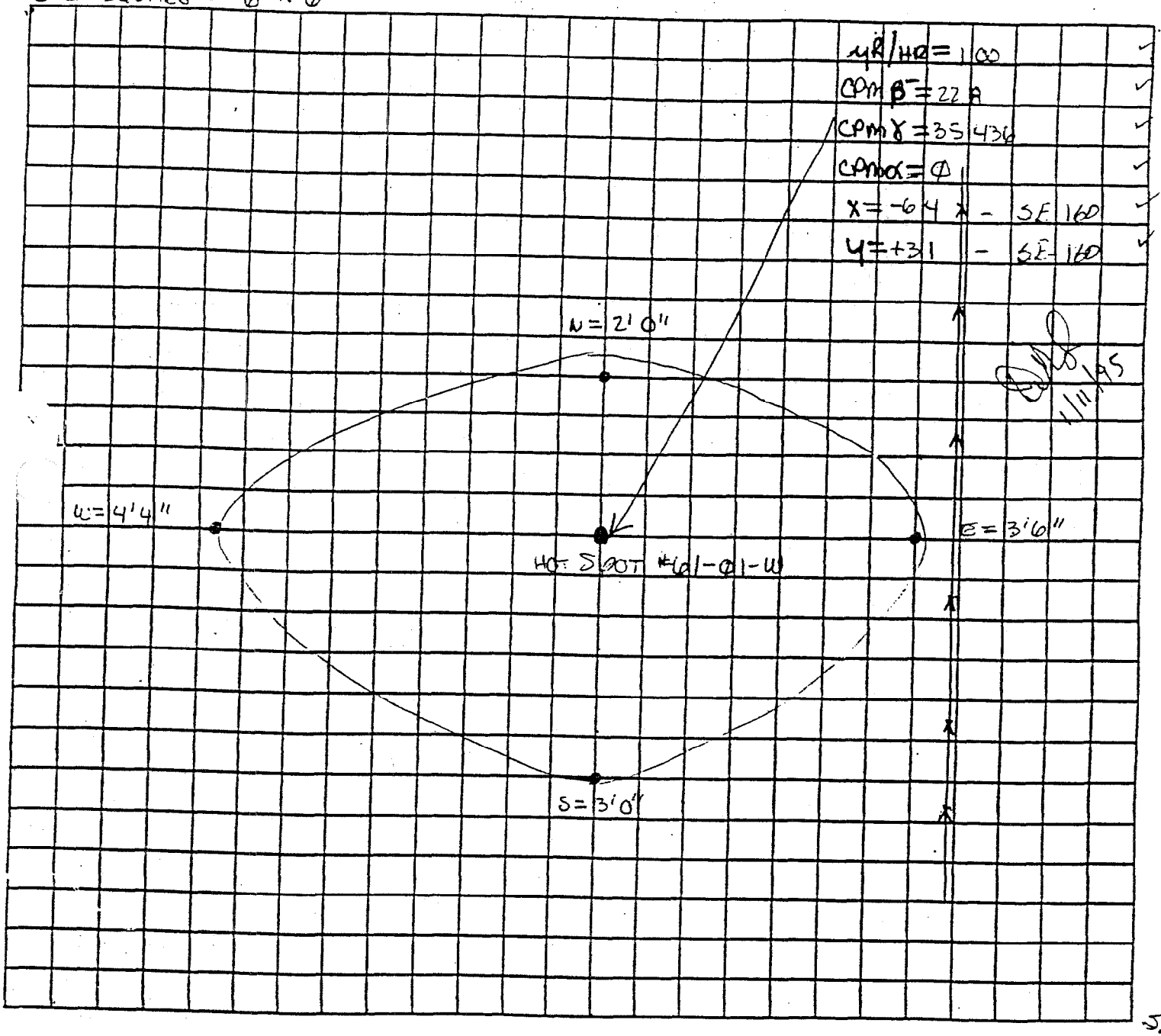
DATE: 12 DEC 94

gs 1-7-95

| | | | | | |
|---|---|---|---|---|---|
| d # 61 | 61-01-W | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| nversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" X 6"




SE160

PAGE 6 OF 6

Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA - Chuckley J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

VEY NO. N/A SITE: PSC-26 GRID #2 DATE: 08 DEC 94
: N/A

INSTRUMENTS

JS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICRO R | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/9 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |

JS 12/6/94

| ation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 62-01 | 0 | 12-21-94 0.4 | 52 | ~~32.3~~ 37.3 12-21-94 | 6100 | 55285 | 8 |
| ↓ 62-02 | 0 | 12-21-94 0.4 | 56 | ~~32.8~~ 32.6 12-21-94 JS 12-21-94 | 6200 | 56714.2 | 8 |

1/11/95

Remarks (Notes): Checked by L. Stavero 12-13-94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 176

DATE: 08 DEC 94

Grid # 62-01 Detector: *See Below Technicians: J. Shawers / G. Shawers

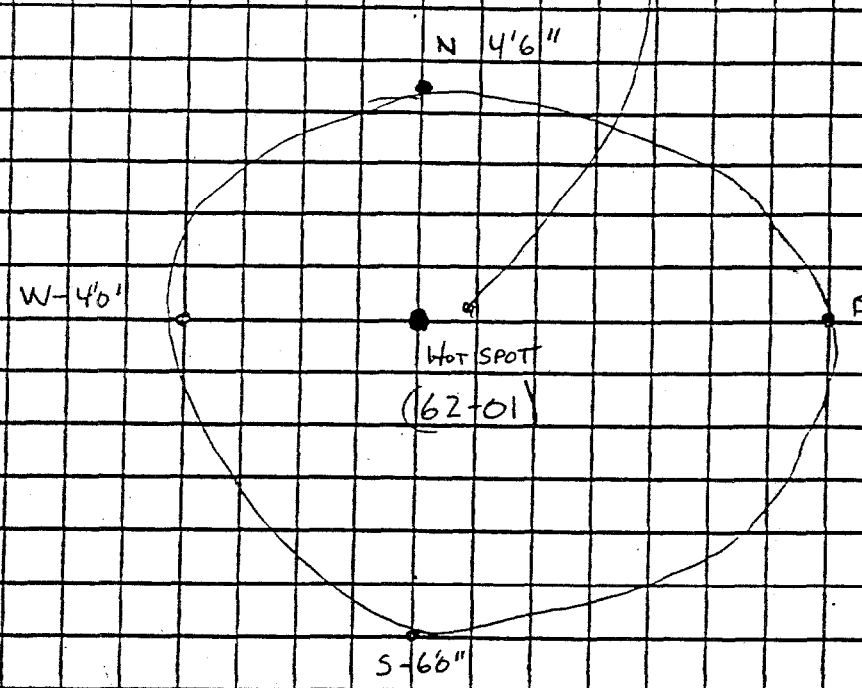
Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | |
|---|---|
| μR/HR = | 8 |
| CPM β = | 52 |
| CPM γ = | 6,100 |
| CPM α = | 0 |
| X = | -66.5 - SLO 41 |
| Y = | +142.5 - SLO 41 |




Remarks ① EACH SQUARE = 1' X 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by - G. Shawers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 1/1

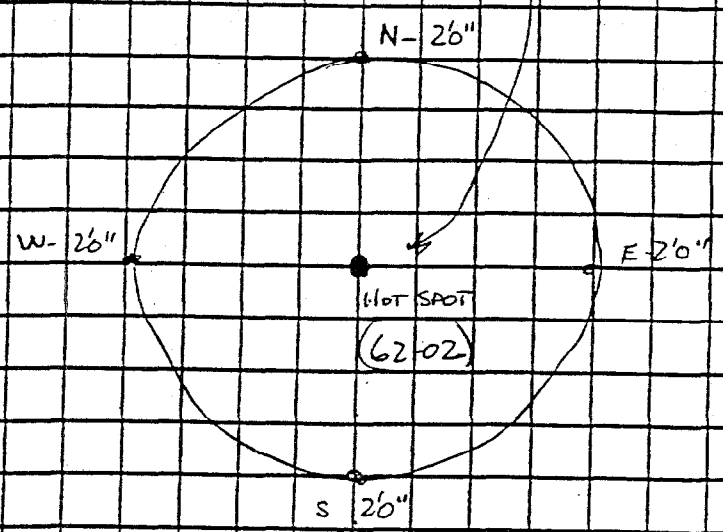
DATE: 08 DEC 94

Grid # 62-02 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

| | | |
|---|---|---|
| μR/HR = | 8 | ✓ |
| CPM β⁻ = | 56 | ✓ |
| CPM γ = | 6,200 | ✓ |
| CPM α = | 0 | ✓ |
| X = | - 101 (S2041) | ✓ |
| Y = | + 131 (S2041) | ✓ |




1/11/95

S2C4

Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center point ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA - Checked by J. Showers 12-13-9

# DIRECT SURFACE CONTAMINATION READINGS

SU[illegible]Y NO. N/A SITE: PSC-26 Grid #62 DATE: 29 DEC 94
IME N/A

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4uR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 3786 | 6.99 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 28.3 | 26.1 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.3 | 19.4 | 4/20/95 |
| | | | | | | |
| | | wcm | | | | |
| | | | | | | |
| | | | | | | |

[illegible] 12.21.94

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 62-03 | 1 ✓ | 3.6 ✓ | 93 ✓ | 248 ✓ | 15,400 ✓ | 166,152 ✓ | 20 ✓ |
| HOT SPOT 62-04 | 5 ✓ | 24.2 ✓ | 87 ✓ | 225 ✓ | 17,800 ✓ | 200,486 ✓ | 24 ✓ |
| HOT SPOT 62-05 | 2 ✓ | 8.8 ✓ | 347 ✓ | 1221 ✓ | 61,400 ✓ | 824,234 ✓ | 140 ✓ |
| | | | | | | | |
| | | | | | | | |
| wcm | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[illegible] 1/11/95

Remarks (Notes):

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



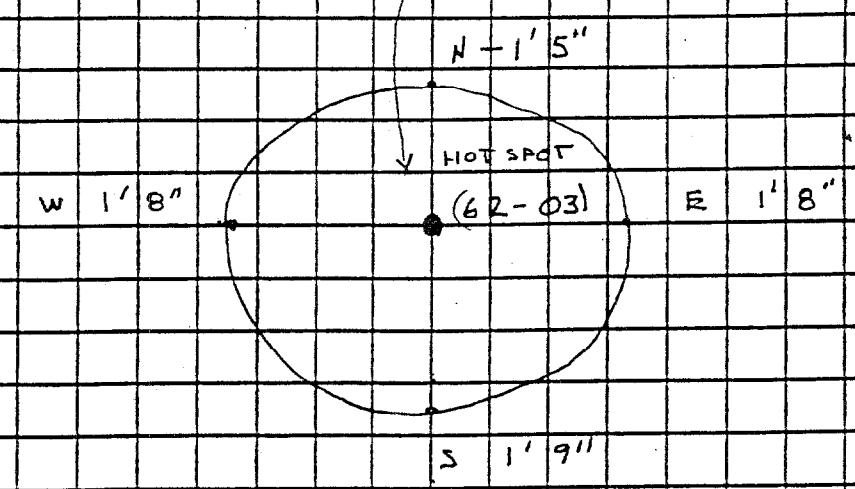
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| id # | 62-03 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| ler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| version: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = | 20 |
| CPM β⁻ = | 93 |
| CPM γ = | 15,400 |
| CPM α = | 1 |
| X = | -84' 0" |
| Y = | +107' 0" |




1/4/95

SL 41

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



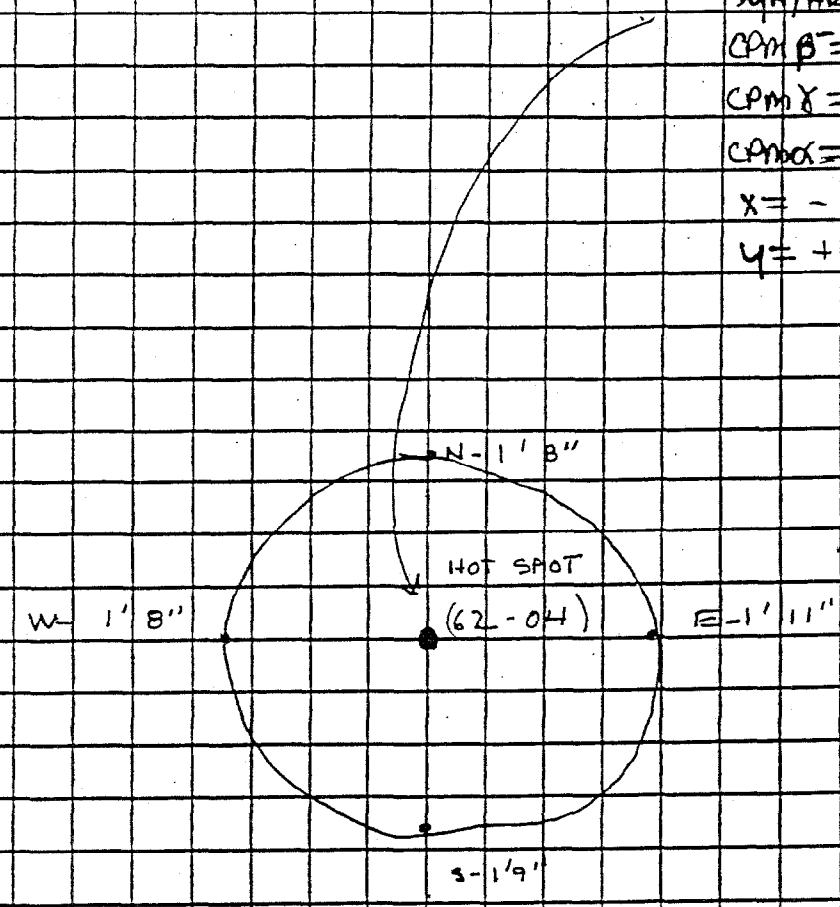
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| id # | 62-04 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| nversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 24 | ✓ |
| CPM β⁻ = | 87 | ✓ |
| CPM γ = | 17,800 | ✓ |
| CPM α = | 5 | ✓ |
| X = | -74' 0" | ✓ |
| Y = | +69' 0" | ✓ |




1/11/95

SL
4

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

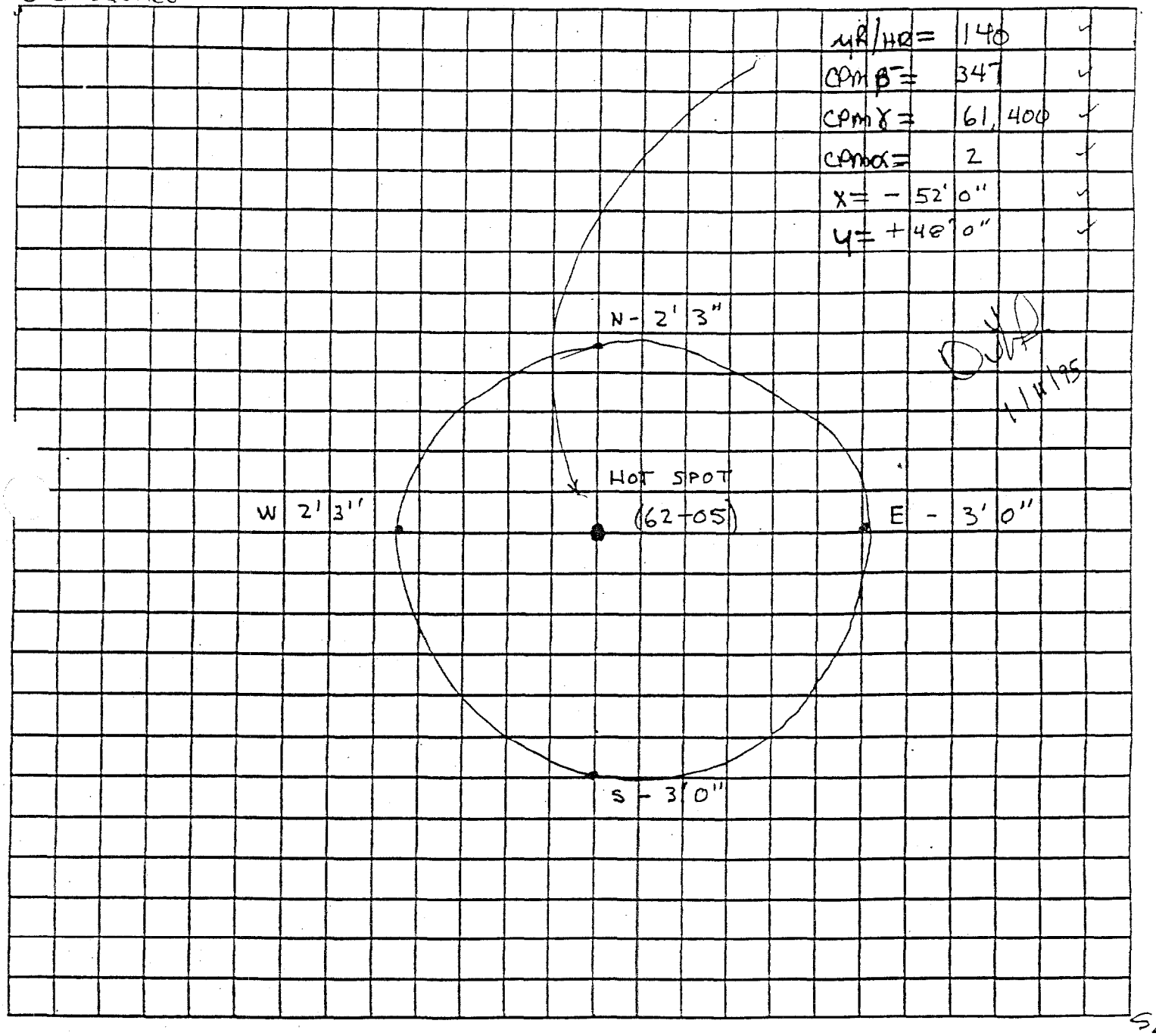


DATE: 29 DEC 94

Grid # 62-05 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




SLC 41

Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

SL Y NO. N/A SITE: PSC-26 Grid # 63 DATE: 29 DEC 94
IK N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4uR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 3786 | 6.99 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 28.3 | 26.1 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.3 | 19.4 | 4/20/95 |
| | | | | | | |
| | | WCM | | | | |
| | | | | | | |
| | | | | | | |

| Location description | | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|---|
| 63-01 | HOT SPOT | 0 | <0.9 | 119 | 348 | 21,500 | 253,419 | 17 |
| 63-02 | HOT SPOT | 0 | <0.9 | 164 | 520 | 72,400 | 981,602 | 28 |
| 63-03 | HOT SPOT | 0 | <0.9 | 7027 | 26,815 | 45,363 | 594,807 | 100 |
| 63-04 | HOT SPOT | 1 | 3.6 | 387 | 1374 | 54,032 | 718,826 | 80 |
| 63-05 | HOT SPOT | 2 | 8.76 | 369 | 1305 | 65,300 | 880,028 | 100 |
| 63-06 | HOT SPOT | 1 | 3.6 | 410 | 1462 | 46,700 | 613,934 | 70 |
| 63-07 | HOT SPOT | 1 | 3.6 | 365 | 1290 | 66,076 | 891,130 | 50 |
| 63-08 | HOT SPOT | 0 | <0.9 | 101 | 279 | 22,470 | 267,296 | 16 |

12-29-94

Remarks (Notes):

1/11/95

PAGE ____ OF ____

# DIRECT SURFACE CONTAMINATION READINGS

SURVEY NO. N/A SITE: PSC-26 Grid #63 DATE: 29 DEC 94

INITIALS N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 uR/hr | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 3786 | 6.99 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 28.3 | 26.1 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.3 | 19.4 | 4/20/95 |
| | | | | | | |
| | | WAM | | | | |
| | | | | | | |
| | | | | | | |

JS 12-29-94

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 63-09 | 86 | 441 | 12,240 ~~37376~~ | 46,788 | 37376 | 480,544 | 60 |
| 63-10 | 0 | <0.9 | 176 | 566 | 51842 ~~51,482~~ | 687496 ~~682,346~~ | 60 |
| | | | | | DOE 1/11/95 | DOE 1/11/95 | |
| | WAM | | | | | | |
| | | | | | DOE 1/11/95 | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remarks (Notes):

PAGE ____ OF ____

# DIRECT SURFACE CONTAMINATION READINGS

SURVEY NO. N/A SITE: PSC-26 GRID #63 DATE: 03 JAN 95

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| Ludlum M19 MicroR | 95487 | N/A | N/A | 4 uR/HR | N/A | 04/02/95 |
| Ludlum 2221 | 99136 | 44-10 | #165 | 2173 | 6.94 | 04/20/95 |
| Ludlum 2221 | 117366 | 44-9 | #116878 | 27.9 | 26.2 | 10/21/95 |
| Ludlum 2221 | 102049 | 43-65 | #090753 | 0.1 | 19.66 | 4/20/95 |
| | | | | | | |
| | | WOM | | | | |
| | | | | | | |
| | | | | | | |

Rev 1-3-95

| Location description | | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|---|
| 63-11 | HOT SPOT | 1 | 4.58 | 106 | 298 | 7800 | 81,080 | 23 |
| 63-13 | HOT SPOT | 6 | 30 | 89 | 233 | 7370 | 74,885 | 20 |
| 63-14 | HOT SPOT | 4 | 19.8 | 390 | 1382 | 40,400 | 550,821 | 130 |
| 63-15 | HOT SPOT | 3 | 14.8 | 139 | 424 | 9500 | 105,576 | 22 |
| 63-17 | HOT SPOT | 0 | <1.01 | 89 | 233 | 7500 | 76,758 | 32 |
| 63-18 | HOT SPOT | 2 | 9.7 | 389 | 1378 | 17,800 | 225,173 | 60 |
| 63-19 | HOT SPOT | 18 | 91.04 | 9347 | 35,569 | 12,800 | 153,127 | 100 |
| 63-20 | HOT SPOT | 0 | <1.01 | 54 | 99.6 | 15,000 | 184,827 | 22 |

Remarks (Notes): 63-12, 63-16 (HOT SPOT ID #NUMBERS) DID NOT MET CRITERIA (FOR HOT SPOT 2x BACKGROUND) ~~FOLLOWING~~ DURING HOT SPOT CHARACTERIZATION

PAGE ____ OF ____

# DIRECT SURFACE CONTAMINATION READINGS

SURVEY NO. N/A SITE: PSC #26 GRID #63 DATE: 03 JAN 95
IN.. N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICRO R | 95487 | N/A | N/A | 4uR/HR | N/A | 04/02/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2173 | 6.94 | 04/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 27.9 | 26.2 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.1 | 19.66 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

WOM

| Location description | | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|---|
| ~~63-21~~ 63-22 | HOT SPOT | 3 | 14.8 | 1462 | 5474 | 33,000 | 444,193 | 170 |
| 63-23 | HOT SPOT | 3 | 14.8 | 117 | 340 | 13,000 | 156,009 | 22 |
| 63-24 | HOT SPOT | 0 | <1.01 | 183 | 592 | 13,438 | 162,320 | 24 |
| 63-25 | HOT SPOT | 0 | <1.01 | 59 | 119 | 8500 | 91,167 | 10 |
| 63-26 | HOT SPOT | 0 | <1.01 | 72 | 168 | 8500 | 91,167 | 20 |
| 63-28 | HOT SPOT | 2 | 9.7 | 125 | 371 | 16,236 | 202,637 | 38 |
| 63-29 | HOT SPOT | 2 | 9.7 | 124 | 367 | 11,462 | 133,847 | 26 |
| 63-30 | HOT SPOT | 3 | 14.8 | 1160 | 4321 | 78,081 | 1,093,775 | 150 |

Remarks (Notes):

1/11/95

PAGE ____ OF ____

# DIRECT SURFACE CONTAMINATION READINGS

JI Y NO. N/A SITE: PSC #26 GRID #63 DATE: 03 JAN 95
N/A

ISTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratic Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICRO R | 95487 | N/A | N/A | 4uR/HR | N/A | 04/02/9 |
| LUDLUM 2221 | 99136 | 44-10 | # 165 | 2173 ~~3786~~ | 6.94 | 04/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 27.9 | 26.2 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 0.1 | 19.66 | 04/20/9 |
| | | | | | | |
| | | WOW | | | | |
| | | | | | | |
| | | | | | | |

| Location description | | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|---|
| 63-31 | HOTSPOT | 3 | 14.8 | 191 | 622.5 | 39,320 | 535,259 | 70 |
| | | | | | | | | |
| | | | | | | | | |
| | | WOW | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

1/4/95

Remarks (Notes):

PAGE____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

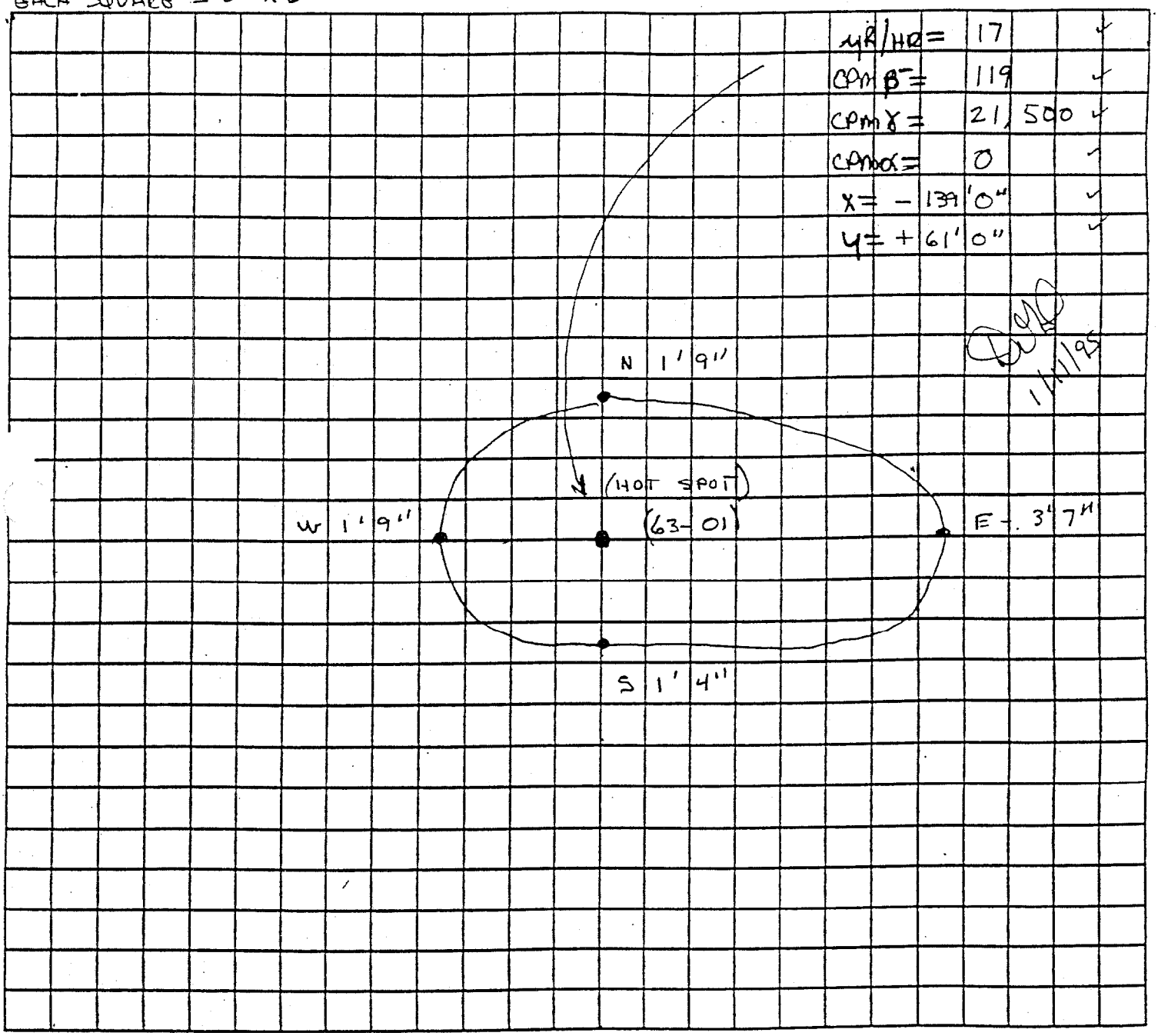


DATE: 29 DEC 94

id # 63 - 01 Detector: *See Below Technicians: J. Shawers / G. Shawers
aler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAGSE
nversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



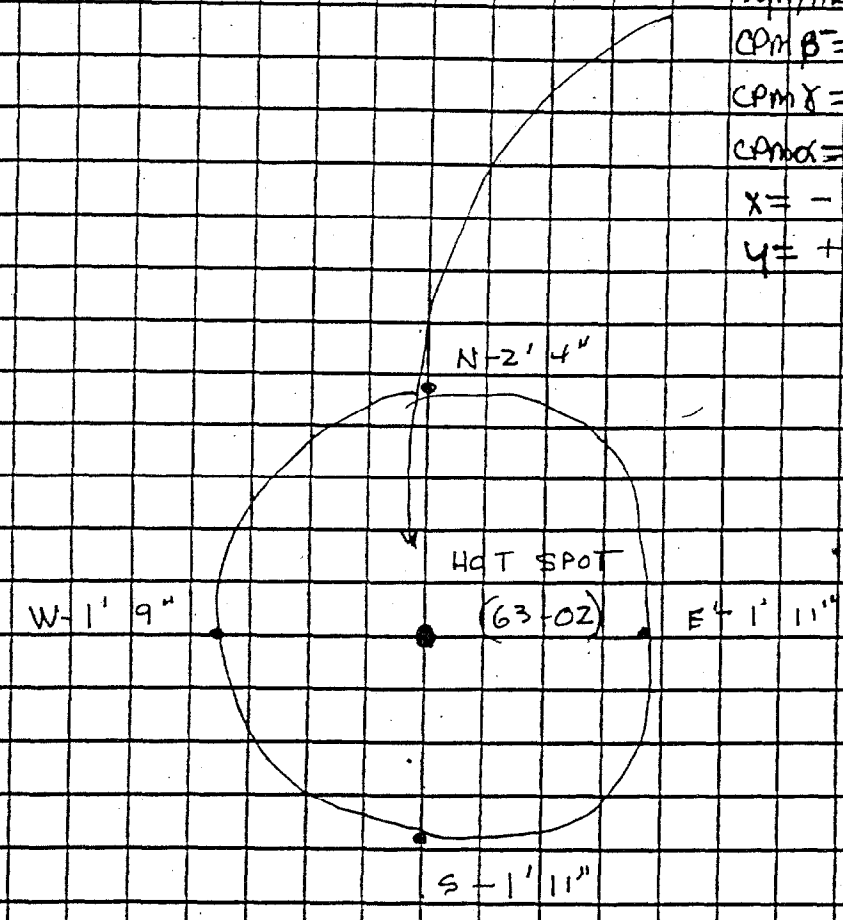
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| rid # | 63-02 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| version: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 28 | ✓ |
| CPM β⁻ = | 164 | ✓ |
| CPM γ = | 72,400 | ✓ |
| CPM α = | 0 | ✓ |
| X = | −131'0" | ✓ |
| Y = | +36'0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



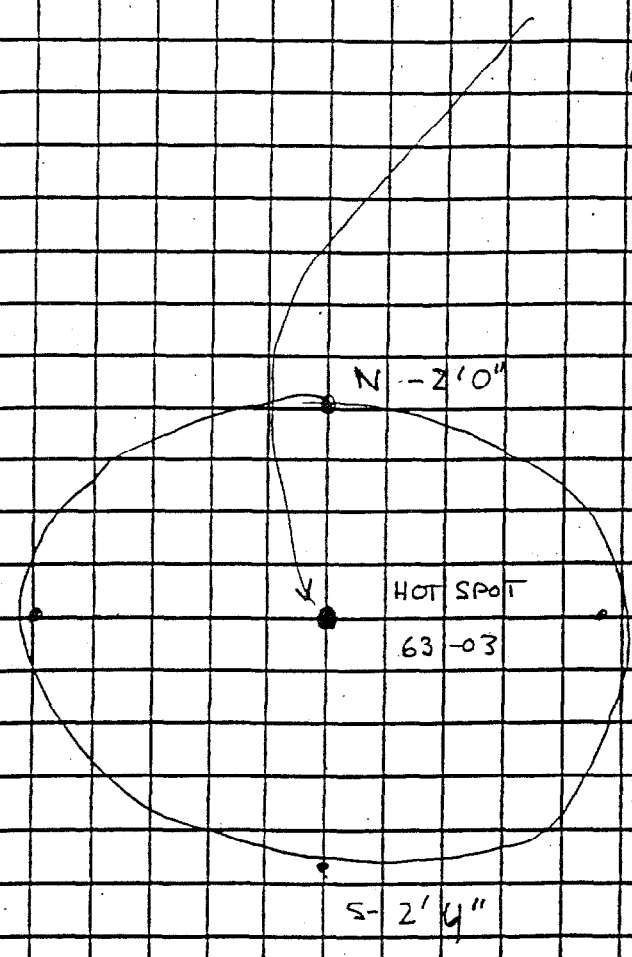
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| ·id # | 63-03 | Detector: | *See Below | Technicians: | J. Shawers / G. Shawers |
| ıler: | LUDLUM 2221/M19 | BKG | N/A | | R. PARRISH / S. HAGSE |
| ıversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

| | | | |
|---|---|---|---|
| μR/HR = | 7 | 00 | |
| CPM β⁻ = | 7 | 027 | |
| CPM γ = | ~~8~~ | 160 | 45,363 |
| CPM α = | | 0 | |
| X = | −134' | 0" | |
| Y = | +22' | 0" | |




DWB 1/11/95

Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA.

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



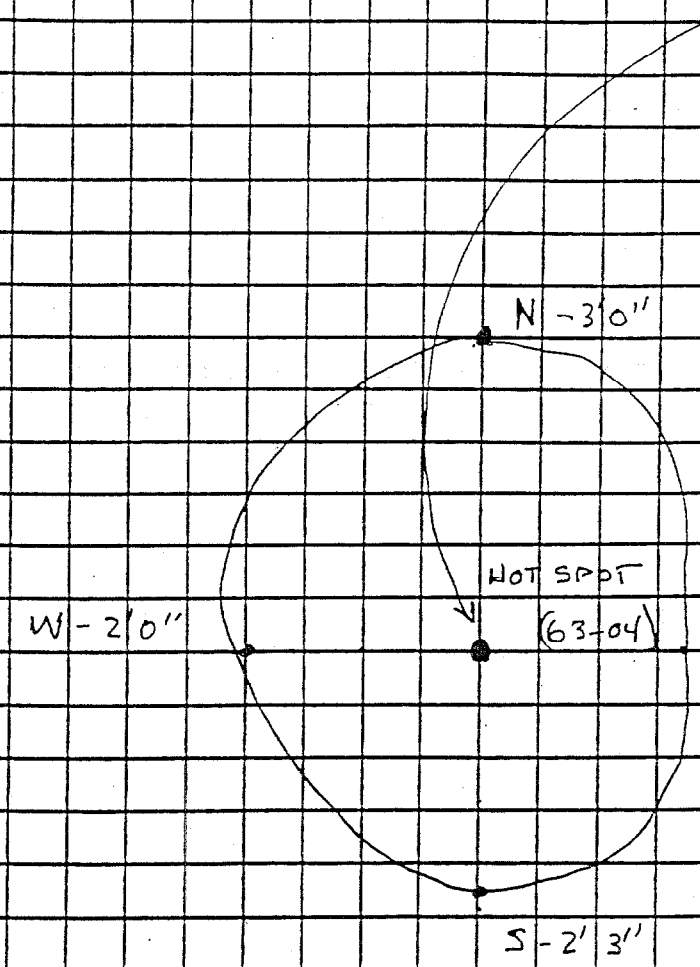
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| rid # | 63-04 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| onversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 80 | ✓ |
| CPM β⁻ = | 387 | ✓ |
| CPM γ = | 54,032 | ✓ |
| CPM α = | 1 | ✓ |
| X = | − 121'0" | ✓ |
| Y = | + 1'0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



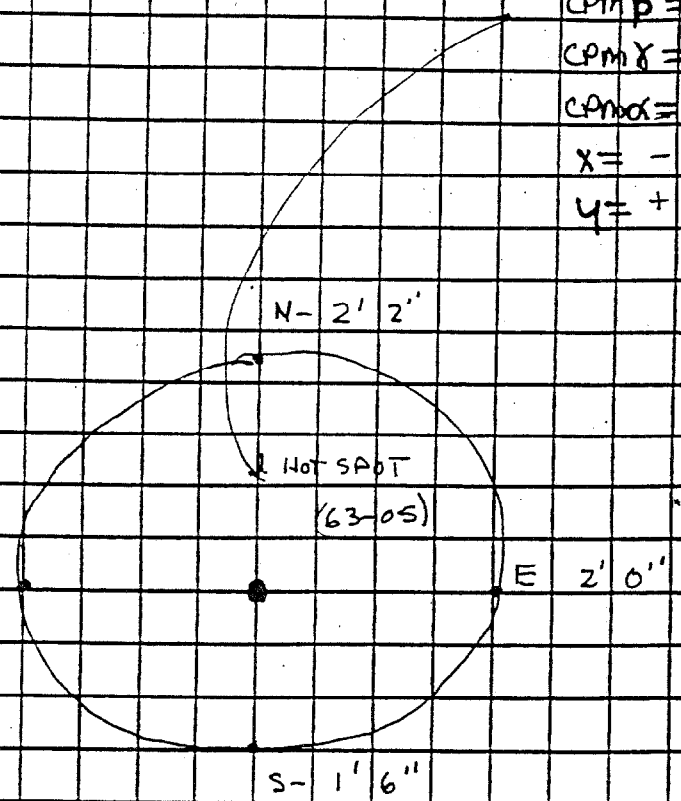
DATE: 29 DEC 94

id # 63-05 Detector: *See Below Technicians: J. Shawers / G. Shawers
ler: Ludlum2221/m19 BKG N/A R. PARRISH / S. HAGSE
nversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 100 | ✓ |
| CPM β = | 369 | ✓ |
| CPM γ = | 65,300 | ✓ |
| CPM α = | 2 | ✓ |
| X = | − 137'0" | ✓ |
| Y = | + 0'6" | ✓ |




DSB 1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA.

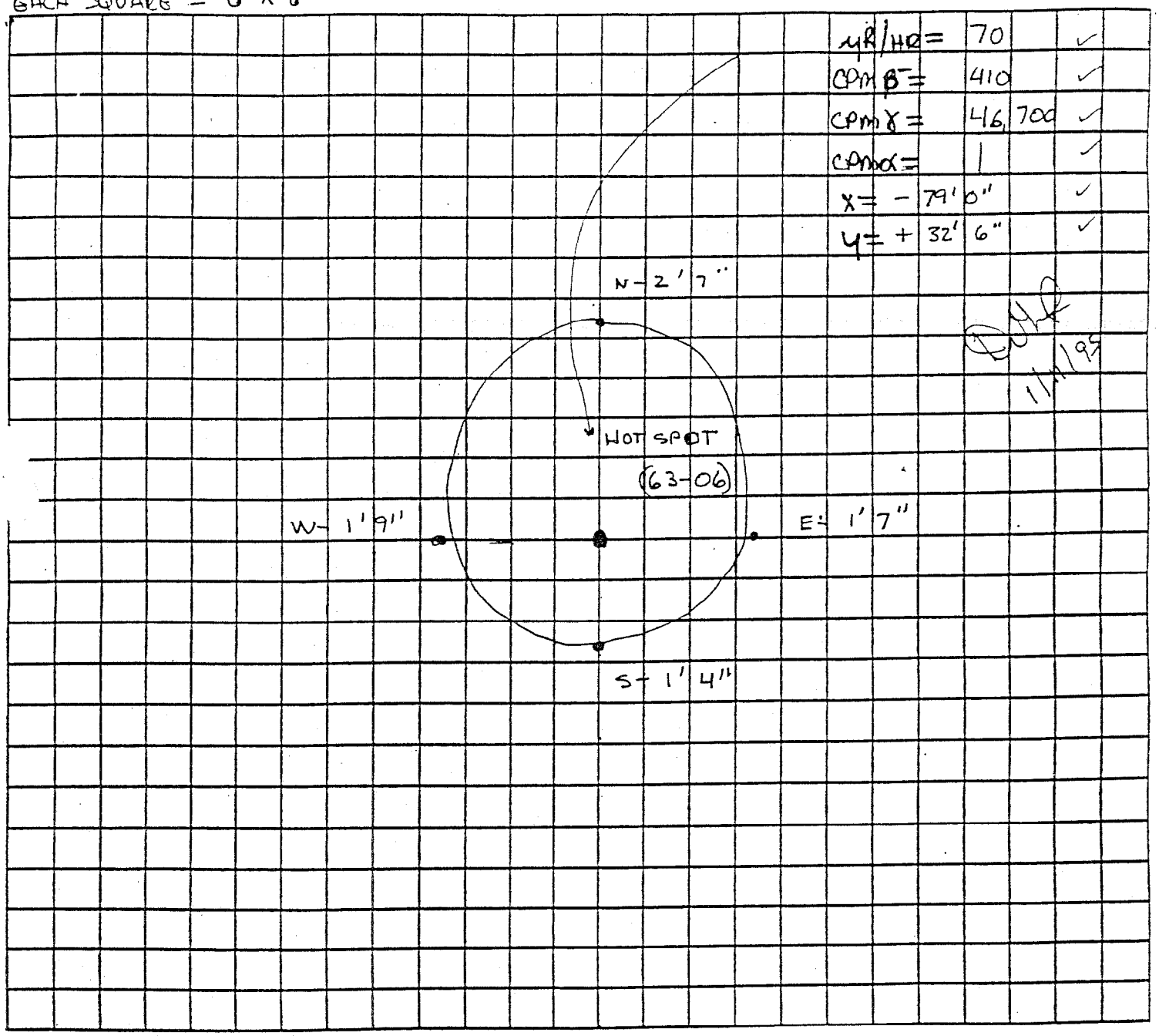
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 29 DEC 94

Grid # 63-06 Detector: *See Below Technicians: J. Shavers / G. Shavers
Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



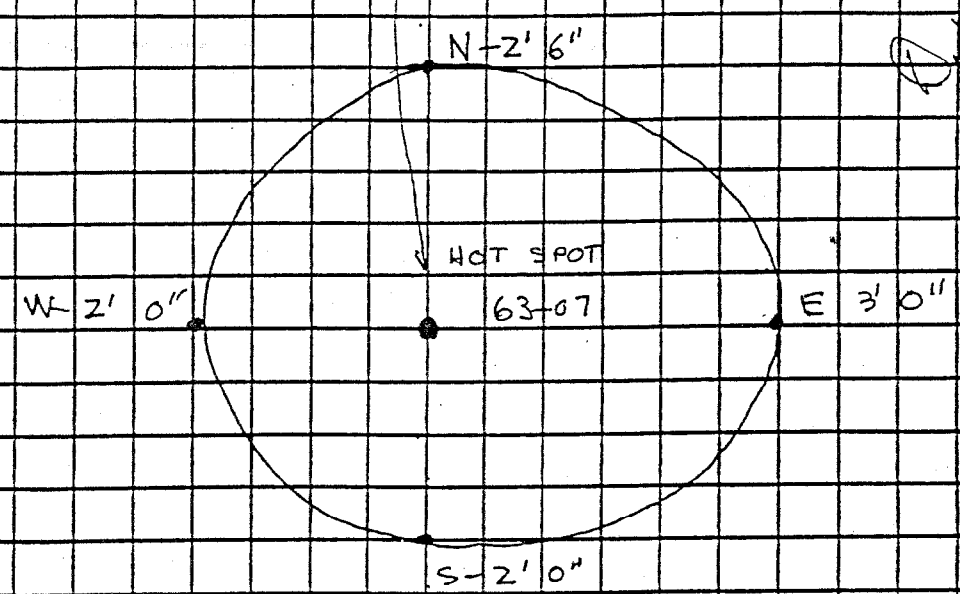
DATE: 29 DEC 94

| | | | | | |
|---|---|---|---|---|---|
| rid # | 63-07 | Detector: | *See Below | Technicians: | J. Showers / G. Showers |
| aler: | LUDLUM2221/M19 | BKG | N/A | | R. PARRISH / S. HAESE |
| nversion: | N/A | S/N: | N/A | | W. C. May |

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = | 50 |
| CPM β⁻ = | 365 |
| CPM γ = | ~~22~~ 66076 |
| CPM α = | 1 |
| X = | − 120' 0" |
| Y = | + 43' 0" |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA.

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

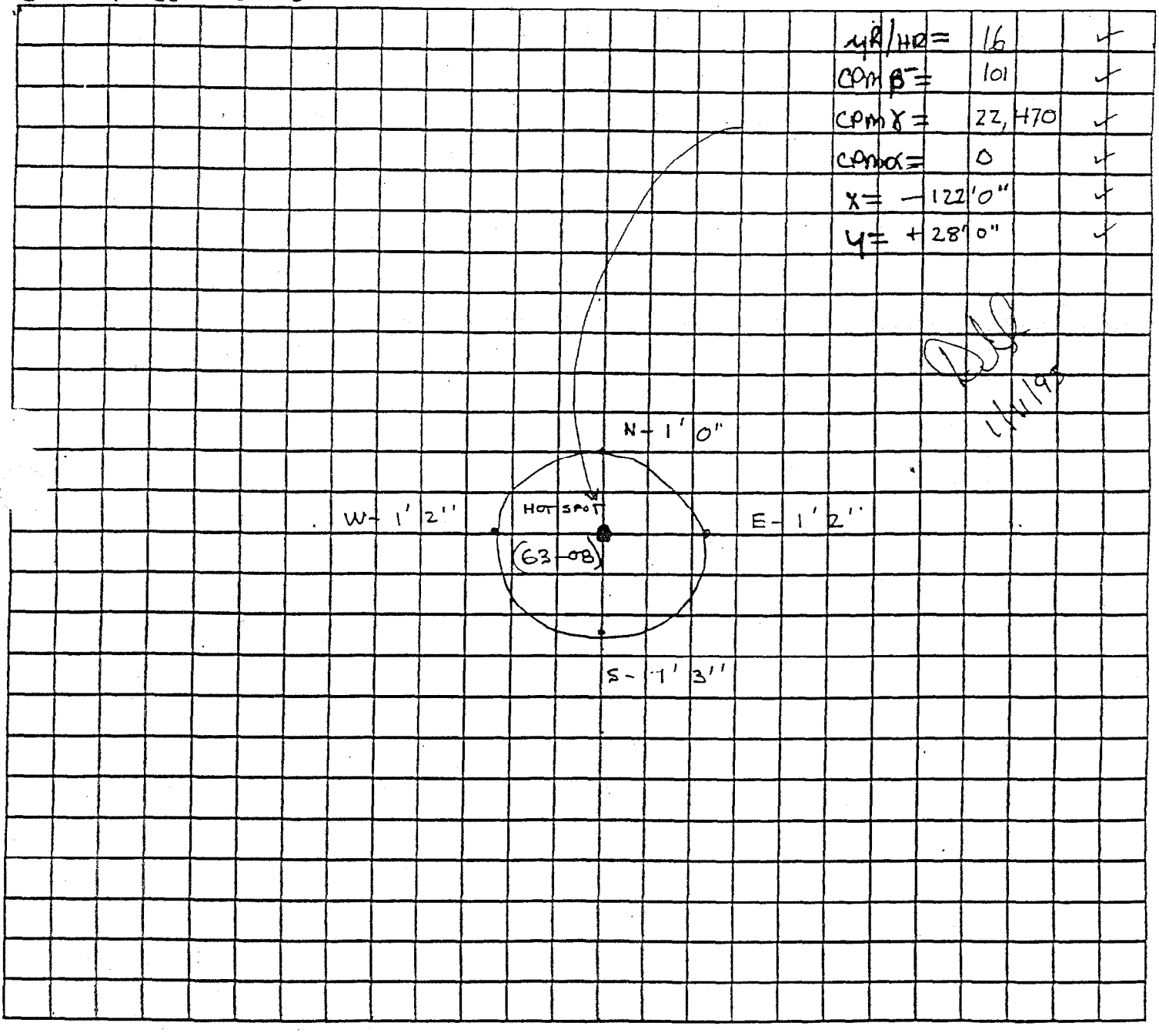


DATE: 29 DEC 94

id # 63-08 Detector: *See Below Technicians: J. Shavers / G. Shavers
aler: LUDLUM 2221/m19 BKG N/A R. PARRISH / S. HAGSE
nversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

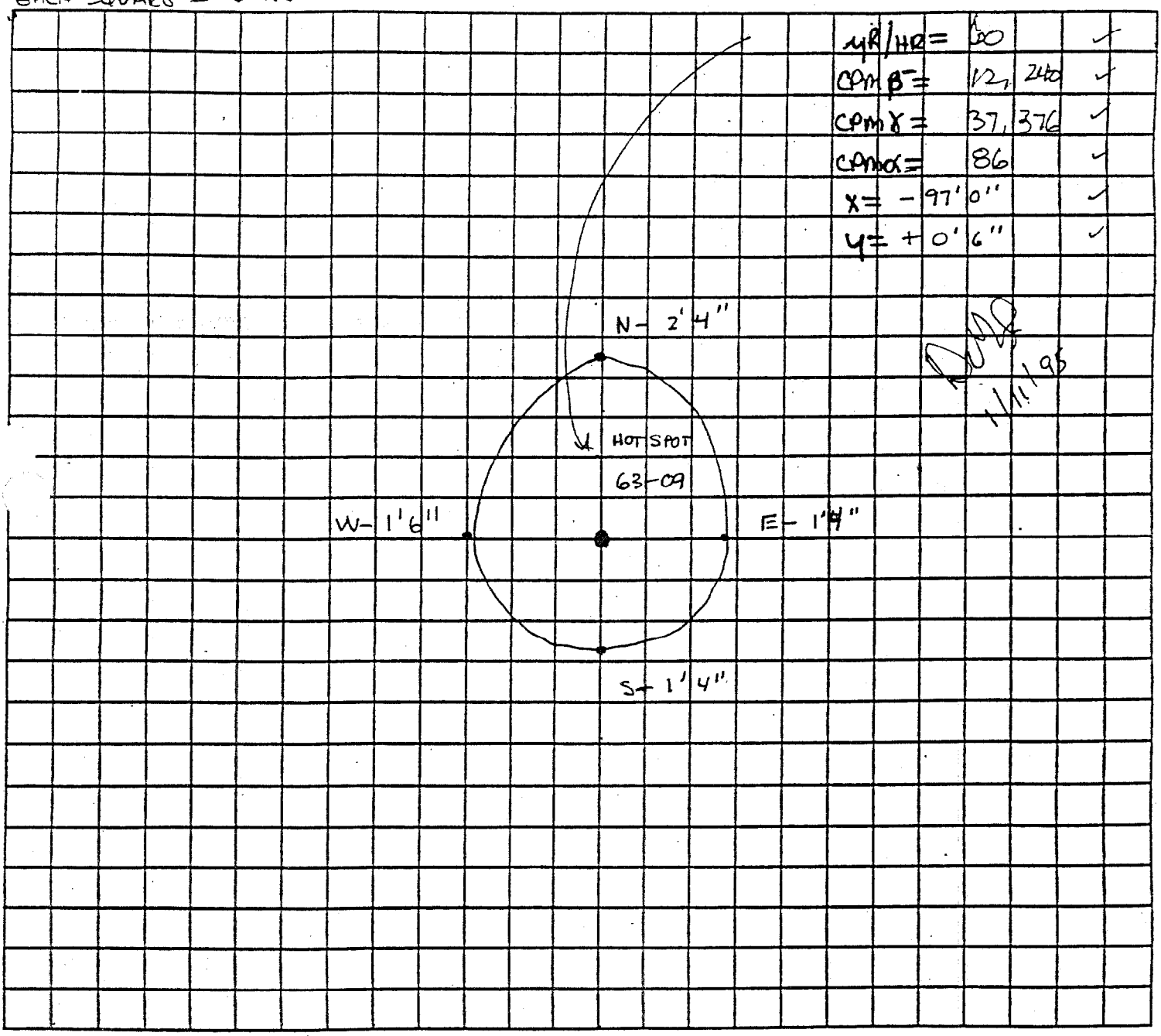


DATE: 29 DEC 94

id # 63-09 Detector: *See Below Technicians: J. Showers / G. Showers
aler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAGSE
nversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




Remarks ① EACH SQUARE = 6" x 6" ② Peak Reading is @ center point ③ Area of INTEREST IS OUT to EDGE of ENCIRCLED AREA

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 29 DEC 94

id # 63-10 Detector: *See Below Technicians: J. Shawers / G. Shawers

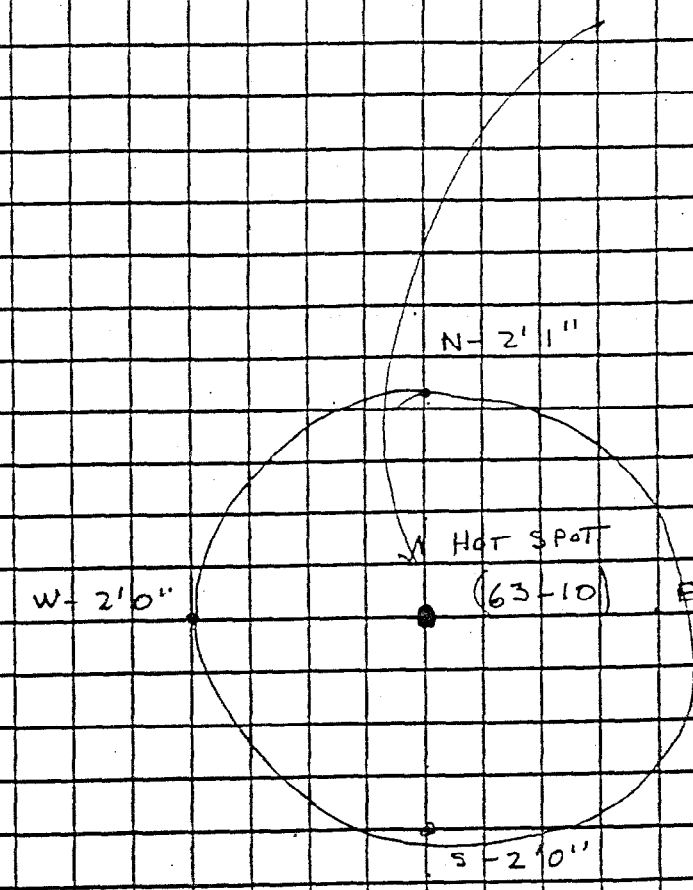
ıler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 60 | ✓ |
| CPM β = | 176 | ✓ |
| CPM γ = | 51842 | ✓ |
| CPM α = | 0 | ✓ |
| X = | −91' 0" | ✓ |
| Y = | +95' 0" | ✓ |




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 1 / 1

DATE: 03 JAN 95

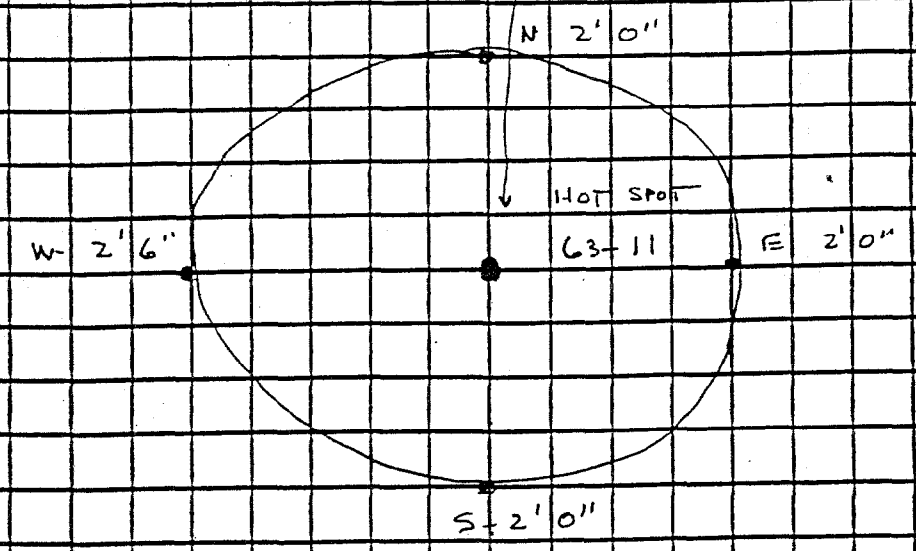
Grid # 63-11 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | |
|---|---|---|---|
| μR/HR = | | 23 | ✓ |
| CPM β⁻ = | | 106 | ✓ |
| CPM γ = | | 7800 | ✓ |
| CPM α = | | 1 | ✓ |
| X = | − | 92' 0" | ✓ |
| Y = | + | 120' 0" | ✓ |

1/11/95




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

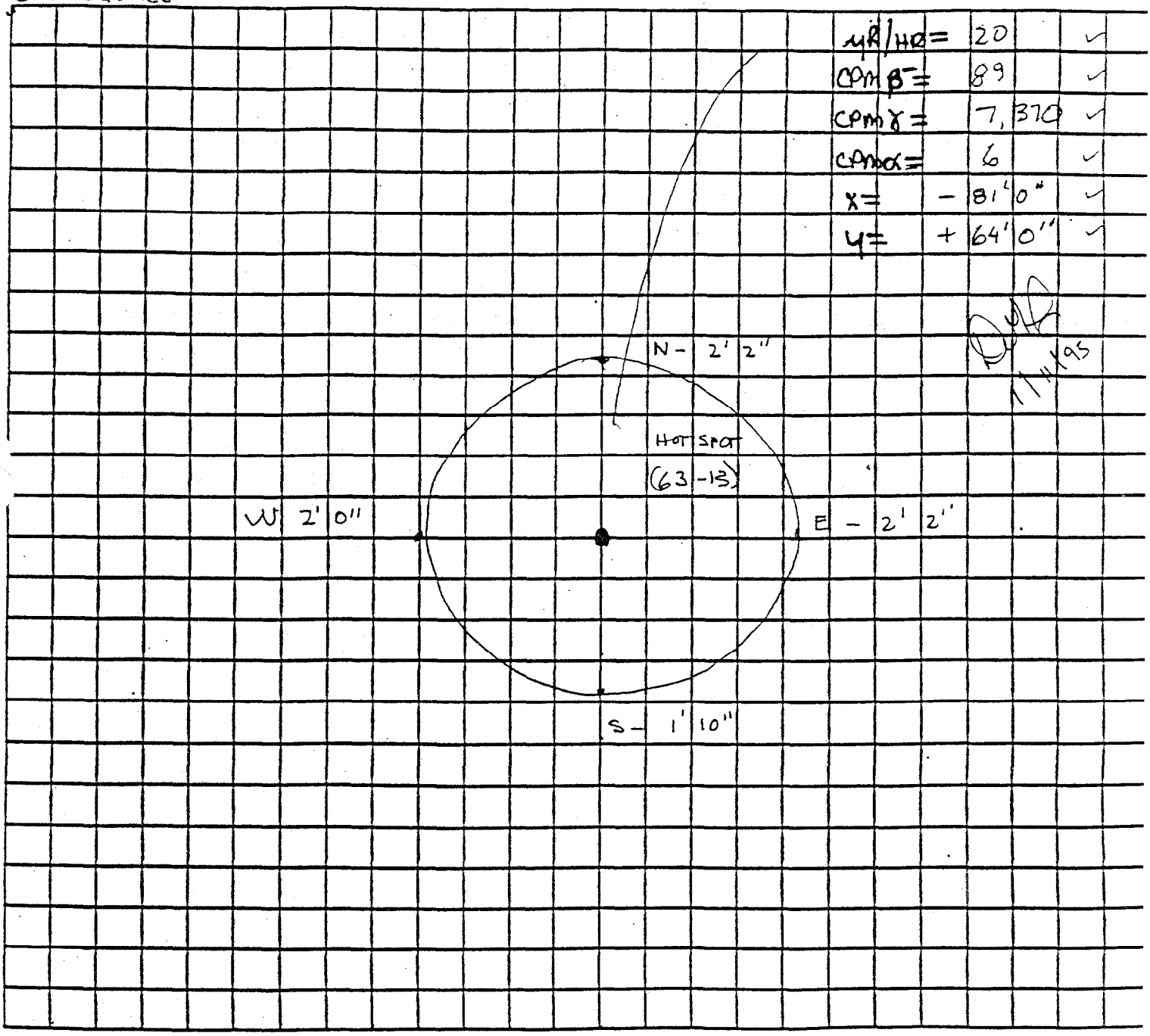
# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 03JAN95

Grid # 63-13 Detector: *See Below Technicians: J. Shauers / G. Shau
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




| | | | |
|---|---|---|---|
| μR/HR = | 20 | | ✓ |
| CPM β⁻ = | 89 | | ✓ |
| CPM γ = | 7,370 | | ✓ |
| CPM α = | 6 | | ✓ |
| X = | - 81' | 0" | ✓ |
| Y = | + 64' | 0" | ✓ |

11/1/95

Remarks: (1) EACH SQUARE = 6" X 6" (2) PEAK READING IS @ CENTER POINT (3) AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

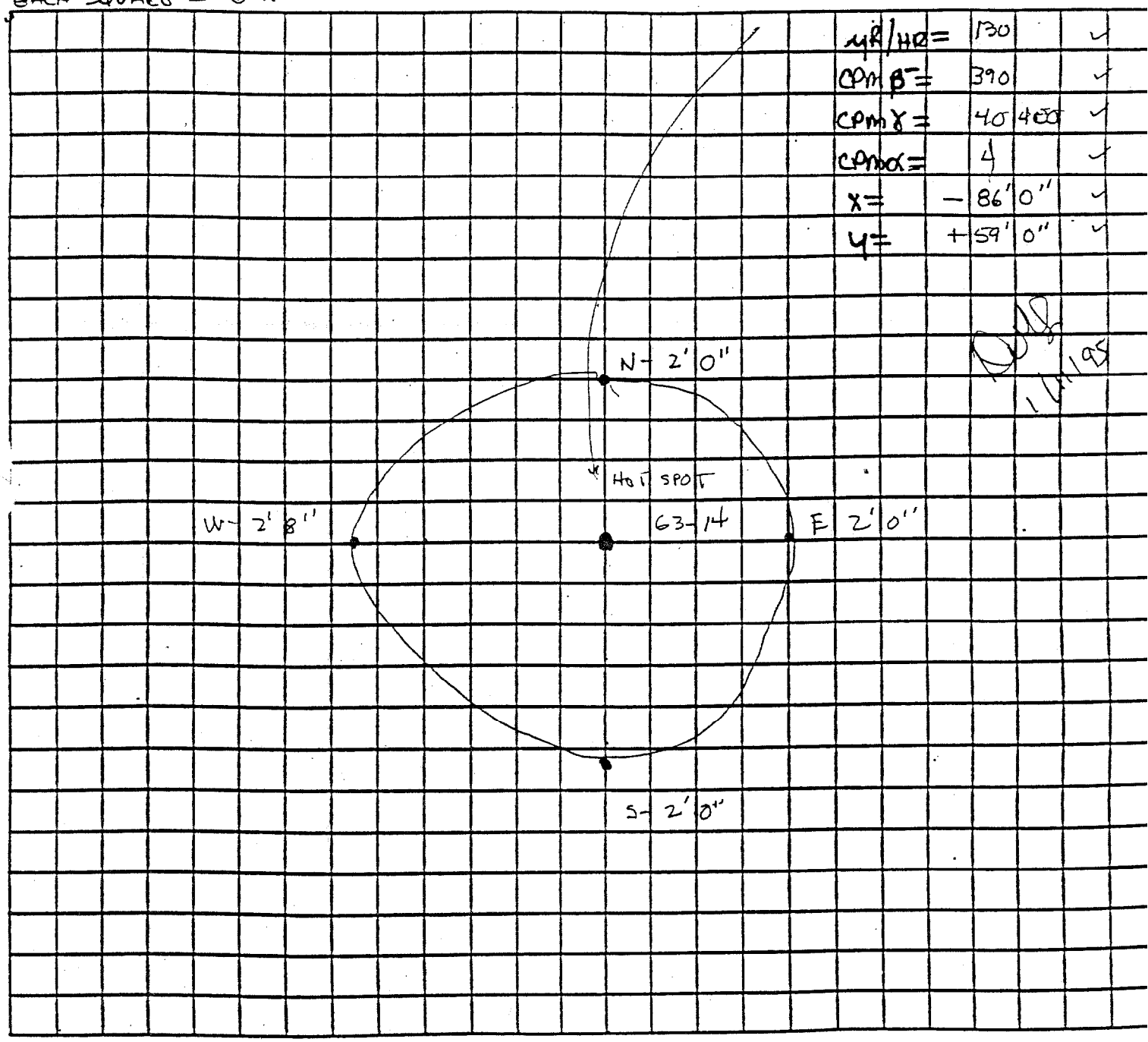
FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

DATE: 03JAN95

Grid # 63-14 Detector: *See Below Technicians: J. Shauers / G. Shau
Scaler: Ludlum2221/m19 BKG N/A R. PARRISH / S. HAGSE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"




| | | | | |
|---|---|---|---|---|
| μR/HR = | | 130 | | ✓ |
| CPM β⁻ = | | 390 | | ✓ |
| CPM γ = | | 40 | 400 | ✓ |
| CPM α = | | 4 | | ✓ |
| X = | − | 86' | 0" | ✓ |
| Y = | + | 59' | 0" | ✓ |

1/11/95

Remarks ① EACH SQUARE = 6" X 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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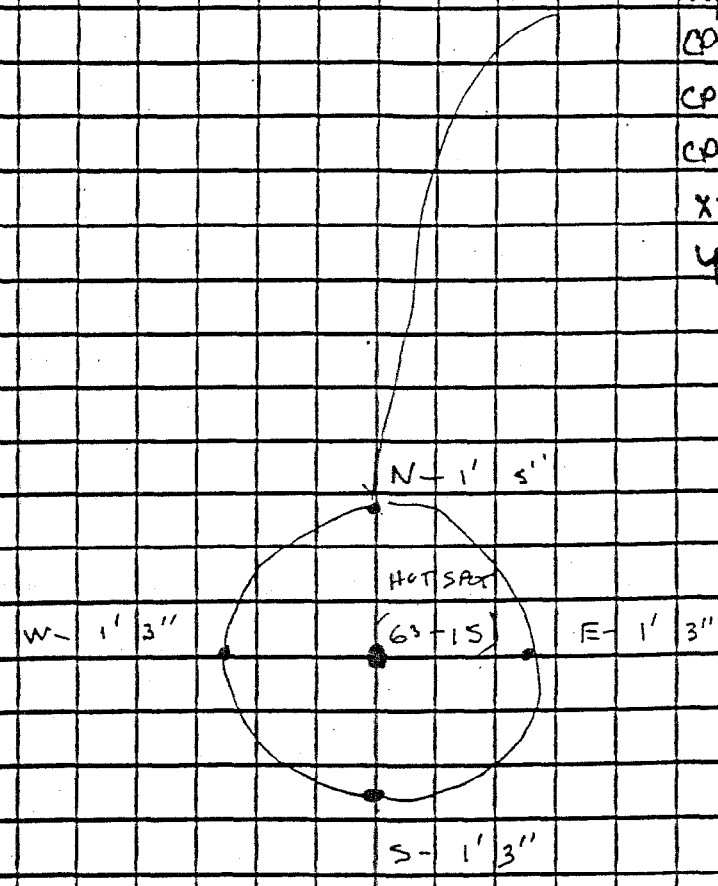
DATE 03 JAN 95

Grid # 63-15 Detector: *See Below Technicians: J. Shawers / G. Shaw
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" X 6"

| | | |
|---|---|---|
| μR/HR = | 22 | ✓ |
| CPM β⁻ = | 139 | ✓ |
| CPM γ = | 9,500 | ✓ |
| CPM α = | 3 | ✓ |
| X = | −77' 0" | ✓ |
| Y = | +32' 0" | ✓ |




Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



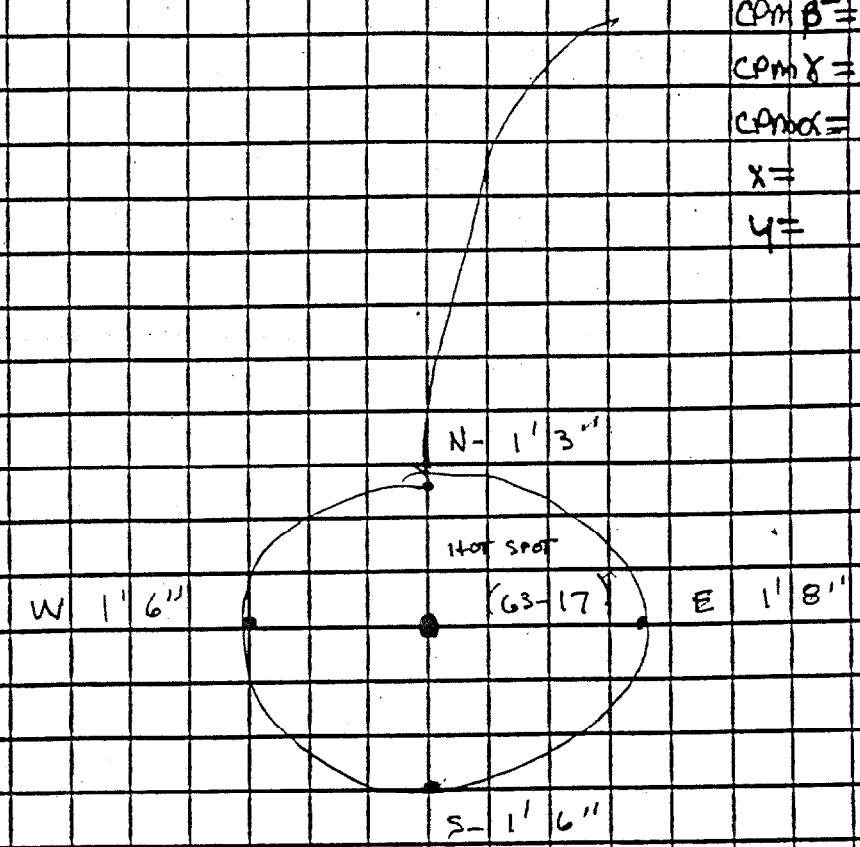
DATE: 03 JAN 95

Grid # 63-17 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | |
|---|---|---|---|
| μR/HR = | 32 | | ✓ |
| CPM β = | 89 | | ✓ |
| CPM γ = | 7,500 | | ✓ |
| CPM α = | 0 | | ✓ |
| x = | − 70' | 0" | ✓ |
| y = | + 14' | 6" | ✓ |




1/4/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



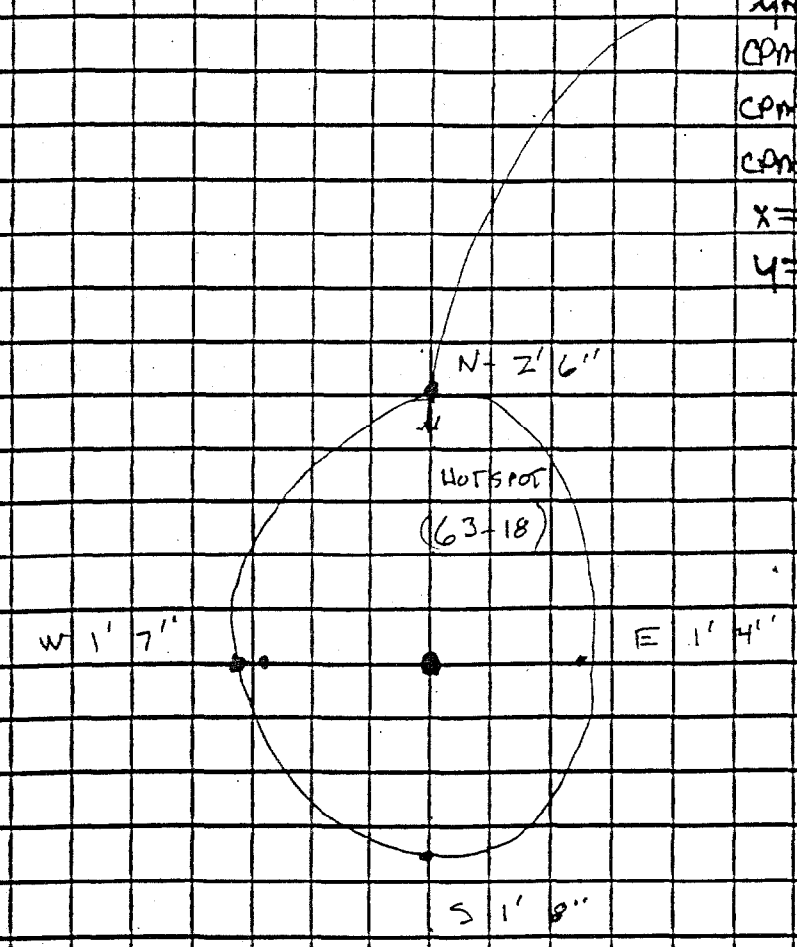
DATE: 03 JAN 95

Grid # 63-18 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" X 6"

| | | |
|---|---|---|
| μR/HR = | 60 | ✓ |
| CPM β⁻ = | 389 | ✓ |
| CPM γ = | 17,800 | ✓ |
| CPM α = | 2 | ✓ |
| X = | -70' 0" | ✓ |
| Y = | +5' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" X 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 03 JAN 95

Grid # 63-19
Scaler: LUDLUM 2221/M19
Conversion: N/A

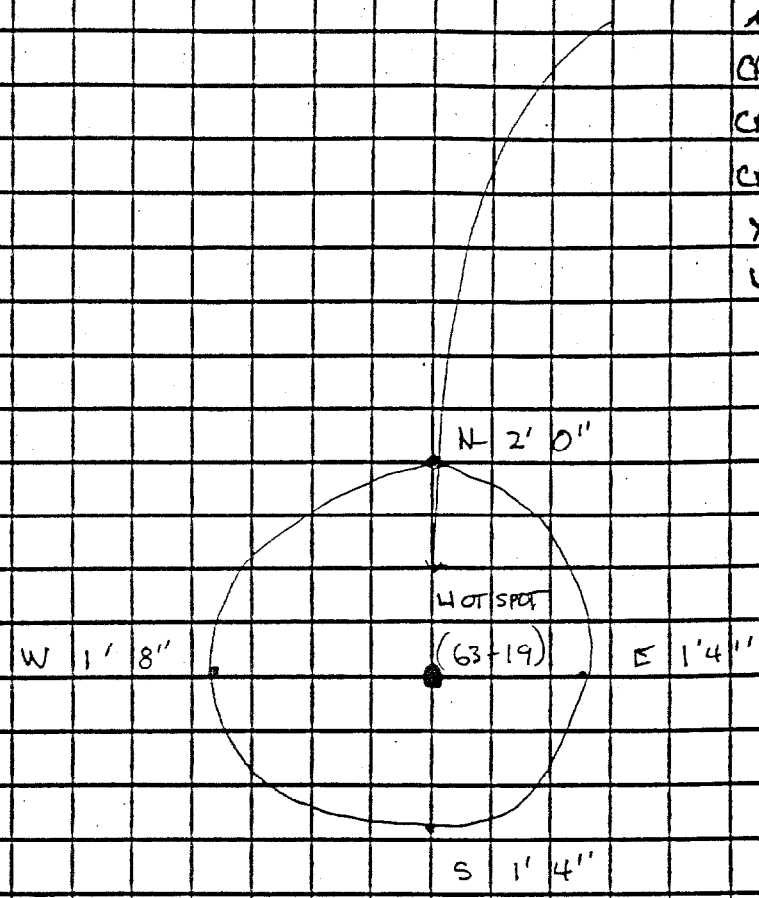
Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Shaw
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | | |
|---|---|---|---|
| μR/HR = | | 100 | ✓ |
| CPM β⁻ = | | 9 347 | ✓ |
| CPM γ = | | 12,800 | ✓ |
| CPM α = | | 18 | ✓ |
| X = | − | 52' 0" | ✓ |
| Y = | + | 17' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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DATE: 03JAN95

Grid # 63-20
Scaler: LUDLUM2221/M19
Conversion: N/A

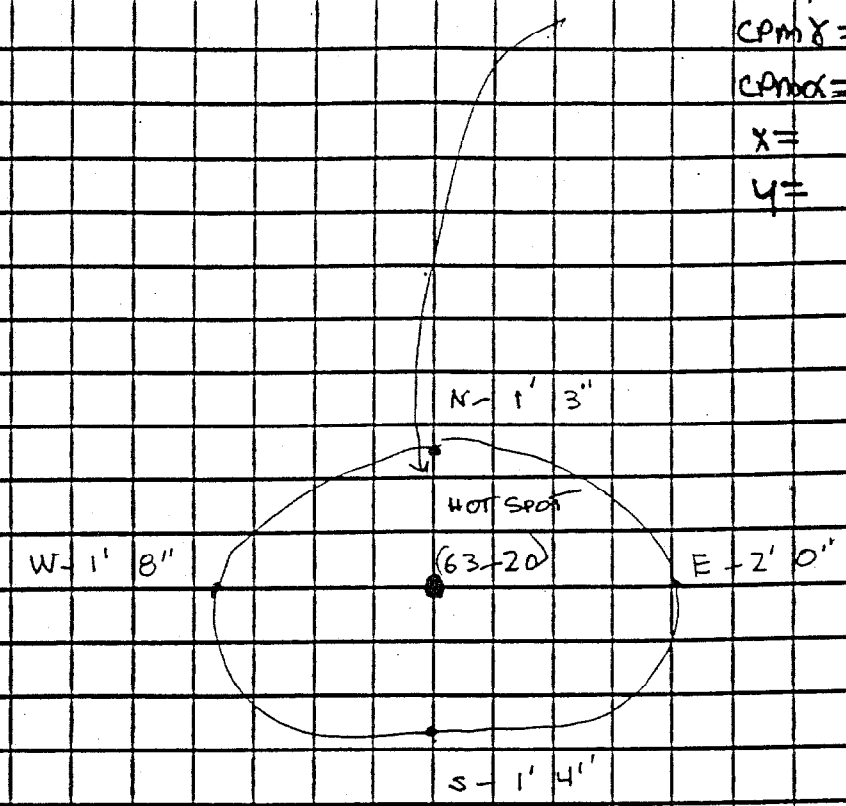
Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 22 | ✓ |
| CPM β⁻ = | 54 | ✓ |
| CPM γ = | 15,000 | ✓ |
| CPM α = | 0 | ✓ |
| X = | − 66' 0" | ✓ |
| Y = | + 20' 0" | ✓ |




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



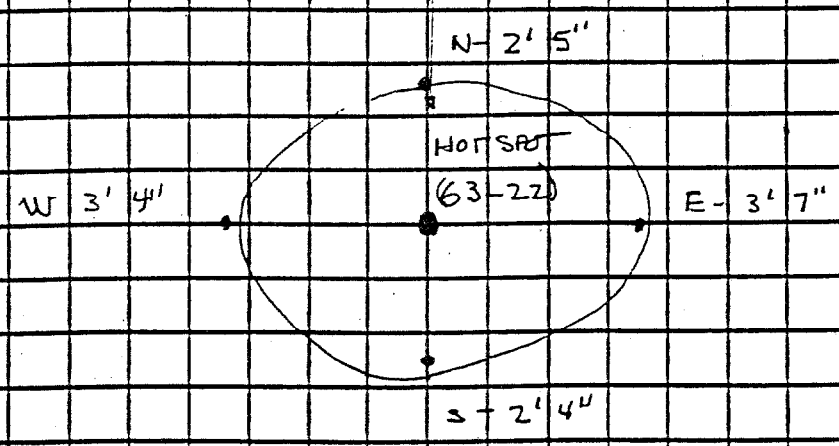
DATE: 03JAN95

Grid # 63-22 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = ~~6" x 6"~~ 12" x 12" 01-03-95

| | | |
|---|---|---|
| μR/HR = | 170 | ✓ |
| CPM β⁻ = | 14 62 | ✓ |
| CPM γ = | 33,000 | ✓ |
| CPM α = | 3 | ✓ |
| x = | − 65' 0" | ✓ |
| y = | + 30' 0" | ✓ |




Remarks ① EACH SQUARE = ~~6" x 6"~~ 12" x 12" 01-03-95 ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



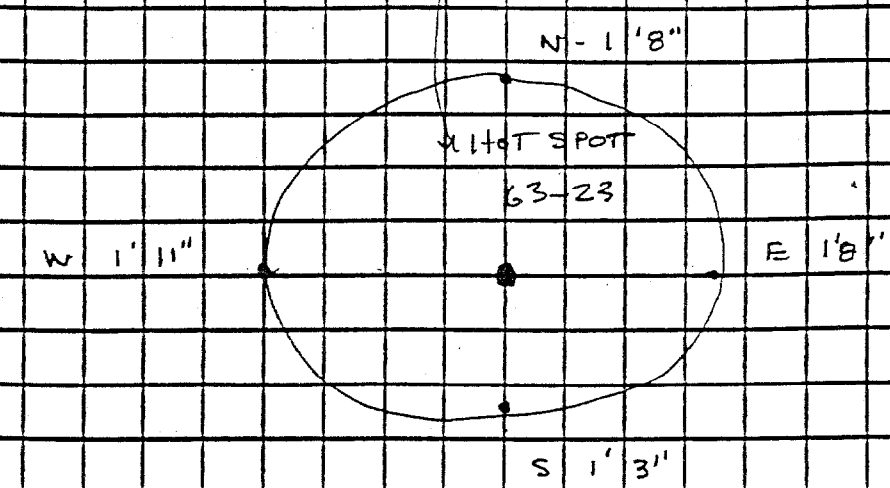
DATE: 03JAN95

Grid # 63-23 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 22 | ✓ |
| CPM β⁻ = | 117 | ✓ |
| CPM γ = | 13,000 | ✓ |
| CPM α = | 3 | ✓ |
| X = | -70' 0" | ✓ |
| Y = | +30' 0" | ✓ |




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 03JAN95

Grid # 63-24
Scaler: LUDLUM2221/M19
Conversion: N/A

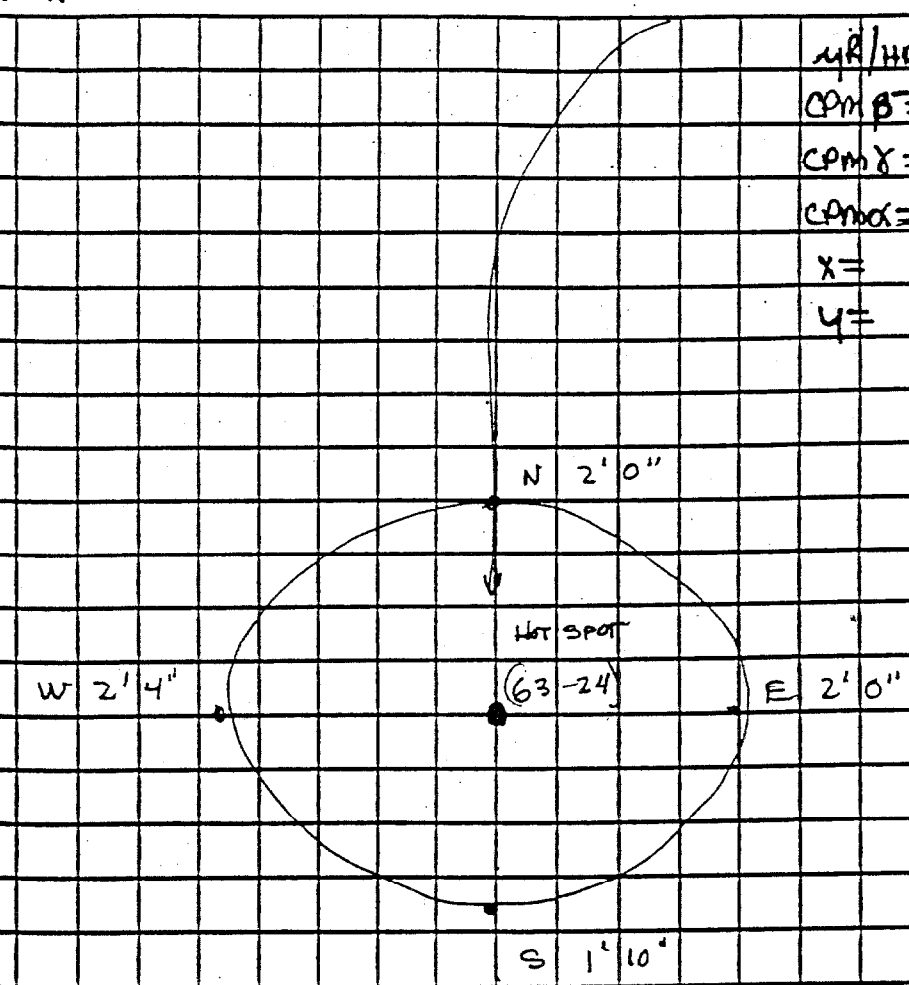
Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Show
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 24 | ✓ |
| CPM β⁻ = | 183 | ✓ |
| CPM γ = | 13,438 | ✓ |
| CPM α = | 0 | ✓ |
| X = | − 68' 0" | ✓ |
| Y = | + 48' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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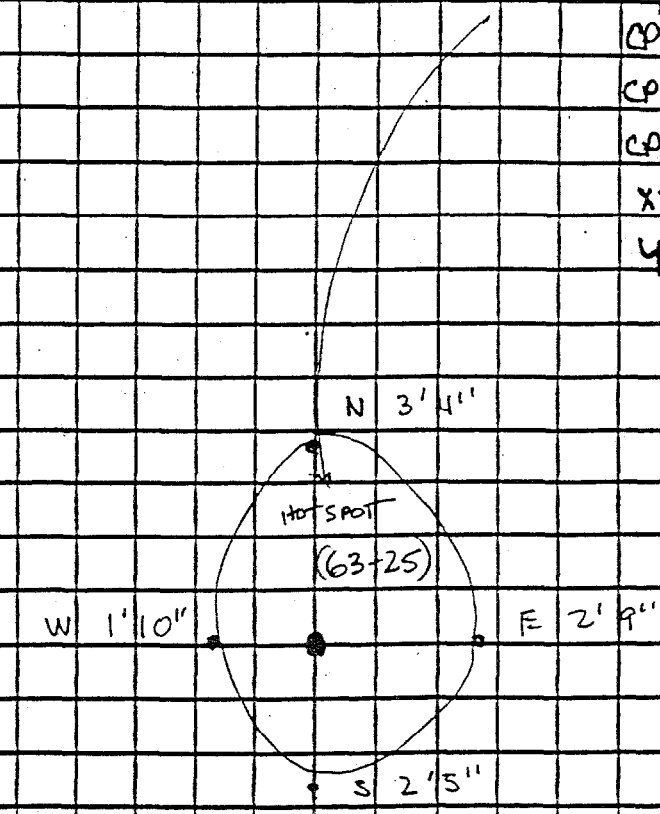
DATE: 03 JAN 95

Grid # 63-25 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = ~~6" x 6"~~ 12" x 12" 01-0395

| | | | |
|---|---|---|---|
| μR/HR = | | 10 | ✓ |
| CPM β⁻ = | | 59 | ✓ |
| CPM γ = | | 8,500 | ✓ |
| CPM α = | | 0 | ✓ |
| X = | − | 60' 0" | ✓ |
| Y = | + | 52' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = ~~6" x 6"~~ 12" x 12" 01-0395 ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



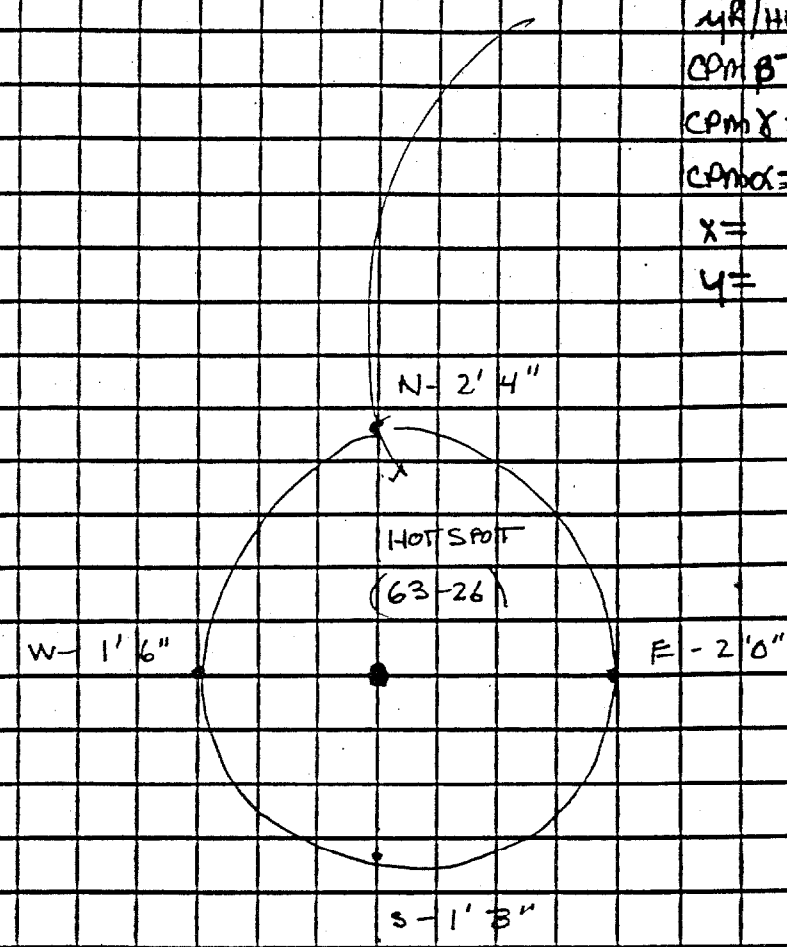
DATE: 03 JAN 95

Grid # 63-26 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 20 | ✓ |
| CPM β⁻ = | 72 | ✓ |
| CPM γ = | 8,500 | ✓ |
| CPM α = | 0 | ✓ |
| X = | −62' 0" | ✓ |
| Y = | +76' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

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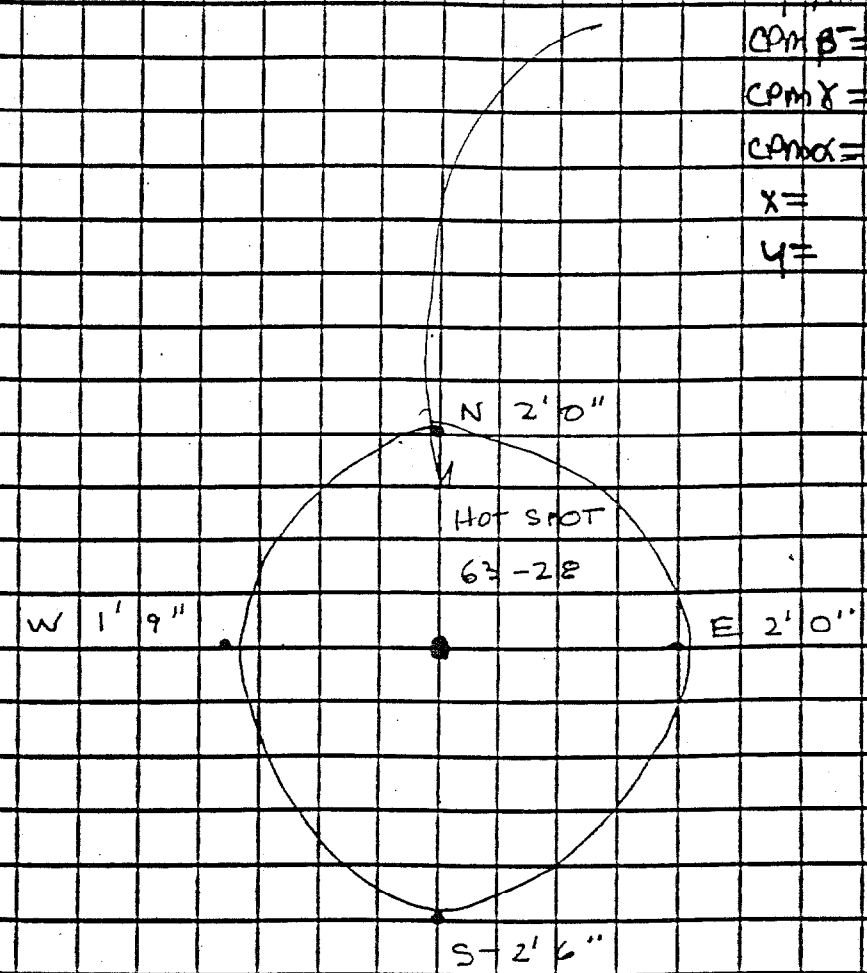
DATE: 03JAN95

Grid # 0103 95 63-28 63-28 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAES
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 38 | ✓ |
| CPM β⁻ = | 125 | ✓ |
| CPM γ = | 16,236 | ✓ |
| CPM α = | 2 | ✓ |
| X = | −54' 0" | ✓ |
| Y = | +117' 0" | ✓ |




1/11/95

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 211

DATE: 03JAN95

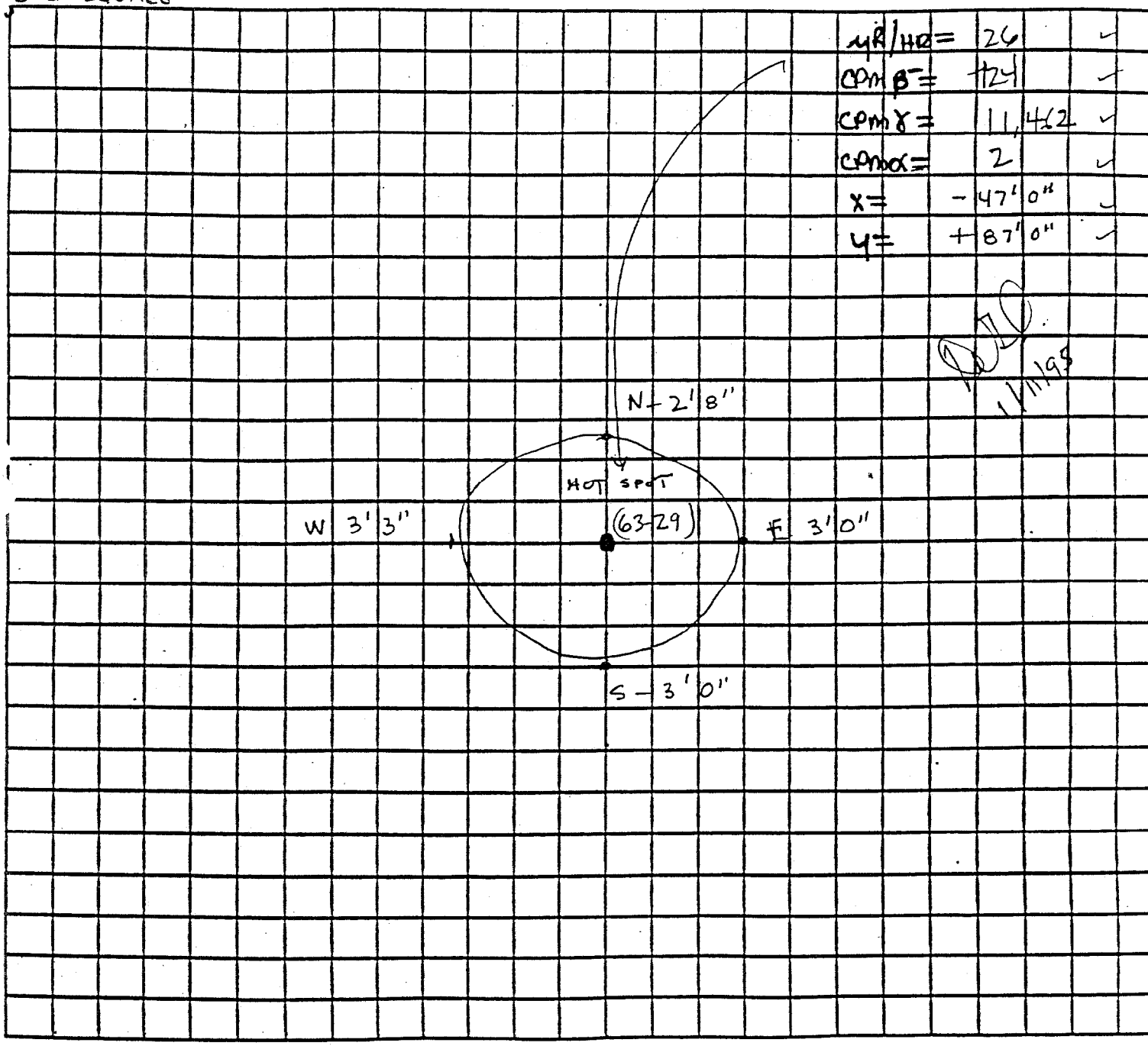
Grid # 63-29 Detector: *See Below Technicians: J. Showers / G. Shaw

Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGES

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = X




Remarks ① EACH SQUARE = X ② PEAK Reading is @ Center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 2/2

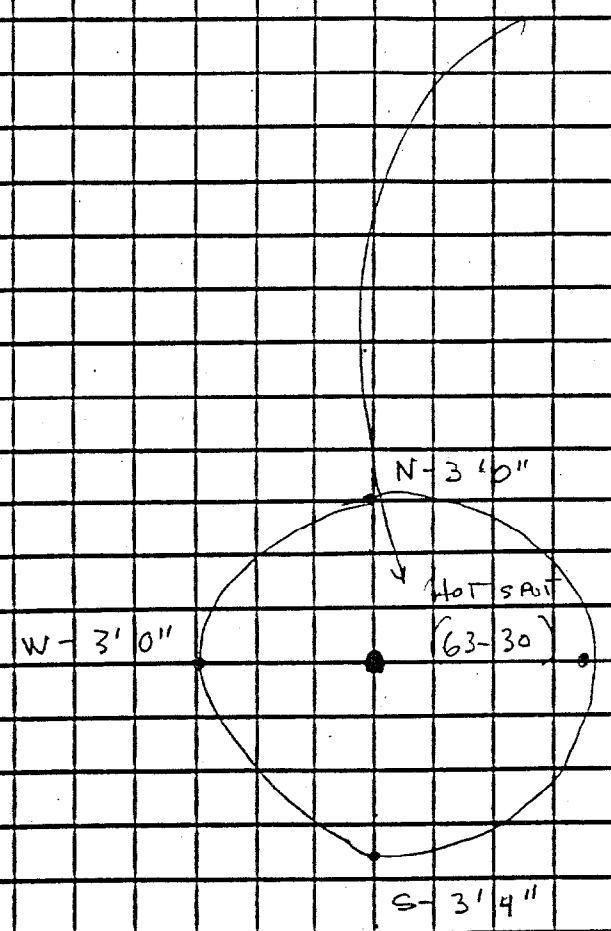
DATE: 03JAN95

Grid # 63-30 Detector: *See Below Technicians: J. Showers / G. Show
Scaler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = ~~6" x 6"~~ 12" x 12" 1/3/95

| | | |
|---|---|---|
| μR/HR = | 150 | ✓ |
| CPM β⁻ = | 1160 | ✓ |
| CPM γ = | 78,081 | ✓ |
| CPM α = | 3 | ✓ |
| X = | − 44' 0" | ✓ |
| Y = | + 95' 0" | ✓ |




Remarks ① EACH SQUARE = ~~6" x 6"~~ 12" x 12" 1-3-95 ② Peak Reading is @ center point ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 2/3

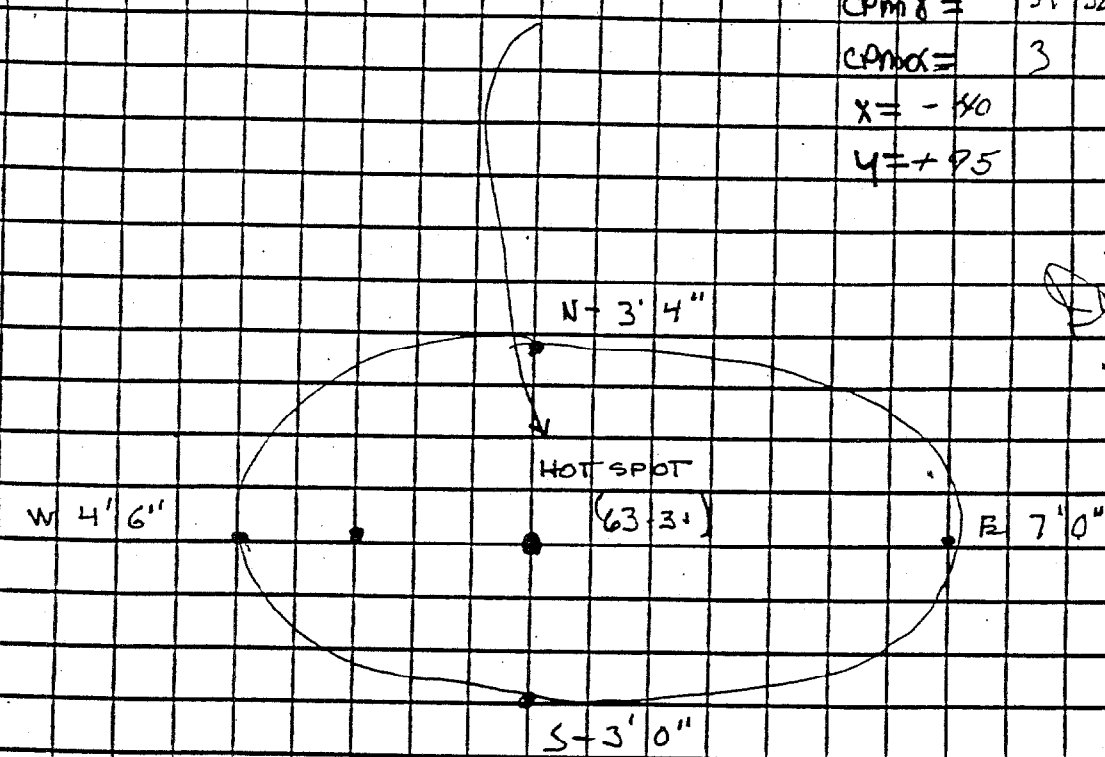
DATE: ~~DEC 94~~ 03JAN95

Grid # 63-31 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = ~~6" x 6"~~ 12" x 12" 1-3-95

| | | | |
|---|---|---|---|
| μR/HR = | 70 | | ✓ |
| CPM β⁻ = | 191 | | ✓ |
| CPM γ = | 39 | 320 | ✓ |
| CPM α = | 3 | | ✓ |
| X = -40 | | | ✓ |
| Y = +75 | | | ✓ |




1/11/95

Remarks ① EACH SQUARE = ~~6" x 6"~~ 12" x 12" 1-3-95 ② PEAK Reading is @ center POINT ③ AREA of INTEREST IS OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

U[illegible]Y NO. N/A SITE: PSC-26 GRID # 64 DATE: 04JAN95

IM[illegible] N/A ~~Part II~~ go 1-5-95

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2681 | 6.8 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 29.2 | 25.7 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | 18.04 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | wam | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ wam/Gamma cpm | ~~Beta~~ wam/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 64-01 | 1 | 2.2 | 578 | 2135 | 98000 | 1401750 | 180 |
| | | | | | | | |
| | | | | | | | |
| | wam | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[signature] 1/11/95

Remarks (Notes):

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

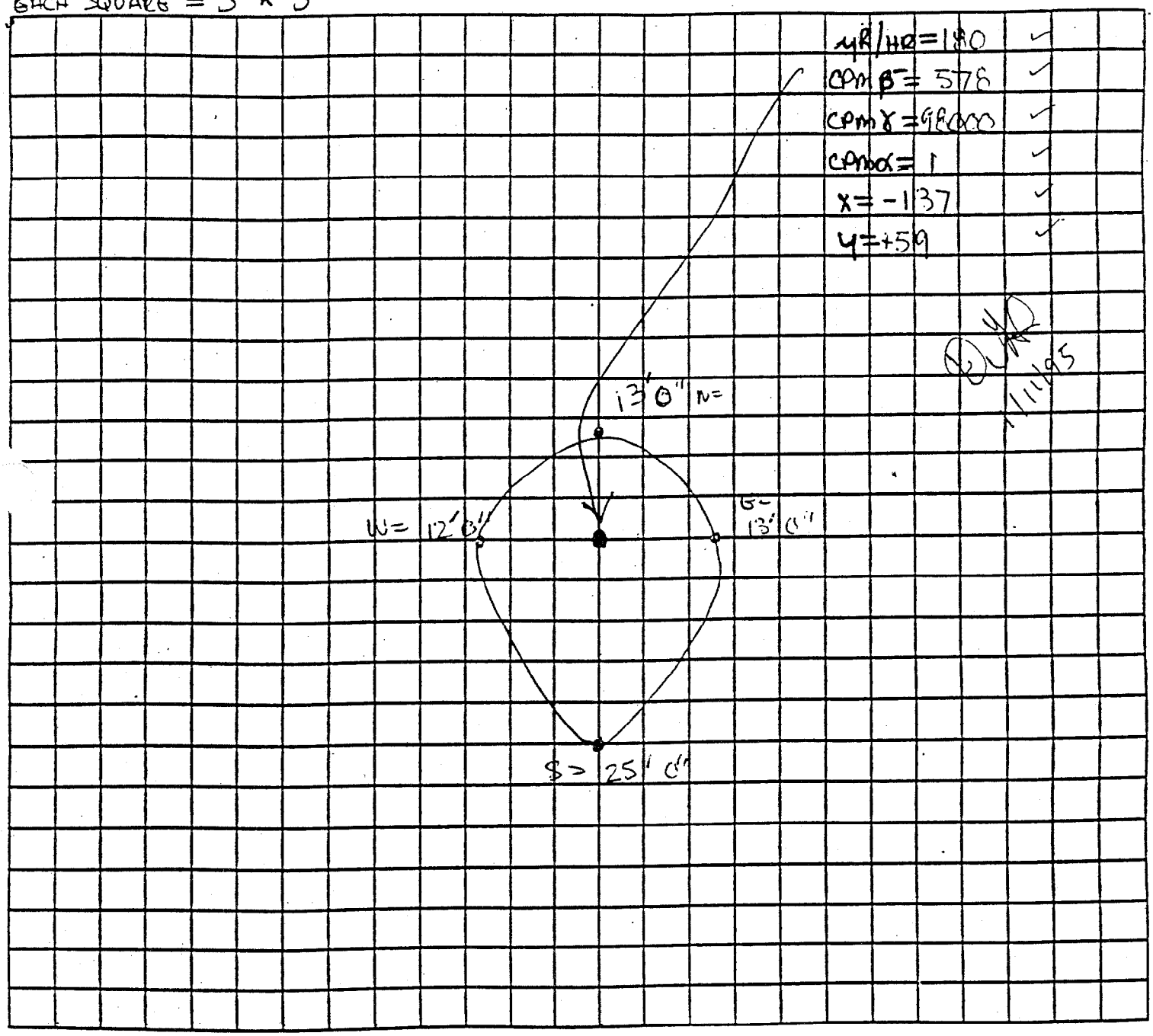
PAGE 2/3

DATE: ~~Dec 94~~ 04JAN95 WCM

Grid # 64-01 ~~Part #~~ WCM Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 5' x 5'




Remarks ① EACH SQUARE = 5' x 5' ② PEAK Reading is @ center POINT ③ AREA INTEREST IS OUT to EDGE of ENCIRCLED AREA

# DIRECT SURFACE CONTAMINATION READINGS

.Y NO. N/A SITE: PSC-26 GRID #65 DATE: 08 DEC 94

IN N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICROR | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOTSPOT 65-01 | 1 | 2.3 | 298 | 1023 | 60790 | 836571 | 100 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

[illegible] 12-21-94

[illegible] 1/11/95

Remarks (Notes): Checked by J. Showers 12-13-94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 2/1

DATE: 08 DEC 94

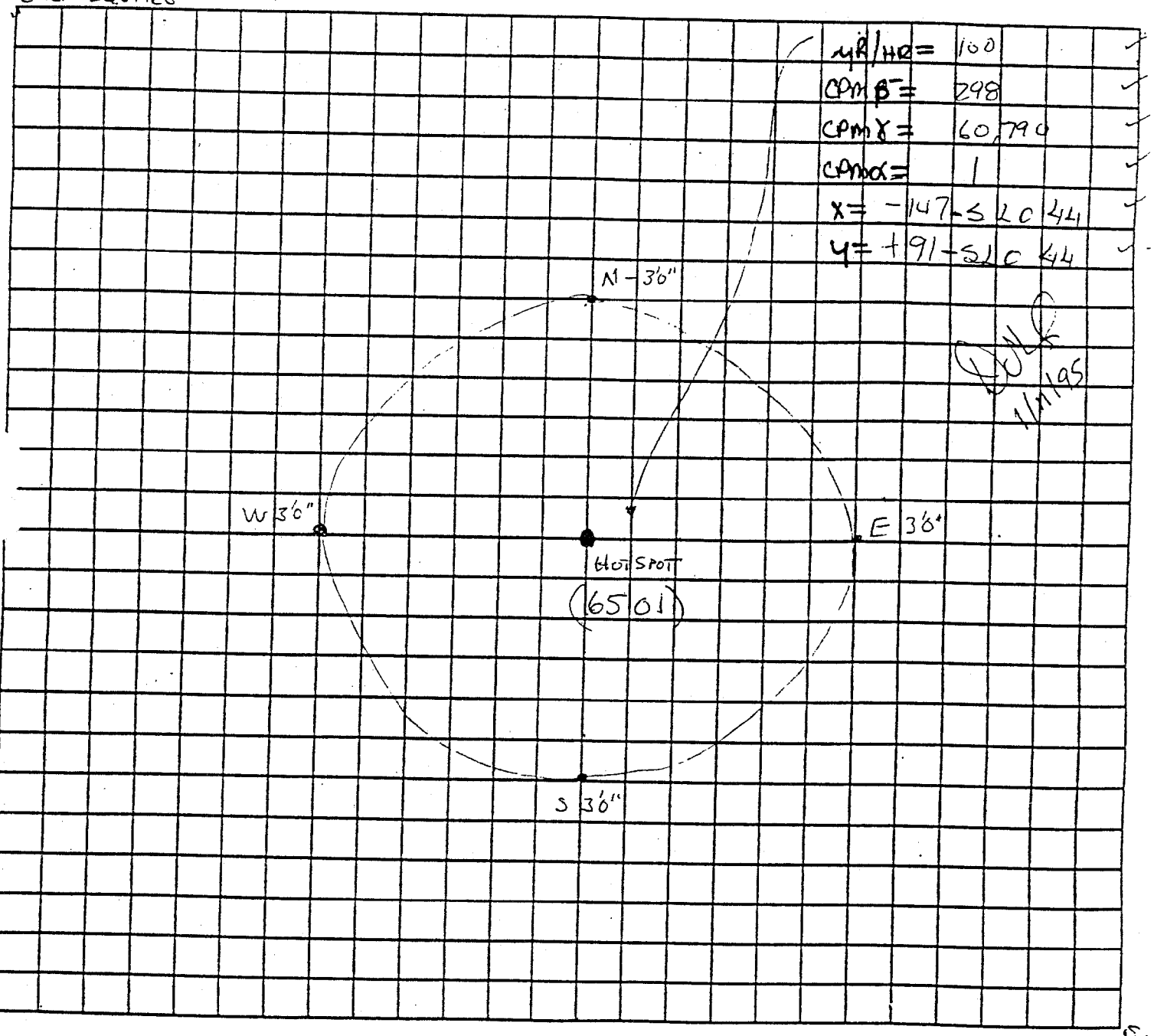
Grid # 65-01
Scaler: LUDLUM2221/M19
Conversion: N/A

Detector: *See Below
BKG N/A
S/N: N/A

Technicians: J. Showers / G. Showers
R. PARRISH / S. HAESE
W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

RV NO. N/A SITE: PSC-26A 68-A-1 DATE: 12-20-94
E: N/A

TRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ EFF % | Calibration Date |
|---|---|---|---|---|---|---|
| UDLUM MODEL 19 | 95487 | N/A | N/A | 4uR | N/A | 4-2-95 |
| UDLUM 2221 | 99136 | 44-10 | 165 | 2178 | 6.93 | 4.20.95 |
| UDLUM 2221 | 117366 | 44-09 | 116878 | 32.8 | 27.3 | 10.21.95 |
| UDLUM 2221 | 102049 | 43-65 | 090753 | 1.4 | 19.5 | 4.20.95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOTSPOT 68-A-1 | 3 | 8.2 | 288 | 935 | 97240 | 1,371,746 | 110 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/11/95

Remarks (Notes):

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



DATE: 20 DEC 94

Grid # 68 ~~WPM 68-01~~ 68-A1 Detector: *See Below Technicians: G. Showers / J. Showers

Scaler: LUDLUM 2221/M19 BKG N/A W.C. May

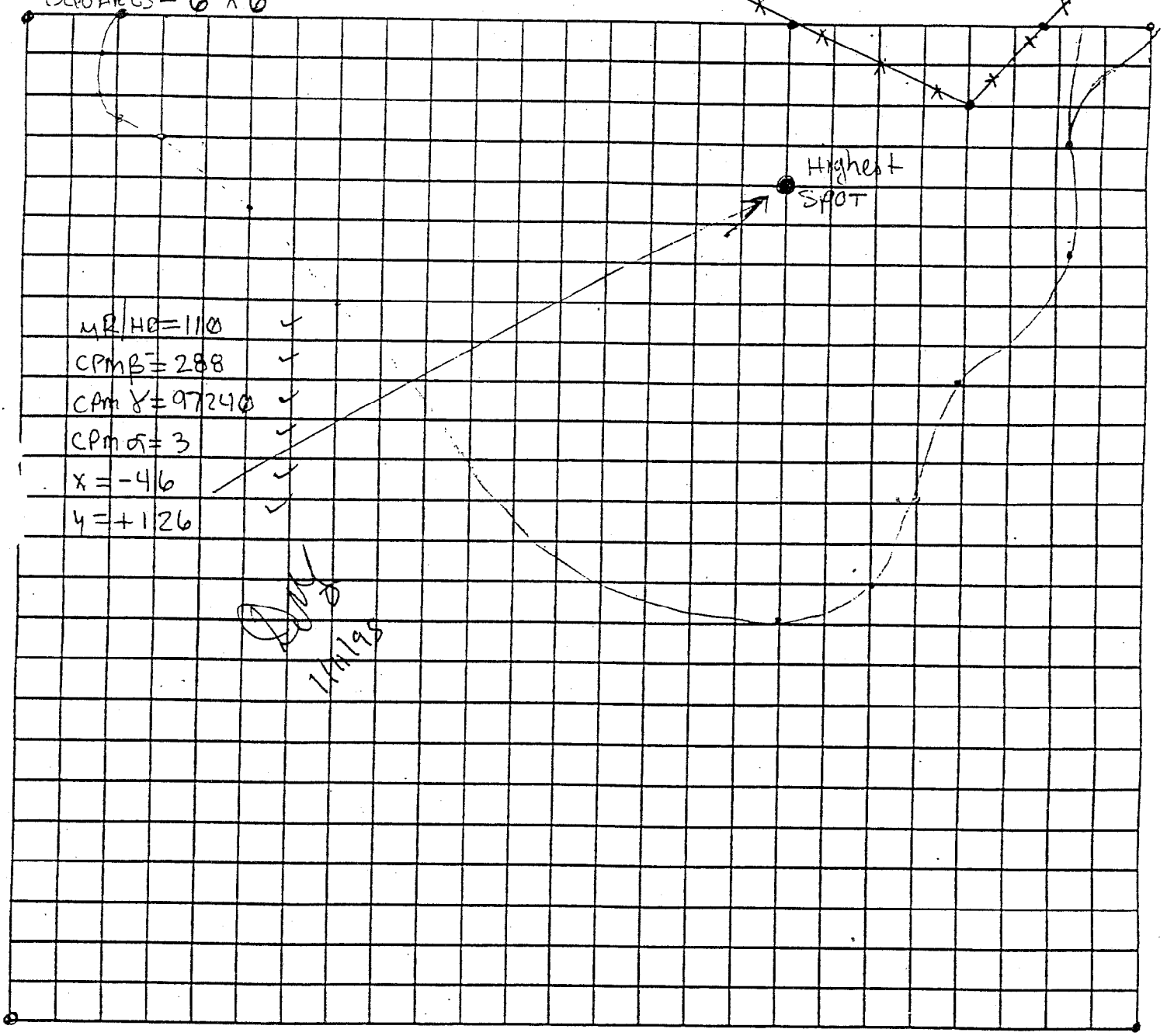
Conversion: N/A S/N: N/A N/A

*M19 = 95487 μR/HR
*2221 = 99136 + Detector #165 γ
*2221 = 117366 + Detector #116878 β⁻γ
*2221 = 102049 + Detector #090753 α

SL082

SQUARES = 6' x 6'

SL08




SL078

SL079

Remarks ① EACH SQUARE = 6' x 6' ② Peak reading ③ High spot point ③ Area interest is OUT TO EDGE of encircled area.

# DIRECT SURFACE CONTAMINATION READINGS

EY NO. N/A SITE: PSC-26 GRID #69 DATE: 12 DEC 94

IN N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ | Calibratio Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2147 | .0687 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 36 | .277 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .173 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ...tion description Hot spot | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| 69-01 | 3 | ~~1.387~~ | 63 | ~~47~~ 97.4 | 11028 | ~~129A~~ 129272.1 | 16 |
| | | 13.87 | | JS 12-21-94 | | JS 12-15-94 | |
| | | DWF 1/11/95 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | DWF 1/11/95 | |
| | | | | | | | |
| | | | | | | | |

Remarks (Notes): K = 1000 Checked by J. S. Havens 12-13-94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

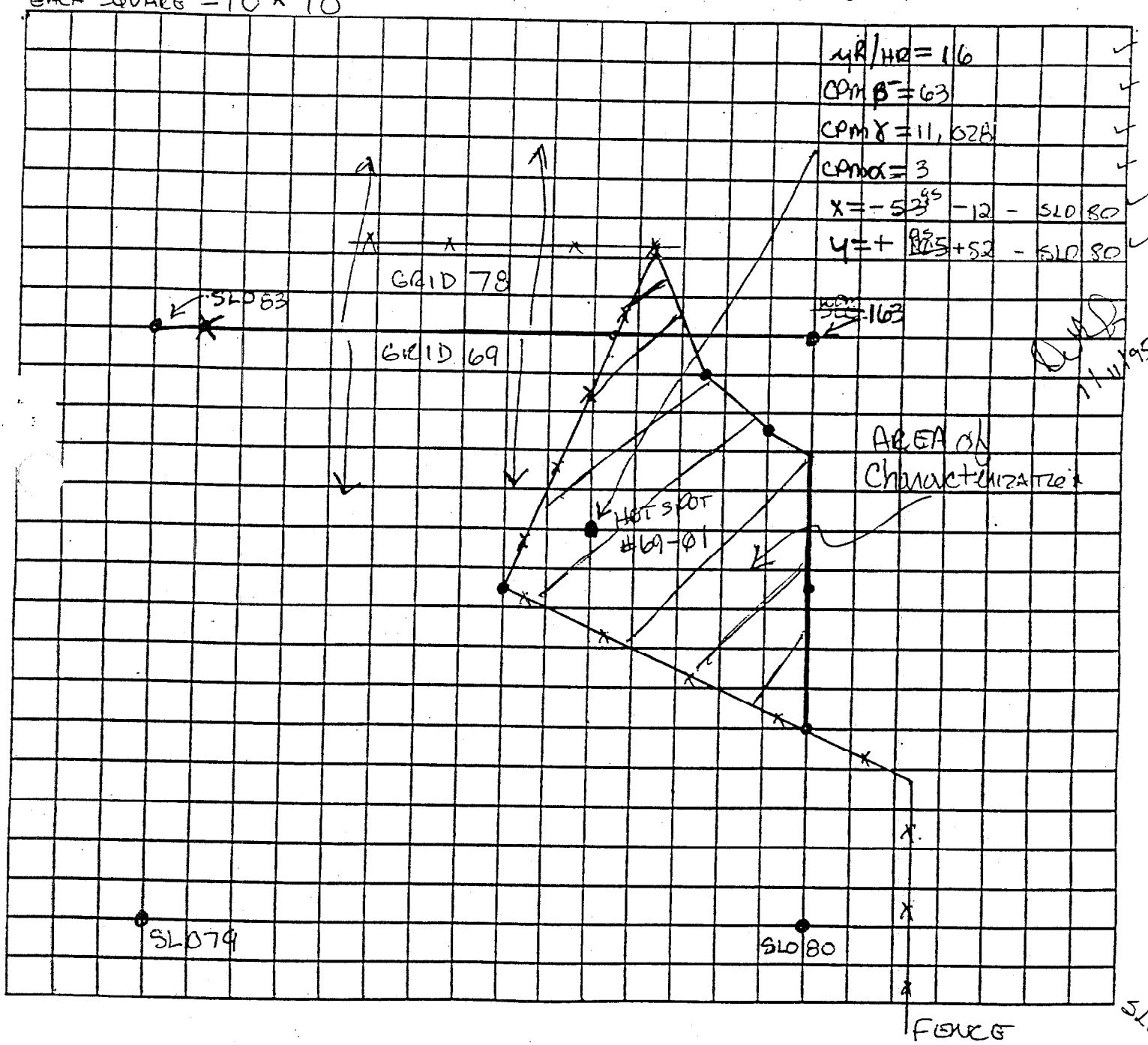
PAGE 221

DATE: 12 DEC 94

1# 69 69-01 Detector: *See Below Technicians: J. Showers / G. Showers
aler: LUDLUM2221/m19 BKG N/A R. PARRISH / S. HAESE
nversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 10' x 10'




Remarks ① EACH SQUARE = 10' x 10' ② Peak Reading is @ center point ③ AREA of INTEREST is out to EDGE of ENCIRCLED AREA - Checked by J. Showers 12-13-9

# DIRECT SURFACE CONTAMINATION READINGS

RV NO. N/A SITE: PSC-26A GRID # 69 DATE: 12-20-94
ME: N/A

STRUMENTS

AS 12-20-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ EFF % | Calibration Date |
|---|---|---|---|---|---|---|
| MICRO LUDLUM M#19 | 95487 | N/A | N/A | 4uR | N/A | 4-2-95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2178 | 6.93 | 4-20-95 |
| LUDLUM 2221 | 117366 | 44-09 | #116878 | 32.8 | 27.3 | 10-21-95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | 1.4 | 19.5 | 4-20-95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Non Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT - 69-01 | 4 | 13 | 126 | 341 | 25483 | 367405 | 42 |
| 69-02 | 3 ✓ | 8 ✓ | 127 ✓ | 345 ✓ | 16196 ✓ | ~~272279~~ 202279 ✓ | 24 ✓ |
| Combined 69-03 | 0 ✓ | 0 ✓ | 70 ✓ | 136 ✓ | 13011 ✓ | 156320 ✓ | 22 ✓ |
| 69-04 | N/A | 0 | N/A | — | N/A | — | N/A |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

DWG 11/95

Remarks (Notes): ① 69-04 consumed by 69-03 characterization.

PAGE ____ OF ____

DOG COME

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET



DATE 20 DEC 94

Grid # 69-01 69-02 Detector: * SEE BELOW Technicians: J. SHOWERS

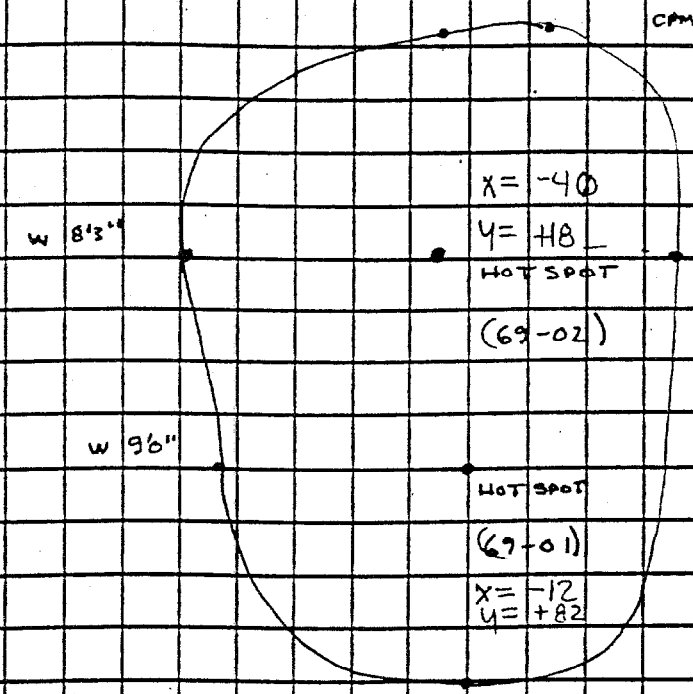
Scaler: LUDLUM 2221 BKG N/A S. HAESE

Conversion: N/A S/N: N/A N/A

* LUDLUM 95487 - M19
LUDLUM 2221 - 99136 - 44-10 DET. 165
LUDLUM 2221 117366-44-09 DET. 116878
LUDLUM 2221 102049-43-65 DET. 090753

SLO SCALE 1/4" = 2'
83

| | 69-01 | 69-02 |
|---|---|---|
| μR/HR | 42 | 24 |
| CPM γ | 25,483 | 16,196 |
| CPM β | 126 | 127 |
| CPM α | 4 | 3 |




1/11/95

Remarks

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET
HOT SPOT CHARACTERIZATION

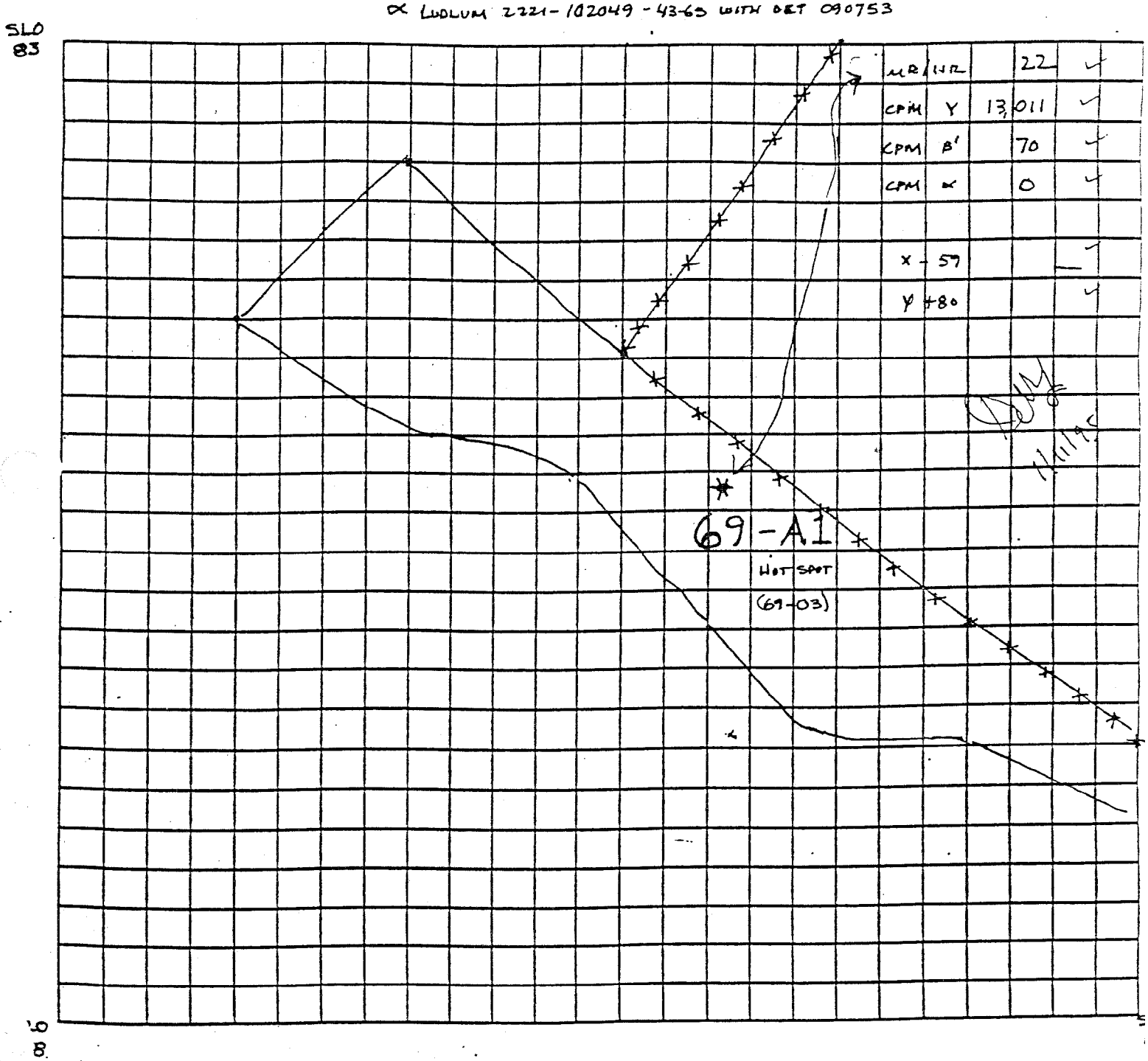
DATE 20 DEC 94

Grid # 69-A1 HOT SPOT Detector: * SEE BELOW Technicians: J. SHOWERS / R. PARRISH

Scaler: LUDLUM 2221 BKG NOT APPLICABLE G. SHOWERS / WC. MAY

Conversion: NOT APPLICABLE S/N: N/A S. HAESE

* LUDLUM M19-95487
γ LUDLUM 2221-99136-4410 WITH DET 165
β' LUDLUM 2221-117366-4409 WITH DET 116878
α LUDLUM 2221-102049-4363 WITH DET 090753




NOTE: REFER TO GAMMA SCAN DATA SHEET PAGE 70 FOR HOT SPOT IN GRID # 69 PART I

Remarks NOTE: REFER TO GAMMA SCAN DATA SHEET PAGE 84: HOT SPOTS IDENTIFIED AS 69-04, X-93, Y+92 INSIDE AREA >20% BACKGROUND, WITH 69-03 (FROM PAGE 84) THE DESIGNATED CHARACTERIZED (69-A1) HOT SPOT

# DIRECT SURFACE CONTAMINATION READINGS



S. NO. N/A SITE: PSC-26 GRID # 70 DATE: 12 DEC 94

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2147 | .0687 | 4/20/9 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 36 | .277 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .173 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description HOT SPOT | Alpha | | Beta | | ~~Beta~~/Gamma | | Micro R/h |
|---|---|---|---|---|---|---|---|
| | cpm | dpm | cpm | dpm | cpm | dpm | |
| 70-01-W | 0 | <0.68 | 165 | 465 | 24925 | 331557.4 | 45 |
| ~~70-01-WS~~ | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Remarks (Notes): 12-13-94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

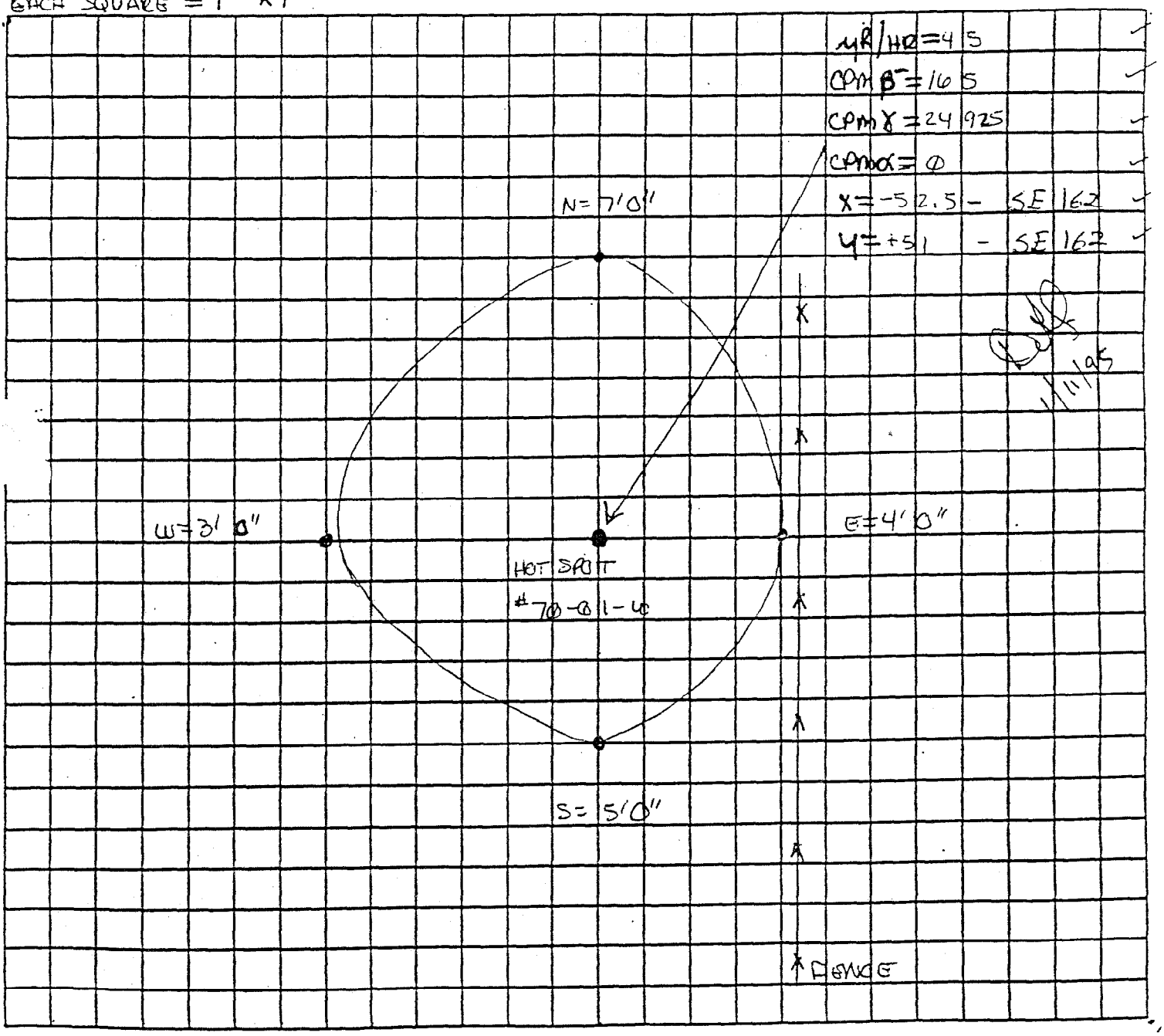
PAGE 226

DATE: 12 DEC 94

1#70 70-01-W Detector: *See Below Technicians: J. Showers / G. Showers
aler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'




*ks ① EACH SQUARE = 1' X 1' ② PEAK Reading is @ center POINT ③ AREA INTEREST IS OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12

# DIRECT SURFACE CONTAMINATION READINGS

VEY NO. N/A SITE: PSC-26 GRID #71 DATE: 08 DEC 94

N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~%~~ eff. (JS 12-15-94) | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/9 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/ |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| ation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Gamma cpm | ~~Beta~~ Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| HOT SPOT 71-01 | 2 | 8.2 | 57 | 96.5 | 6500 | 61000 | 10 |
| ↓ 71-02 | 1 | 2.3 | 555 | 2011.9 | 103500 | 1446714 | 100 |
| 71-03 see note below | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/11/95

Remarks (Notes): 71-03 DID NOT MEET HOT SPOT CRITERIA AND WAS LESS THAN TWO TIMES BACKGROUND

Checked by J. Showers 12-13-94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 228

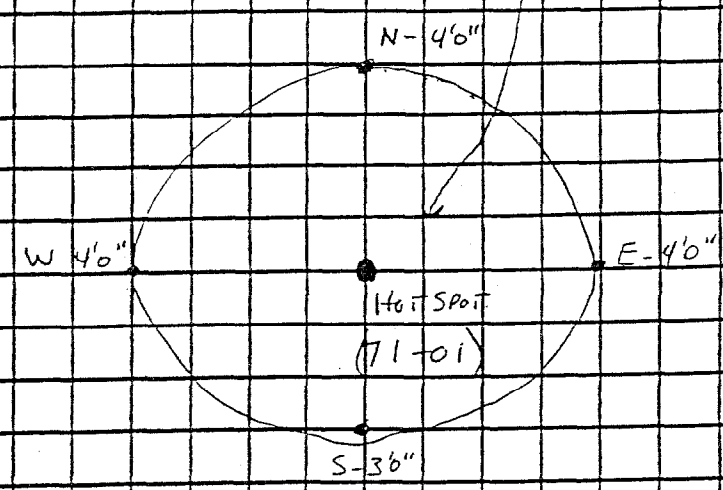
DATE: 08 DEC 94

Grid # 71-01 Detector: *See Below Technicians: J. Showers / G. Showe
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | | | | |
|---|---|---|---|---|
| μR/HR = | 10 | | | ✓ |
| CPM β⁻ = | 57 | | | ✓ |
| CPM γ = | 6,500 | | | ✓ |
| CPM α = | 2 | | | ✓ |
| X = | - 53 | - | SLO | 45 ✓ |
| Y = | + 9 | - | SLO | 45 ✓ |




1/11/95

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked G. J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



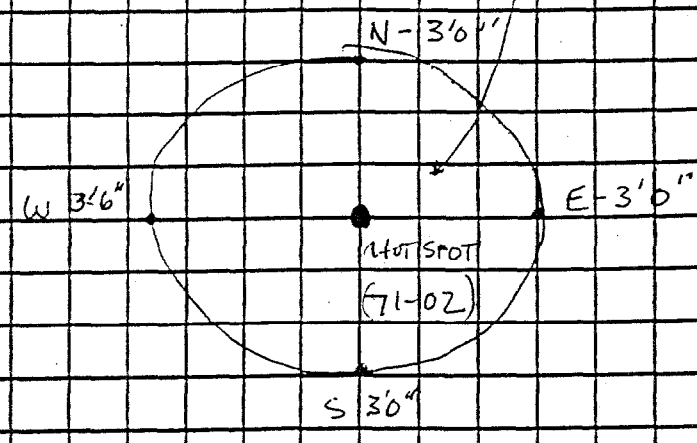
DATE: 08 DEC 94

Grid # 71-02 Detector: *See Below Technicians: J. Showers / G. Shawe
Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE
Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 1' x 1'

| | | | | |
|---|---|---|---|---|
| μR/HR = | 100 | | | ✓ |
| CPM β = | 555 | | | ✓ |
| CPM γ = | 103,500 | | | ✓ |
| CPM α = | 1 | | | ✓ |
| X = | − 145.5 | − | 520 | 45 ✓ |
| Y = | + 64.5 | − | 520 | 45 ✓ |




DJP 1/11/95

Remarks ① EACH SQUARE = 1' x 1' ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Charles G. J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

VEY NO. N/A SITE: PSC-26 GRID #72 DATE: 08 DEC 94
E: N/A

INSTRUMENTS

JB 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibratio Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4MR/HR | N/A | 4/2/ |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/ |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/9 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/9 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| cation description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/ |
|---|---|---|---|---|---|---|---|
| HOT SPOT 72-01 | 2 | 8.2 | 65 | 127 | 8200 | 95285.7 | 15 |
| 72-02 | 2 | 8.2 | 195 | 627 | 21350 | 273142.8 | 34 |
| 72-04 | 0 | -0.4 | 128 | 369.6 | 18530 | 232857.1 | 30 |
| 72-05 | 1 | 2.3 | 191 | 611.9 | 31270 | 414857.1 | 50 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Remarks (Notes): 72-03 DID NOT MEET HOT SPOT CHARACTERIZATION - IS LESS THAN 2 TIMES BKG.

12-13-94

PAGE____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET



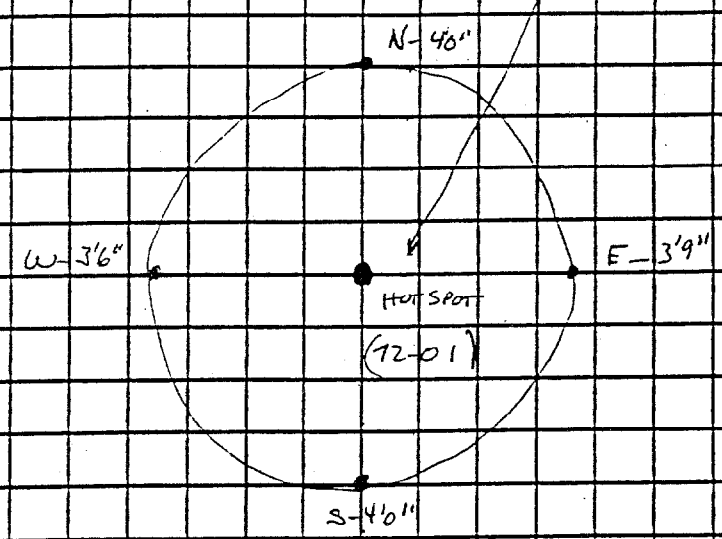
DATE: 08 DEC 94

Grid # 72-01 Detector: *See Below Technicians: J. Showers / G. Shower
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 1' x 1'

| | |
|---|---|
| μR/HR = | 15 |
| CPM β⁻ = | 65 |
| CPM γ = | 8200 |
| CPM α = | 2 |
| X = | −143 − SLO 46 |
| Y = | +35.5 − SLO 46 |




1/1/95

Remarks ① EACH SQUARE = 1' x 1' ② PEAK Reading is @ CENTER POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12.13.94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE 232

DATE: 08 DEC 94

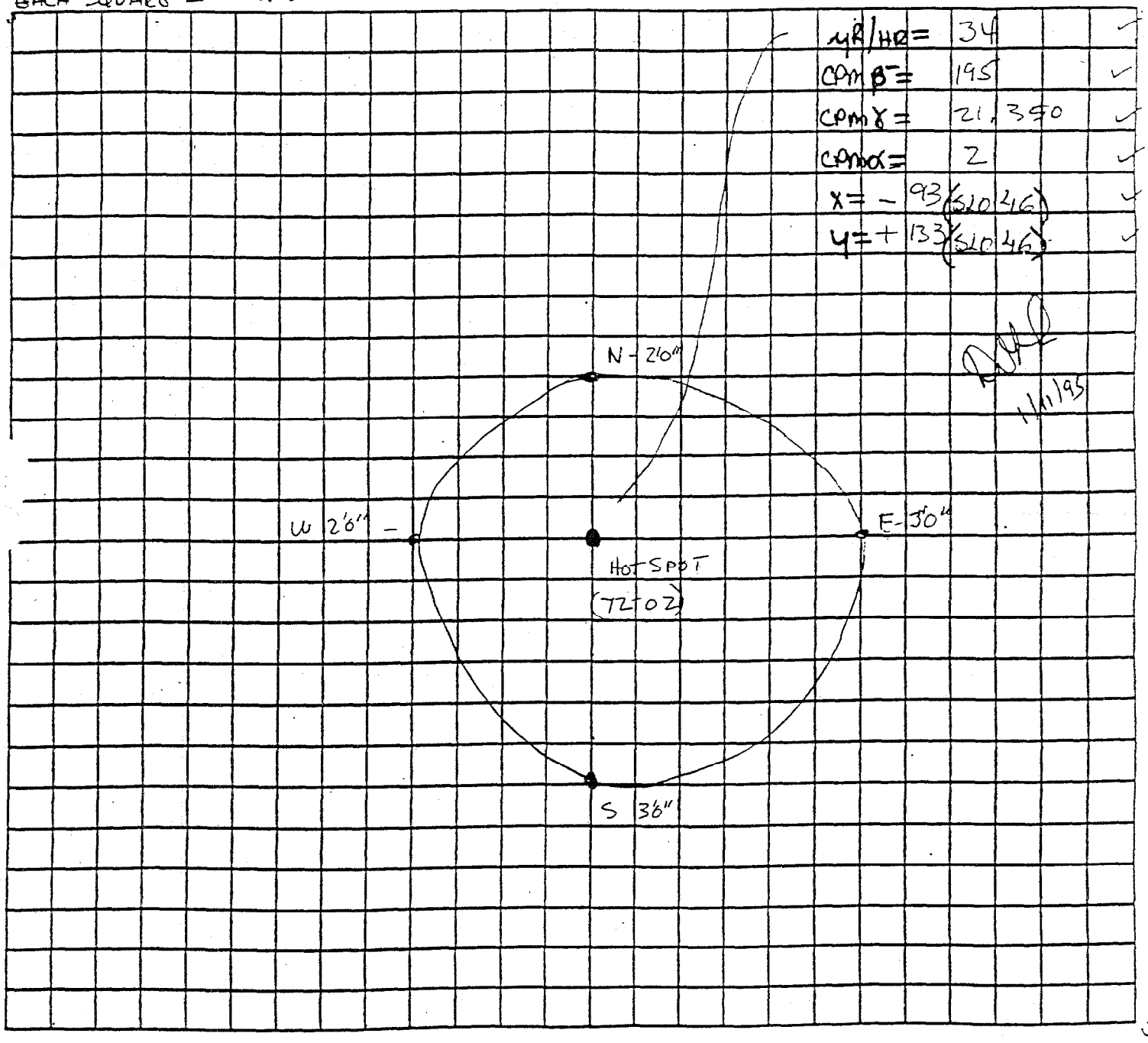
Grid # 72-02 Detector: *See Below Technicians: J. Showers / G. Showers

Scaler: Ludlum 2221/m19 BKG N/A R. PARRISH / S. HAGSE

Conversion: N/A S/N: N/A W. C. May

*m19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"




Remarks ① EACH SQUARE = 6" x 6" ② PEAK READING IS @ CENTER POINT ③ AREA OF INTEREST IS OUT TO EDGE OF ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

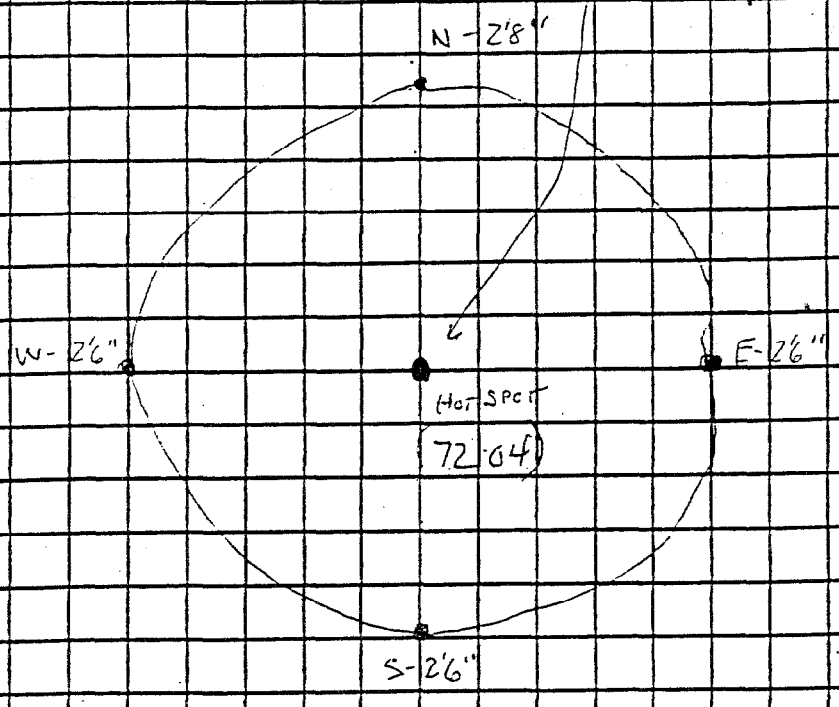
DATE: 08 DEC 94

Grid # 72-04 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | 30 | ✓ |
| CPM β⁻ = | 128 | ✓ |
| CPM γ = | 18,530 | ✓ |
| CPM α = | 0 | ✓ |
| x = | -42 - 5LO 46 | ✓ |
| y = | +41 - 5LO 46 | ✓ |




1/11/95

5LO

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

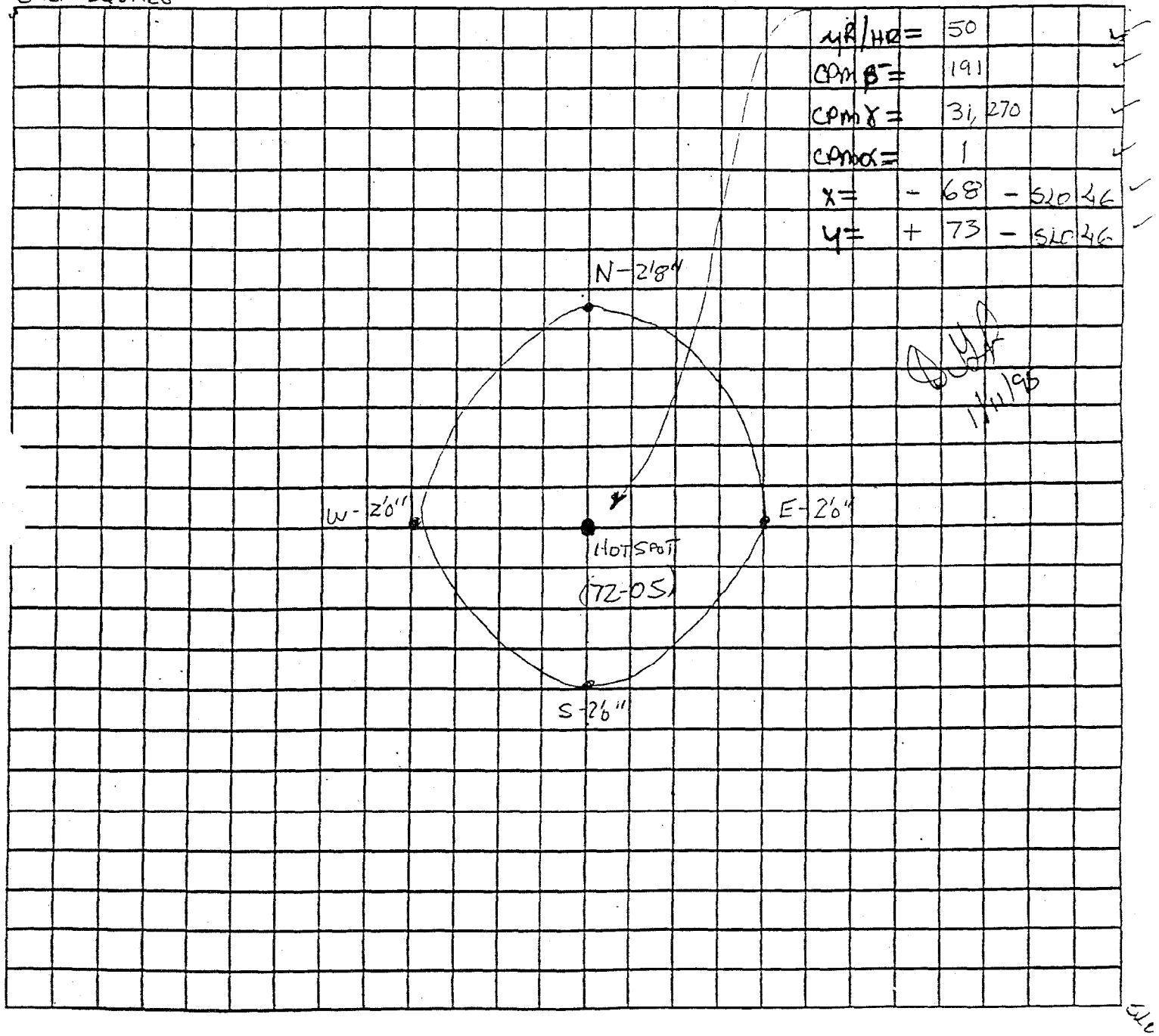
PAGE [illegible]

DATE: 08 DEC 94

Grid # 72-05 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"




Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12.13.94

# DIRECT SURFACE CONTAMINATION READINGS

.Y NO. N/A SITE: OSC-26 GRID #73 DATE: 08 DEC 94

N/A

INSTRUMENTS

12.15.94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M14 MICRO R | 95487 | N/A | N/A | 4 MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |

| ...tion description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 73-01 | 0 | <0.4 | 49 | 65.7 | 19930 | 352857 | 23 |

1/11/95

Remarks (Notes): Shelly L. Stowers 12.13.94

PAGE ____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE [illegible]

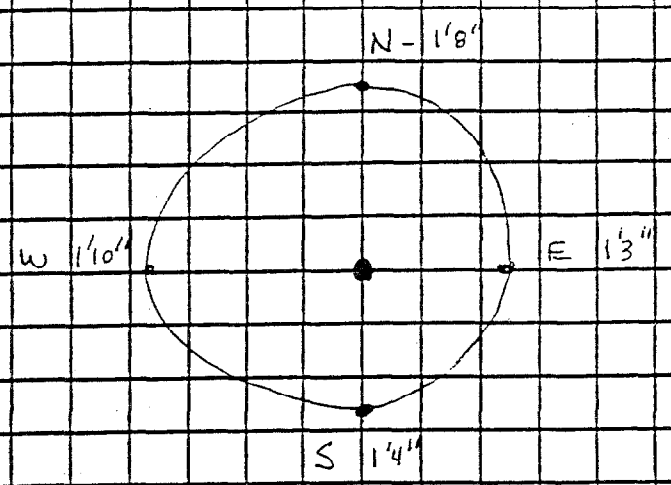
DATE: 08 DEC 94

Grid # 73-01 Detector: *See Below Technicians: J. Showers / G. Showers
Scaler: LUDLUM 2221/M19 BKG N/A R. PARRISH / S. HAESE
Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR # 165 γ
*2221 = 117366 + DETECTOR # 116878 β⁻ γ
*2221 = 102049 + DETECTOR # 090753 α

EACH SQUARE = 6" x 6"

| | | |
|---|---|---|
| μR/HR = | | 23 |
| CPM β⁻ = | | 49 |
| CPM γ = | | 19,930 |
| CPM α = | | 0 |
| x = | − | 138 (SLO 47) |
| y = | + | 111 (SLO 47) |




Bell 1/11/95

SLO

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers 12-13-94

# DIRECT SURFACE CONTAMINATION READINGS

SU[illegible]Y NO. N/A SITE: PSC-26A 77-A-1 DATE: 12-20-94
IM[illegible] N/A

NSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | ~~% eff.~~ EFF % (JS 12-20-94) | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM MODEL 19 | 95487 | N/A | N/A | 4 μR | N/A | 4-2-95 |
| LUDLUM 2221 | 99136 | 44.10 | 165 | 2178 | 6.93 | 4-20-95 |
| LUDLUM 2221 | 117366 | 44.09 | 116878 | 32.8 | 27.3 | 10-21-95 |
| LUDLUM 2221 | 102049 | 43.65 | 090753 | 1.4 | 19.5 | 4-20-95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm (WEM 12-21-94) | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 77-A-1 | 12 ✓ | 54 ✓ | 1197 ✓ | 4265 ✓ | 157350 ✓ | 2,239,134 ✓ | 200 ✓ |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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DWH 1/11/95

Remarks (Notes):

PAGE ____ OF ____

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 20Dec94 77-A-1

Grid # 77 ~~77-01~~ WCM

Scaler: LudLum 2221/M19

Conversion: N/A

Detector: *See Below

BKG N/A

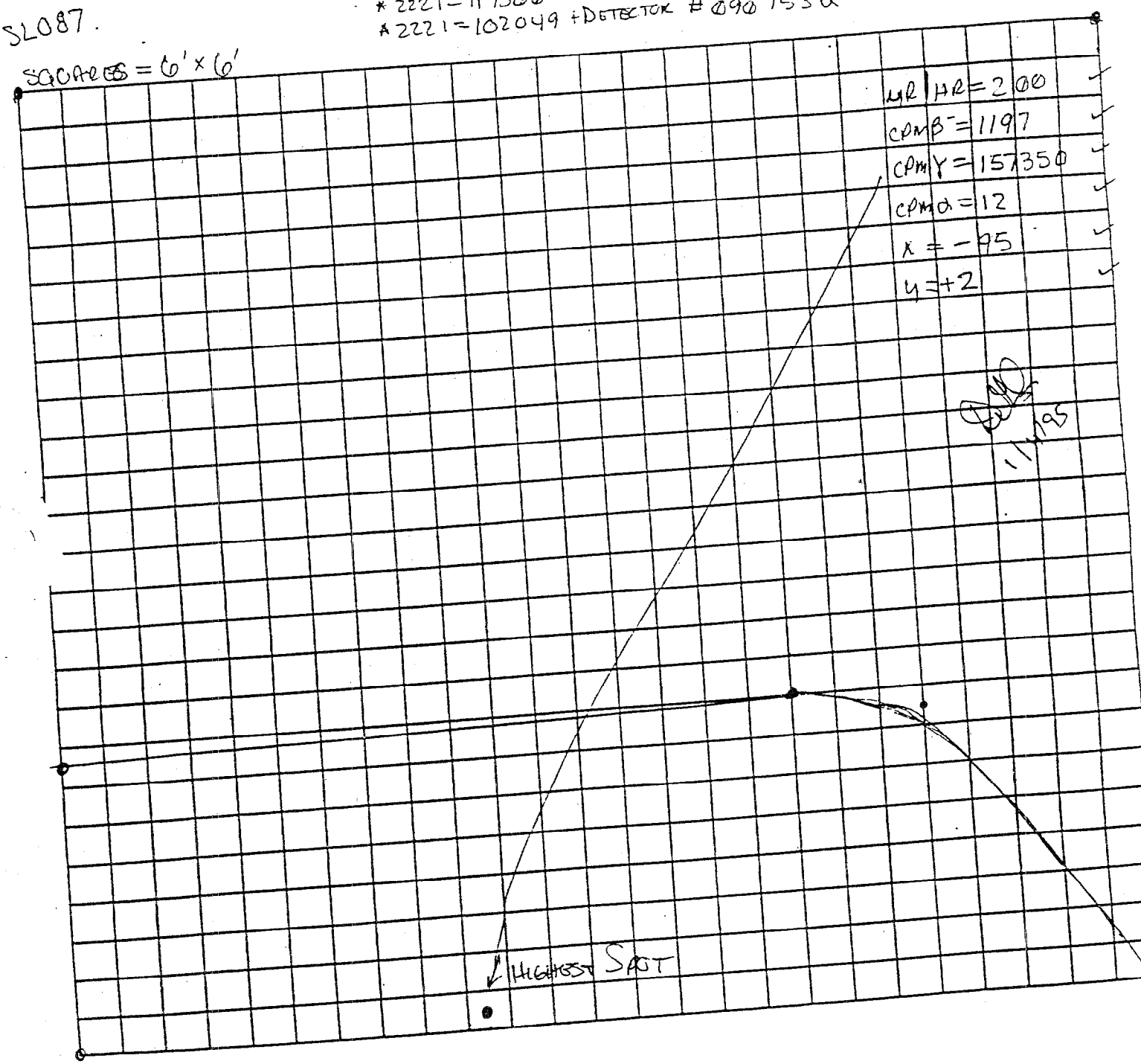
S/N: N/A

Technicians: J. Showers / G. Showers, R. Parrish / S. Haese, W.C. May

*M19 = 95487 μR/HR
*2221 = 99136 + Detector #165 γ
*2221 = 117366 + Detector # 116878 β⁻ γ
*2221 = 102049 + Detector # 090753 α

SL087.

SQUARES = 6' x 6'




SL082

Remarks ① EACH Square = 6' x 6' ② Peak readings @ High spot on map. ③ Area of interest is OUT TO EDGE of encircled area

# DIRECT SURFACE CONTAMINATION READINGS

EY NO. N/A SITE: PSC-26 GRID #80 DATE: 08 DEC 94

IP N/A

INSTRUMENTS

JS 12-15-94

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| LUDLUM M19 MICROR | 95487 | N/A | N/A | 4MR/HR | N/A | 4/2/95 |
| LUDLUM 2221 | 99136 | 44-10 | #165 | 2230 | .07 | 4/20/95 |
| LUDLUM 2221 | 117366 | 44-9 | #116878 | 31.9 | .26 | 10/21/95 |
| LUDLUM 2221 | 102049 | 43-65 | #090753 | .6 | .17 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

JS 10/6/94

| tion description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~/Gamma cpm | ~~Beta~~/Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| HOT SPOT 80-01 | 0 | dw 12-21-94 <0.4 | 82 | 192.6 | 6500 | 61000 | 10 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

1/11/95

Remarks (Notes): Charles G. Stowers 12-13-94

PAGE____ OF ____

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE _____

DATE: 08 DEC 94

Grid # 80-01 Detector: *See Below Technicians: J. Showers / G. Showers

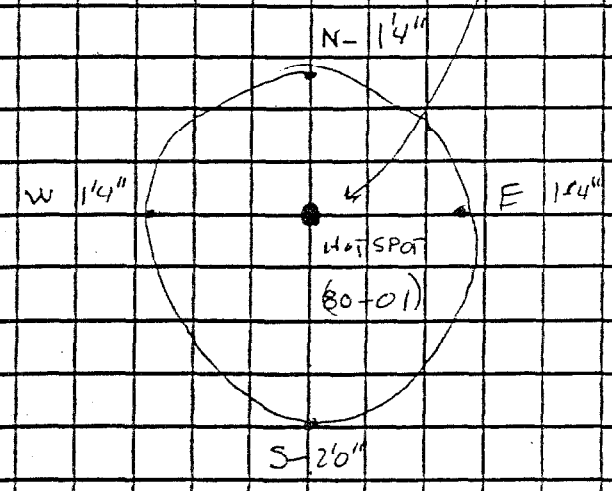
Scaler: LUDLUM2221/M19 BKG N/A R. PARRISH / S. HAESE

Conversion: N/A S/N: N/A W. C. May

*M19 = 95487 μR/HR
*2221 = 99136 + DETECTOR #165 γ
*2221 = 117366 + DETECTOR #116878 β⁻ γ
*2221 = 102049 + DETECTOR #090753 α

EACH SQUARE = 6" x 6"

| | |
|---|---|
| μR/HR = | 10 |
| CPM β⁻ = | 82 |
| CPM γ = | 6,500 |
| CPM α = | 0 |
| X = | -123 - SLD 48 |
| Y = | +61.5 - SLD 48 |




1/11/98

SLD

Remarks ① EACH SQUARE = 6" x 6" ② PEAK Reading is @ center POINT ③ AREA of INTEREST is OUT to EDGE of ENCIRCLED AREA

Checked by J. Showers

# DIRECT SURFACE CONTAMINATION READINGS

SU[illegible]Y NO. N/A SITE: PSC-26 Grid #81 DATE: 05 Dec 94

[illegible] N/A

INSTRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| Ludlum M14 micro R | 95487 | N/A | N/A | 4 uR/HR | N/A | 4/2/95 |
| Ludlum 2221 | 99136 | 44-10 | #165 | 2251 | .071 | 4/20/95 |
| Ludlum 2221 | 117366 | 44-9 | #116878 | 31 | .27 | 10/21/9[illegible] |
| Ludlum 2221 | 102049 | 43-65 | #090753 | 1.4 | .171 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | Beta/Gamma cpm | Beta/Gamma dpm | Micro R/h |
|---|---|---|---|---|---|---|---|
| * 81-01 - SEE NOTE Below | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

11/1/95

* Remarks (Notes): 81-01 D.O NOT MEET CRITERIA

PAGE 1 OF 1

# DIRECT SURFACE CONTAMINATION READINGS

JR. NO. N/A SITE: PSC-26 GRID #88 DATE: 09/AN95
ME: N/A

STRUMENTS

| Meter (type/model) | Meter Serial # | Probe (type/model) | Probe Serial # | Background cpm | % eff. | Calibration Date |
|---|---|---|---|---|---|---|
| UDLUM M19 micro R | 95487 | N/A | N/A | 4 | N/A | 4/2/95 |
| UDLUM 2221 | 99136 | 44-10 | #165 | 2060 | 6.95 | 4/20/95 |
| UDLUM 2221 | 117366 | 44-9 | #116878 | 32.3 | 24.97 | 10/21/95 |
| UDLUM 2221 | 102049 | 43-65 | #090753 | .2 | 19.4 | 4/20/95 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

| Location description | Alpha cpm | Alpha dpm | Beta cpm | Beta dpm | ~~Beta~~ Gamma cpm | Gamma dpm | Micro R/hr |
|---|---|---|---|---|---|---|---|
| 88-01 | 3 | 14.4 | 220 | 751 | 27600 | 367482 | 40 |
| 88-02 | 0 | <1.45 | 55 | 90.9 | 13200 | 160287 | 20 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

11/11/95

Remarks (Notes):

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

DATE: 09JAN95

Grid # 88 88-01

Scaler: LUDLUM 2221

Version: N/A

Detector: *See below

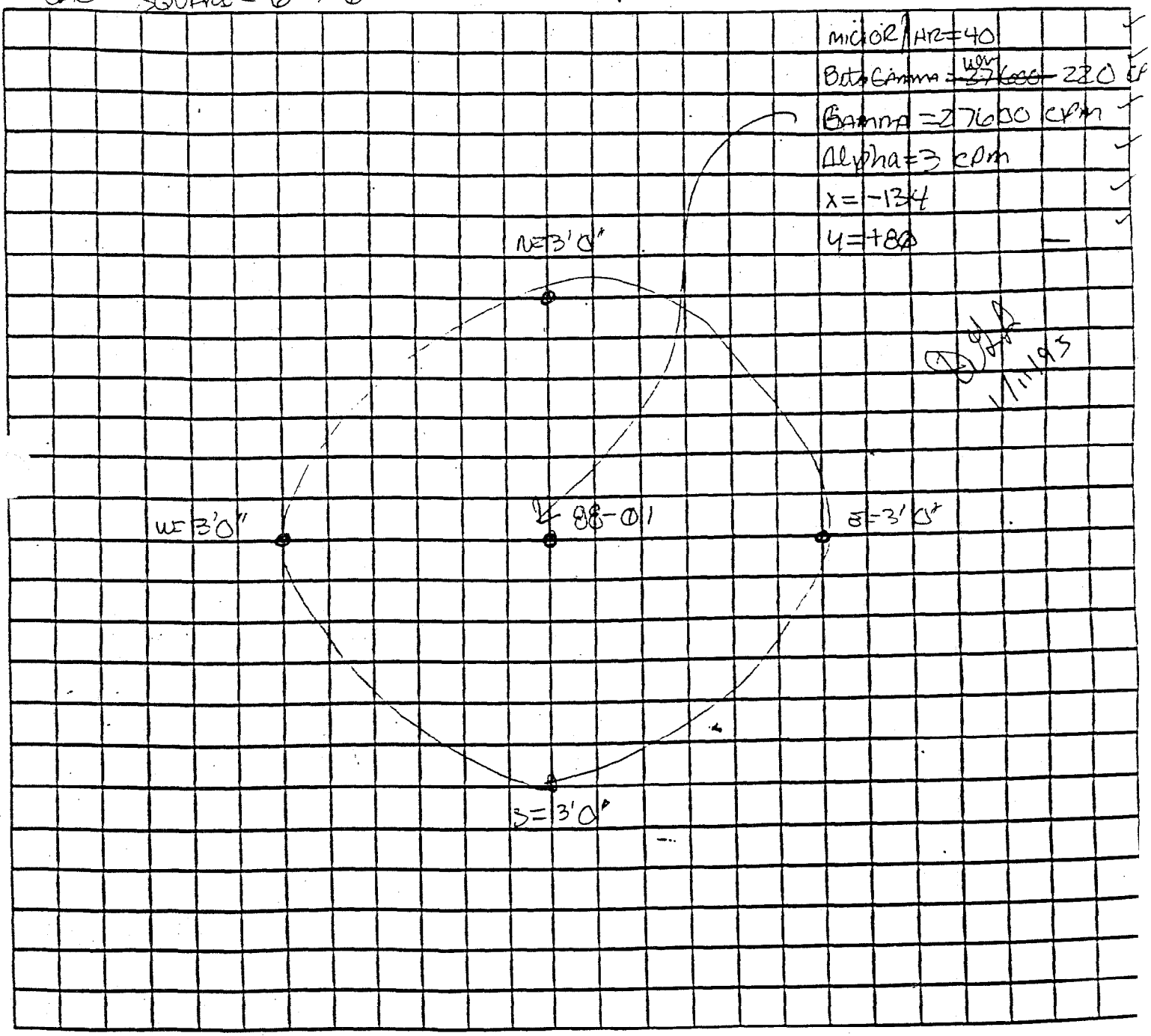
BKG N/A

S/N: *95487 micro R

* 99136 w/ #165 detector γ
* 117366 w/ #116878 detector β'/γ
* 102049 w/ #090753 detector α

Technicians: W. C. May / J. Shaver
G. Shaver / S. Haese
R. Parrish

EACH SQUARE = 6" x 6"




2 OF 3

Remarks

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

Date: 09JAN95

Grid # 88 88-02

Scaler: Ludlum 2221

Conversion: N/A

Detector: * See below.

BKG * See instrument Sheet

S/N: *95487 = micro R/11

*99136 w/#165 detector γ

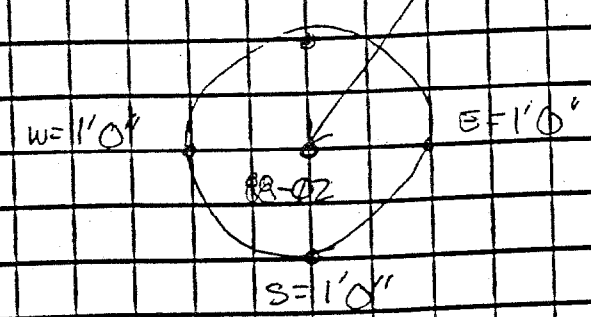
* 117366 w/#116878 detector β/γ

* 102049 w/#090753 detector α

Technicians: J. Shaver / G. Shaver
W. Carney / S. Haese
R. Parrish

Each square = 6" x 6'

| | |
|---|---|
| micro R/HR = 20 | ✓ |
| Beta Gamma = 55 | ✓ |
| Gamma = 13200 | ✓ |
| Alpha = 0 | ✓ |
| X = -129 | ✓ |
| Y = 81 | ✓ |




3 OF 3

Remarks

# APPENDIX G

# SOIL SAMPLE DATA

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99948779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/JX

cc: BECH00394 Report Date: January 24, 1995 PSC 26 GRID # 20 Page 1 of 2

| | |
|---|---|
| Sample ID | : JX00040 SPS |
| Lab ID | : 9501247-01 |
| Matrix | : Soil |
| Date Collected | : 01/11/95 |
| Date Received | : 01/13/95 |
| Priority | : Rush |
| Collector | : Client |

At HS 20-02

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0764 | +/- 0.0405 | 0.0541 | 0.100 | pCi/g | 1.0 | MDS | 01/23/95 | 0751 | 59908 | 1 | 1 |
| Potassium-40 | | 4.36 | +/- 0.904 | 0.707 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | | 15.1 | +/- 0.295 | 0.107 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.634 | +/- 0.232 | 0.244 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.746 | +/- 0.0834 | 0.0951 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | | 15.1 | +/- 0.295 | 0.107 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.738 | +/- 0.0824 | 0.0940 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | U | 1.54 | +/- 1.31 | 1.86 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.150 | +/- 0.204 | 0.359 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | U | 1.54 | +/- 1.31 | 1.86 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

| C = Container | Lab. Container ID | Reference ID |
|---|---|---|
| C 1 | 9501247-01.01 | JX0004001 |

HS 20-02
8-119469 cpm ← peak γ during HS Charac. 12/5/94

~~5 pCi~~ ~~[illegible] cpm~~ ? [illegible]

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# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | HPI |
|---|---|---|
| FL | E87156/87294 | E87472/87453 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02994 | |
| VA | 00151 | |
| WI | 999847779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/JX

cc: BECH00394 Report Date: January 24, 1995 

Sample ID : JX00040 SFS

| C = Container | Lab. Container ID | Reference ID |
|---|---|---|

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Analytical Report Specialist

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87456 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02094 | |
| VA | 00151 | |
| WI | 999685779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

PSC 26
GRID # 40

cc: BECH00394

Report Date: January 24, 1995



| | |
|---|---|
| Sample ID | : JX00041 SFS |
| Lab ID | : 9501247-02 |
| Matrix | : Soil |
| Date Collected | : 01/11/95 |
| Date Received | : 01/13/95 |
| Priority | : Rush |
| Collector | : Client |

AT HS 40-02

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | U | 0.610 | +/- 0.403 | 0.615 | 0.615 | pCi/g | 1.0 | MDS | 01/23/95 | 0753 | 59908 | 1 | 1 |
| Potassium-40 | U | 1.64 | +/- 4.56 | 7.52 | 7.52 | pCi/g | 1.0 | | | | | | |
| Radium-226 | | 1990 | +/- 3.45 | 1.19 | 1.19 | pCi/g | 1.0 | | | | | | |
| Radium-228 | U | 0.399 | +/- 1.58 | 2.55 | 2.55 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | U | 0.966 | +/- 0.817 | 1.18 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | | 1990 | +/- 3.45 | 1.19 | 1.19 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | U | 0.921 | +/- 0.807 | 1.17 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | U | 16.2 | +/- 21.2 | 26.5 | 26.5 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | -2.65 | +/- 2.65 | 4.37 | 4.37 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | U | 16.2 | +/- 21.2 | 26.5 | 26.5 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

| C = Container | Lab. Container ID | Reference ID |
|---|---|---|
| C 1 | 9501247-02.01 | JX0004101 |

HS: 40-02
N - 158816 cpm ← Peak N during HS Charac. 12/5/94
~~Spec - 8.4 K cpm~~ ? Bob

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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99968779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/JX

cc: BECH00394 Report Date: January 24, 1995 

Sample ID : JX00041 SFS

| C = Container | Lab. Container ID | Reference ID |
|---|---|---|

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon
Analytical Report Specialist

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87453 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller
Project Description: Cecil Field/JX

PSC 26
GRID #77

cc: BECH00394 Report Date: January 24, 1995 

| | |
|---|---|
| Sample ID | : JX00042 SFS |
| Lab ID | : 9501247-03 |
| Matrix | : Soil |
| Date Collected | : 01/11/95 |
| Date Received | : 01/13/95 |
| Priority | : Rush |
| Collector | : Client |

AT HS 77-01

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | U | 0.123 | +/- 0.178 | 0.269 | 0.269 | pCi/g | 1.0 | MDS | 01/23/95 | 0755 | 59908 | 1 | 1 |
| Potassium-40 | U | 0.336 | +/- 1.81 | 3.08 | 3.08 | pCi/g | 1.0 | | | | | | |
| Radium-226 | | 329 | +/- 1.67 | 0.531 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | U | -0.0271 | +/- 0.645 | 1.07 | 1.07 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.633 | +/- 0.300 | 0.434 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | | 329 | +/- 1.67 | 0.531 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.625 | +/- 0.297 | 0.450 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | U | 1.20 | +/- 6.90 | 10.9 | 10.9 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 1.29 | +/- 1.18 | 1.69 | 1.69 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | U | 1.20 | +/- 6.90 | 10.9 | 10.9 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

| C = Container | Lab. Container ID | Reference ID |
|---|---|---|
| C 1 | 9501247-03.01 | JX0004201 |

HS 77-01
γ- 157 350 cpm ← Peak γ during HS Charac. 12/20/95
~~[illegible]~~ ? [illegible]

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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/IX

cc: BECH00394

Report Date: January 24, 1995



| | | |
|---|---|---|
| | Sample ID | : JX00042 SFS |
| C = Container | Lab. Container ID | Reference ID |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Analytical Report Specialist

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# APPENDIX H

# MOAT SEDIMENT SAMPLE DATA

# NAVY RAC SED SAMPLING RECORD



npling Event: SEDIment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Unit |
|---|---|---|---|---|---|
| JX 000 24 | SEDIMENT | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 10:43<br>Interval End: 10:45 | | | |
|---|---|---|---|---|---|---|
| JX0002401 | GRAB | Collection Method Bucket Auger | 11-15-94 Date | Time | T. Rawlee By | |

Weather Conditions: Cloudy

Field Logbook(s)/Pgs. 1 #1 ES&H Jrnl(s)Pgs 23 SEIR No. JX-001

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | | |
| CYANIDE | 250 ML AMBER | NONE | | |
| METALS | 250 ML AMBER | NONE | | |
| ID ANAL | IC CONTAINER | NONE | JX ~~24~~ 0002401 | — |
| VOC | 125 ML | NONE 4°C | | |
| PAH | 8 oz. clear wide mouth | | | |
| | | | | |
| | | | | |
| | | | | |

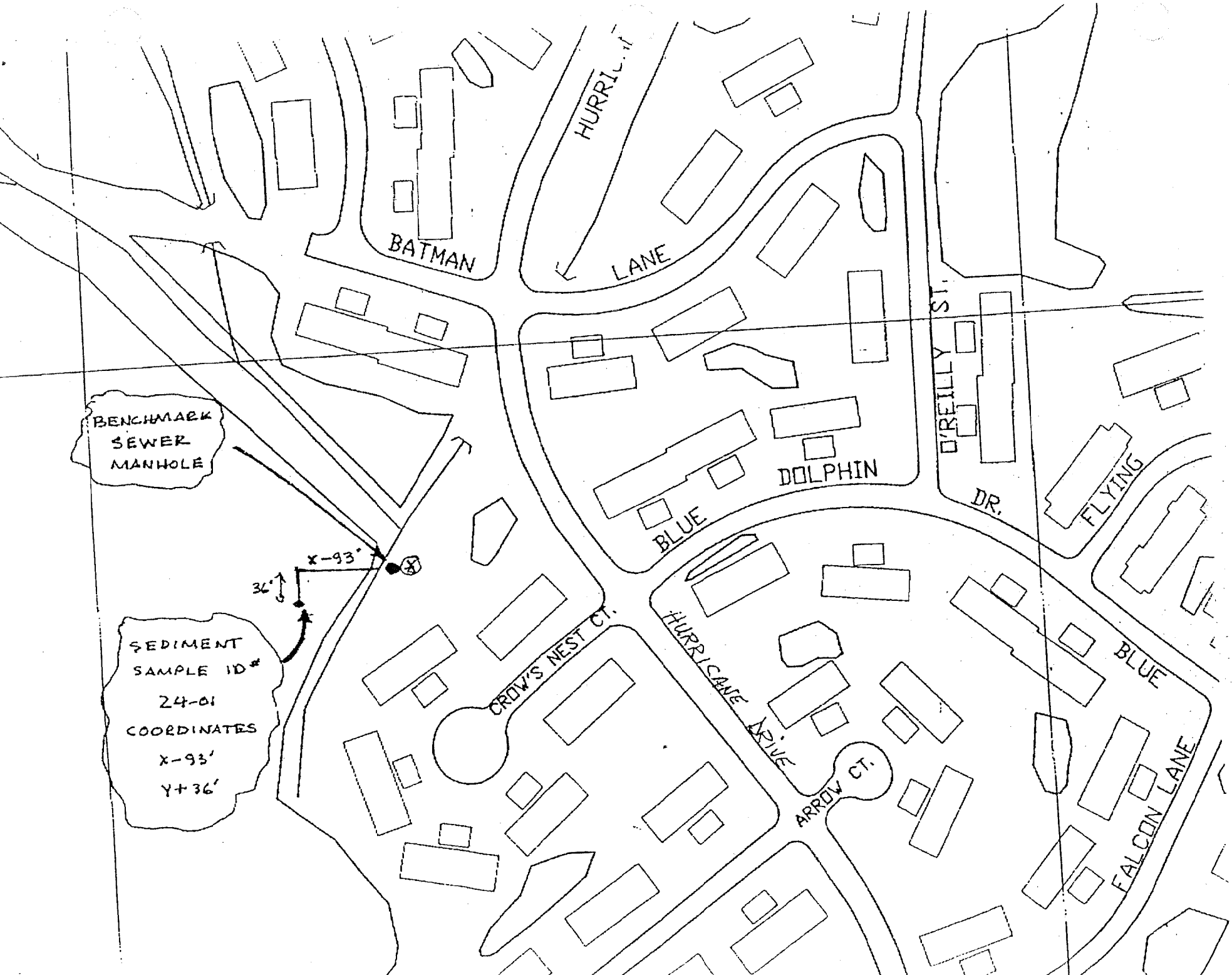
REMARKS: SEDIment Sample. ABB Selected Location. SSE of ~~DOB~~ TR PSC ~~TRO~~ TR

SAMPLE ID LOCATED AT BENCH MARK - SEWER MANHOLE ON HURRICANE DRIVE BETWEEN BATMAN LANE AND CROWS NEST CT.

COORDINATES X-93' Y+36'

Recorded By: T. Rountree Date 11-15-94 Checked and Reviewed By: Date

FM_0015


BATMAN
HURRI
LANE
O'REILLY ST.
DOLPHIN
BLUE
DR.
FLYING
BENCHMARK
SEWER
MANHOLE
X-93'
36'
SEDIMENT
SAMPLE ID#
24-01
COORDINATES
X-93'
Y+36'
CROW'S NEST CT.
HURRICANE DRIVE
ARROW CT.
BLUE
FALCON LANE

# GENERAL ENGINEERING LABORATORIES

*Meeting today's needs with a vision for tomorrow.*

Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

NEAR DSC 26

cc: BECH00394

Report Date: December 01, 1994



SAMPLE ID

ABB SELECTED SAMPLE

| | |
|---|---|
| Sample ID | : JX00024 SED |
| Lab ID | : 9411324-01 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | | 0.194 | +/- 0.0491 | 0.0347 | 0.100 | pCi/g | 1.0 | MDS | 11/22/94 | 1703 | 57406 | 1 |
| Potassium-40 | | 6.29 | +/- 0.674 | 0.398 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | | 1.14 | +/- 0.109 | 0.0638 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | | 1.30 | +/- 0.169 | 0.128 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 1.60 | +/- 0.0715 | 0.0523 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | | 1.14 | +/- 0.109 | 0.0638 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 1.59 | +/- 0.0710 | 0.0520 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 2.16 | +/- 0.826 | 1.05 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | J | 0.214 | +/- 0.165 | 0.179 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 2.16 | +/- 0.826 | 1.05 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC/PO | SEQ | SHT | SUBMTL |
|---|---|---|---|
| SC-001 | 0007 | | 1 |

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# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87453 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00024 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon

Analytical Report Specialist

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

# NAVY RAC SED SAMPLING RECORD



| Sampling Event: Sediment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1 |
|---|---|---|

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Uni |
|---|---|---|---|---|---|
| JX 00025 | sediment sample in moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 0850<br>Interval End: 0853 | | |
|---|---|---|---|---|---|
| JX 0002502 | ENVIRONmental | Collection Method Bucket Auger | 11-15-94 Date | — Time | T. Rountree By |

Weather Conditions: Cloudy, light drizzle

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)Pgs | SEIR No. |
|---|---|---|
| — / — | #1 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| METALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX0002502 | 01 Label came off in drizz |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | — | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: Taken in NE ~~quatr~~ TR quadrent of moat, in section ~~SL092~~ TR 90.

Grid #90 - Coordinates X-118' Y+97'

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| T. Rountree | 11-15-94 | | |

FM_0015

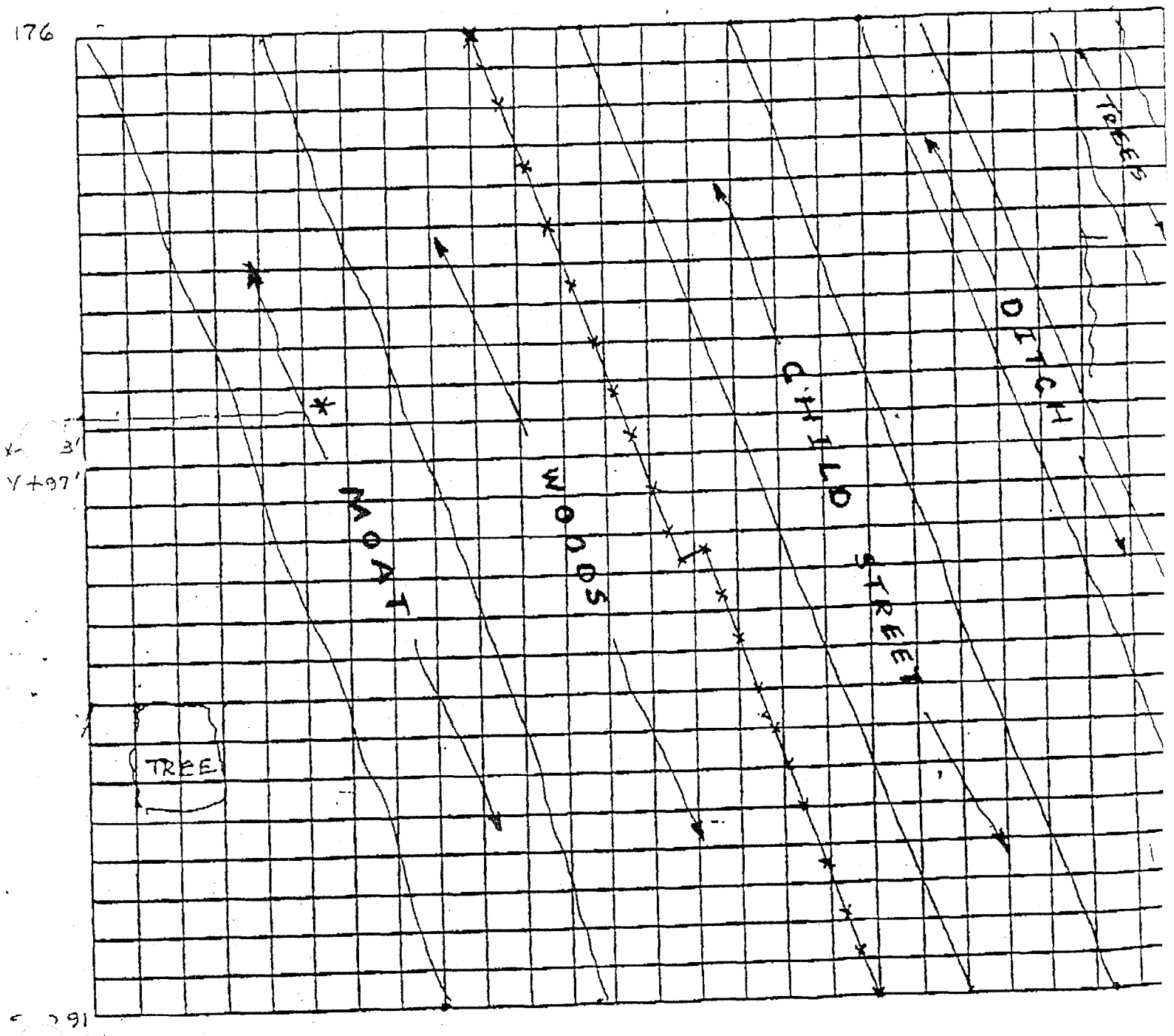
PAGE _____

# FIELD DATA ACQUISITION FORM
## WALKOVER GAMMA SCAN DATA SHEET

Grid # 90 Detector: _____ Technicians: _____

Scaler: _____ BKG _____

Conversion: _____ S/N: _____




Remarks SEDIMENT SAMPLING PERFORMED IN GRID #90. SAMPLE Z502

COORDINATES X-118' Y+97 REFER TO LOGBOOK JA-SD-001 PAGE 2

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 PSC 26 GRID # 90 

| | |
|---|---|
| Sample ID | : JX00025 SED |
| Lab ID | : 9411324-02 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | | 0.137 | +/- 0.0304 | 0.0290 | 0.100 | pCi/g | 1.0 | MDS | 11/23/94 | 1427 | 57406 | 1 | N |
| Potassium-40 | | 2.94 | +/- 0.474 | 0.301 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.444 | +/- 0.0809 | 0.0535 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.495 | +/- 0.136 | 0.0891 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.601 | +/- 0.0469 | 0.0413 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.444 | +/- 0.0809 | 0.0535 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.596 | +/- 0.0465 | 0.0409 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.38 | +/- 0.718 | 0.865 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0690 | +/- 0.0852 | 0.152 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.38 | +/- 0.718 | 0.865 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC/PO | SEQ | SHT | SUBMTL |
|---|---|---|---|
| SC-001 | 0007 | | 1 |

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00025 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigman

Analytical Report Specialist

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

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# NAVY RAC SED SAMPLING RECORD



Sampling Event: Sediment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX000 26 | Sediment sample in moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start / Interval End | Date | Time | By |
|---|---|---|---|---|---|---|
| JX0002601 | Field Duplicate ~~Field Normal~~ | — | 0812 / 0815 | 11-15-94 | — | T. Routtree |
| | | Collection Method: Bucket Auger | | | | |

Weather Conditions: Cloudy

Field Logbook(s)/Pgs. - 1 - | #1 | ES&H Jrnl(s)Pgs 26 | SEIR No. JX.001

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| METALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX0002601 | — |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: Field Duplicate of Sample JX00029. Located in section ~~58~~ 57 ~

Grid #57 - coordinates X-12' Y+2'

Recorded By: T. Routtree | Date 11-15-94 | Checked and Reviewed By: | Date

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

PSC 26
GRID # 57

cc: BECH00394

Report Date: December 01, 1994



| | |
|---|---|
| Sample ID | : JX00026 SEB |
| Lab ID | : 9411324-03 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

DUPLICATE OF MOAT SAMPLE
JX00029

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | U | 0.0140 | +/- 0.0175 | 0.0289 | 0.100 | pCi/g | 1.0 | MDS | 11/23/94 | 1430 | 57406 | |
| Potassium-40 | | 4.36 | +/- 0.477 | 0.286 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | J | 0.939 | +/- 0.0883 | 0.0528 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | J | 0.850 | +/- 0.133 | 0.0857 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 0.904 | +/- 0.0494 | 0.0409 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | J | 0.939 | +/- 0.0883 | 0.0528 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 0.897 | +/- 0.0490 | 0.0406 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 1.36 | +/- 0.727 | 0.809 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | J | 0.174 | +/- 0.106 | 0.148 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 1.36 | +/- 0.727 | 0.809 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC/PO | SEQ | SHT | SUBMTL |
|---|---|---|---|
| SC-001 | 0007 | | 1 |

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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
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| FL | E87156/87294 | E87472/874 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00026 SEB

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Analytical Report Specialist

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

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# NAVY RAC SED SAMPLING RECORD

Page _

| | | |
|---|---|---|
| Sampling Event: Sediment Sampling PSC 26 | Logbook JX-SD — 001 | Form ID - 1 of 1 |

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX000027 | Sediment Sample IN Moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 10:55<br>Interval End: 10:58 | | | |
|---|---|---|---|---|---|---|
| JX0002702 | Environmental | Collection Method Bucket Auger | 11-16-94 Date | Time — | T. Rountree By | |

Weather Conditions: Cloudy, Light drizzle

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)/Pgs | SEIR No. |
|---|---|---|
| — / — | #1 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| TALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX0002702 | 01 label lost Due to wet |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: Located in grid ~~SL06~~ TR Section 18

Grid #18 -- coordinates X-12.7' Y +-1'

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| T. Rountree | 11-15-94 | | |

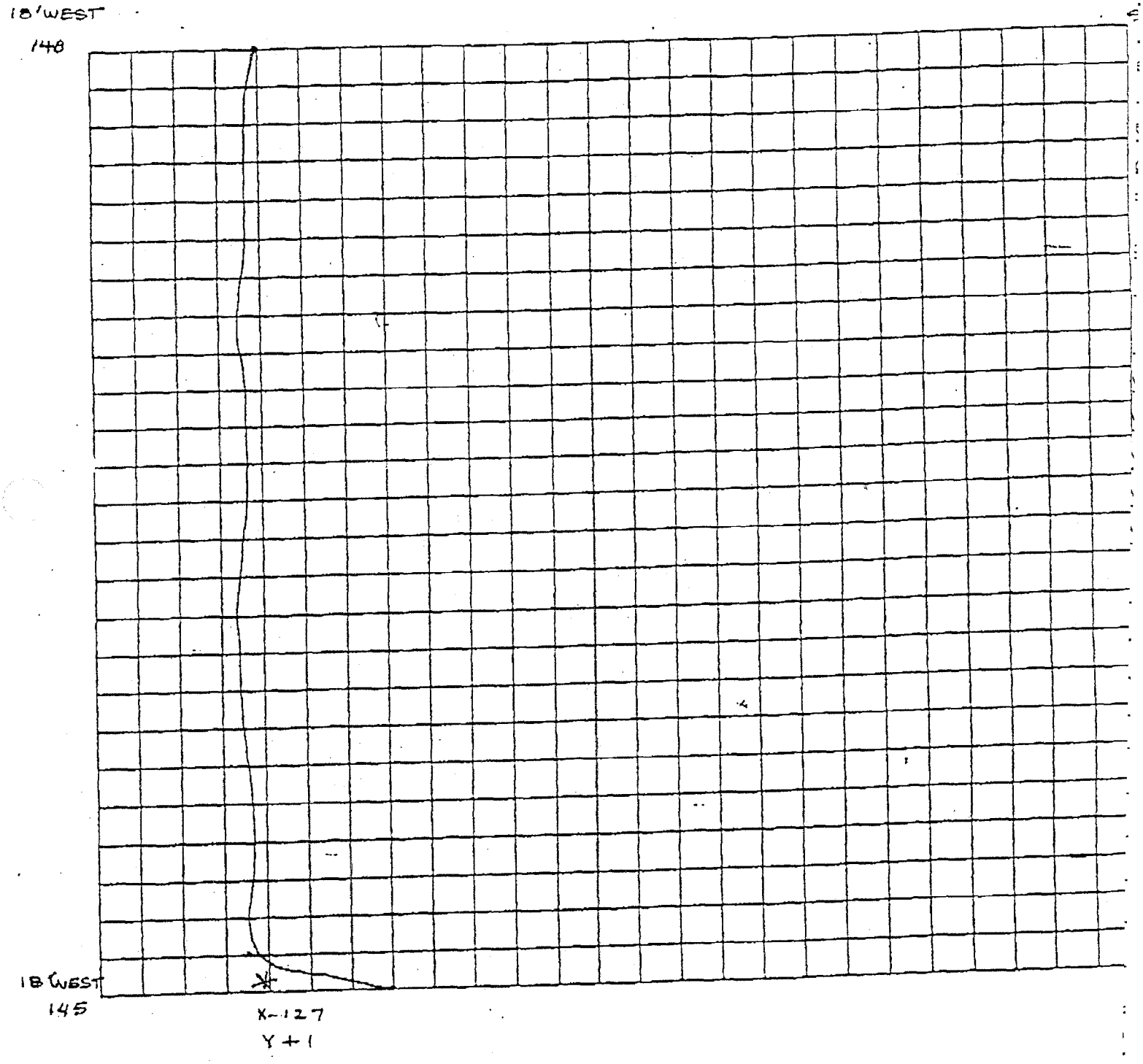
FM_0015

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

Grid # 18 Detector: _____ Technicians: _____

Scaler: _____ BKG _____

Conversion: _____ S/N: _____




Remarks SEDIMENT SAMPLING PERFORMED IN GRID # 18 SAMPLE ID # 2702

COORDINATES X- 127 Y + 1

REFER TO LOGBOOK JK-SD-001 PAGE 4

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994

PSC 26
GRID # 18



| | |
|---|---|
| Sample ID | : JX00027 SED |
| Lab ID | : 9411324-04 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | U | 0.00335 | +/- 0.0226 | 0.0392 | 0.100 | pCi/g | 1.0 | MDS | 11/23/94 | 1432 | 57406 | 1 |
| Potassium-40 | | 3.94 | +/- 0.664 | 0.325 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | J | 0.668 | +/- 0.146 | 0.0691 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | | 1.13 | +/- 0.221 | 0.117 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 0.978 | +/- 0.140 | 0.0537 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | J | 0.668 | +/- 0.146 | 0.0691 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 0.970 | +/- 0.139 | 0.0533 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 1.51 | +/- 0.909 | 1.16 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | U | 0.179 | +/- 0.161 | 0.200 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 1.51 | +/- 0.909 | 1.16 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00027 SED

M = Method Method-Description

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon
Analytical Report Specialist

NAVY RAC PROJECT 22567
BECHTEL ID NUMBER:
SC-001 - 0007 - - 1
SC/PO SEQ SHT SUBMTL

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# NAVY RAC SED SAMPLING RECORD



Sampling Event: Sediment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX 000 28 | Sediment Sample in moat | – | – | – | – |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 0823 Interval End: 0826 | | | |
|---|---|---|---|---|---|---|
| JX00028OL | Environmental | Collection Method Bucket Auger | 11-15-94 Date | – Time | T. Roontree By | |

Weather Conditions: Cloudy, Light Rain

Field Logbook(s)/Pgs. – / –  ES&H Jrnl(s)Pgs #1 Pg 23  SEIR No. JX.001

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | – | – |
| CYANIDE | 250 ML AMBER | NONE | – | – |
| METALS | 250 ML AMBER | NONE | – | – |
| RAD ANAL | IC CONTAINER | NONE | JX00028OZ | Label on lost due to weather |
| VOC | 125 ML | NONE 4°C | – | – |
| PAH | 8 oz. clear wide mouth | | – | – |
| | | | | |
| | | | | |
| | | | | |

REMARKS: Located in Section 80

COORDINATES X- 149' Y + 28'

Recorded By: Roontree  Date 11-15-94  Checked and Reviewed By:  Date

FM_0015

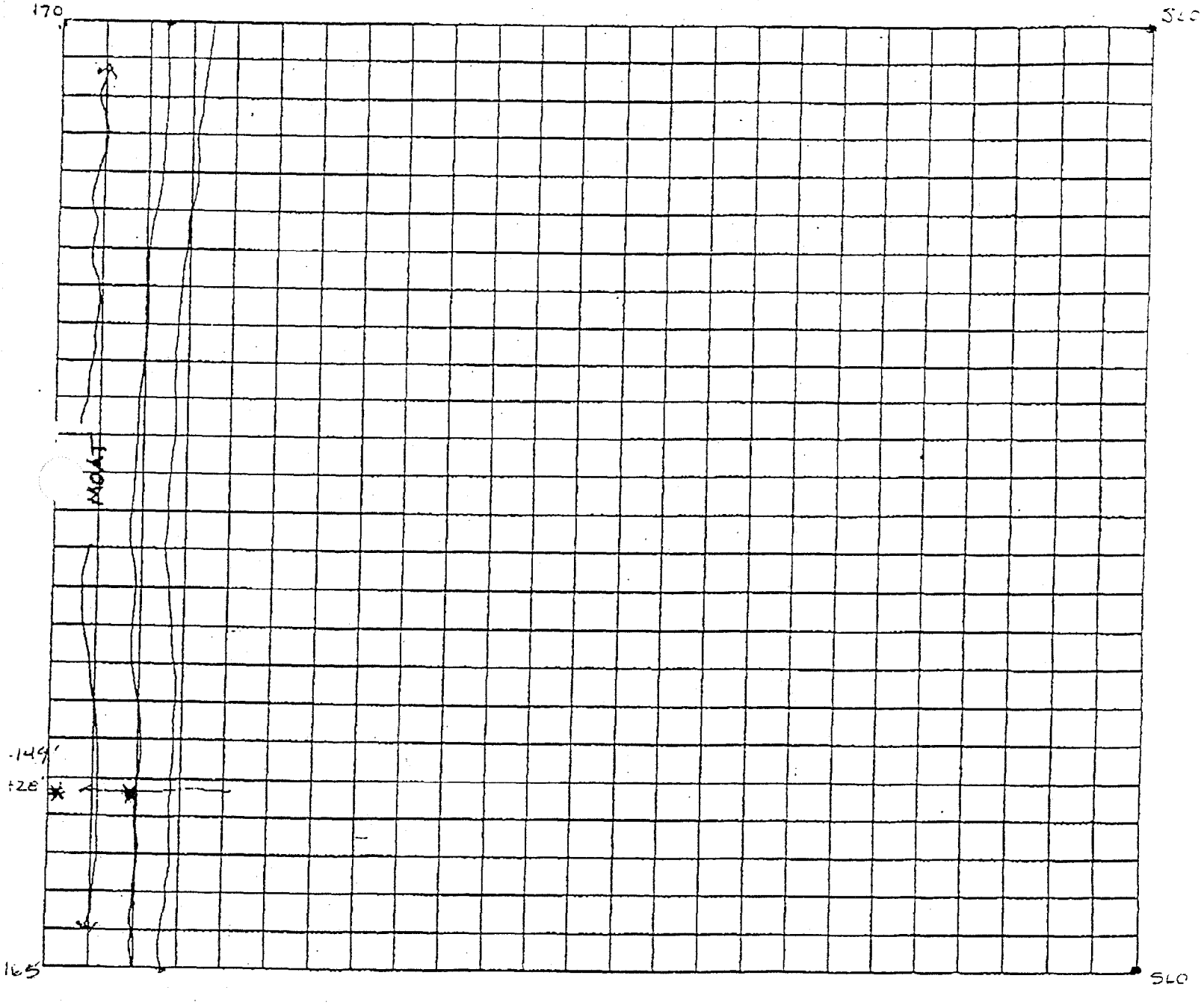
FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE _____

Grid # 80 Detector: _____ Technicians: _____

Scaler: _____ BKG _____

Conversion: _____ S/N: _____




Remarks SEDIMENT SAMPLING PERFORMED IN GRID # 80 SAMPLE ID # 2802

COORDINATES X-149' Y+28'

REFER TO LOGBOOK JX-SD-001 PAGE 45

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 PSC 26 GRID # 80 

Sample ID : JX00028 SED
Lab ID : 9411324-05
Matrix : Soil
Date Collected : 11/15/94
Date Received : 11/16/94
Priority : Rush
Collector : Client

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0382 | +/- 0.0316 | 0.0352 | 0.100 | pCi/g | 1.0 | MDS | 11/23/94 | 1435 | 57406 | 1 | N |
| Potassium-40 | | 3.30 | +/- 0.551 | 0.318 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.766 | +/- 0.147 | 0.0594 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.892 | +/- 0.198 | 0.114 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 1.04 | +/- 0.143 | 0.0438 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.766 | +/- 0.147 | 0.0594 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 1.03 | +/- 0.142 | 0.0434 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.46 | +/- 0.523 | 0.441 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.0940 | +/- 0.0975 | 0.167 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.46 | +/- 0.523 | 0.441 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC/PO | SEQ | SHT | SUBMTL |
|---|---|---|---|
| SC-001 | 0007 | | 1 |

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# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87455 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00030 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon

Analytical Report Specialist

NAVY RAC PROJECT 22567
BECHTEL ID NUMBER:
SC-001 — 0007 — — — 1
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# NAVY RAC SED SAMPLING RECORD



| | | |
|---|---|---|
| pling Event: Sediment Sampling PSC 26 | Logbook JY-SD-001 | Form ID - 1 of 1 |

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID. | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX 00031 | Sediment Sampling IN moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 1027<br>Interval End: 1030 | | | |
|---|---|---|---|---|---|---|
| JX00031 01 | ENVIRONMENTAL | Collection Method Bucket Auger | 11-15-94 Date | — Time | T. Rountree By | |

Weather Conditions: Cloudy

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)Pgs | SEIR No. |
|---|---|---|
| — 1 — | #1 Pg 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| ALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX00031 01 | — |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | — | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: ABB Located Sample.

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| Rountree | 11-15-94 | | |

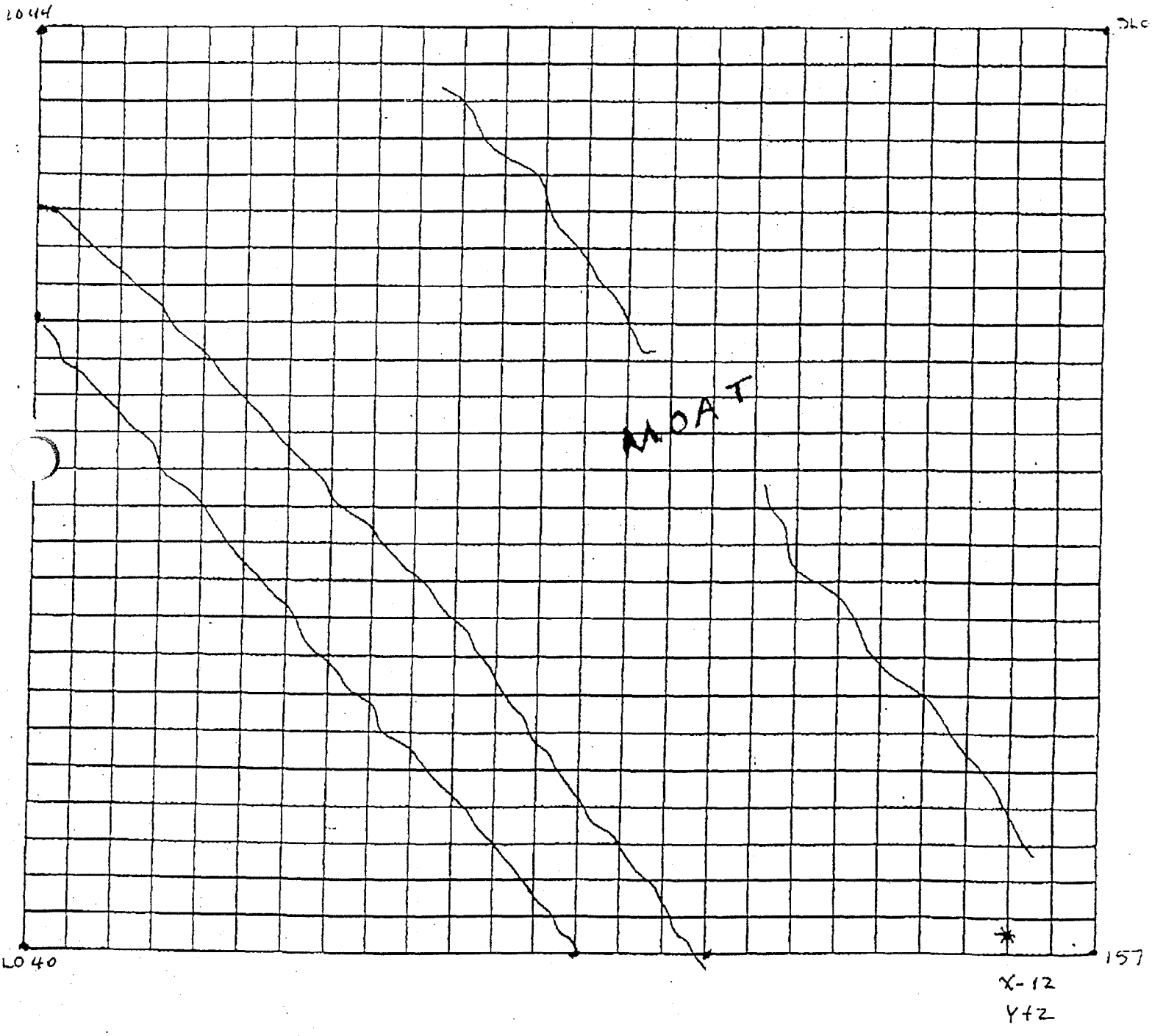
FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

PAGE _____

Grid # 57 Detector: _____ Technicians: _____

Scaler: _____ BKG _____

Conversion: _____ S/N: _____




Remarks SEDIMENT SAMPLING PERFORMED IN GRID #57. SAMPLE ID # 2601, 2901

COORDINATES X-12 Y+2

REFER TO LOG BOOK JX-SD-001 PAGES 3 & 6

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 PSC 26 GRID # 57 

Sample ID : JX00029 SED
Lab ID : 9411324-06
Matrix : Soil
Date Collected : 11/15/94
Date Received : 11/16/94
Priority : Rush
Collector : Client

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | U | -0.00258 | +/- 0.0200 | 0.0308 | 0.100 | pCi/g | 1.0 | MDS | 11/23/94 | 1437 | 57406 | 1 |
| Potassium-40 | | 4.78 | +/- 0.486 | 0.279 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | | 1.10 | +/- 0.0851 | 0.0530 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | J | 0.969 | +/- 0.131 | 0.114 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 0.986 | +/- 0.0525 | 0.0418 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | | 1.10 | +/- 0.0851 | 0.0530 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 0.977 | +/- 0.0521 | 0.0410 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 1.43 | +/- 0.912 | 0.992 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | U | 0.106 | +/- 0.122 | 0.156 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 1.43 | +/- 0.912 | 0.992 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300* |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567
BECHTEL ID NUMBER:
SC-001 _ 0007 _ _ _ 1
SC/PO SEQ SHT SUBMTL

# GENERAL ENGINEERING LABORATORIES

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00029 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon
Analytical Report Specialist

NAVY RAC PROJECT 22567
BECHTEL ID NUMBER:
SC-001 — 0007 — — — 1
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# NAVY RAC SED SAMPLING RECORD

Page 1

| Sampling Event: SEDiment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1 |
|---|---|---|

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX00030 | Sediment Sampling of moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 1137<br>Interval End: 1140 | | | |
|---|---|---|---|---|---|---|
| JX0003002 | environmental | Collection Method Bucket Auger | 11-15-94 Date | — Time | T. Rountree By | |

Weather Conditions: Cloudy, Light Rain

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)Pgs | SEIR No. |
|---|---|---|
| — / — | #1 Pg 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| ALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX0003002 | (01 Label Lost Due To Wea |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | — | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: ABB Located Sample.

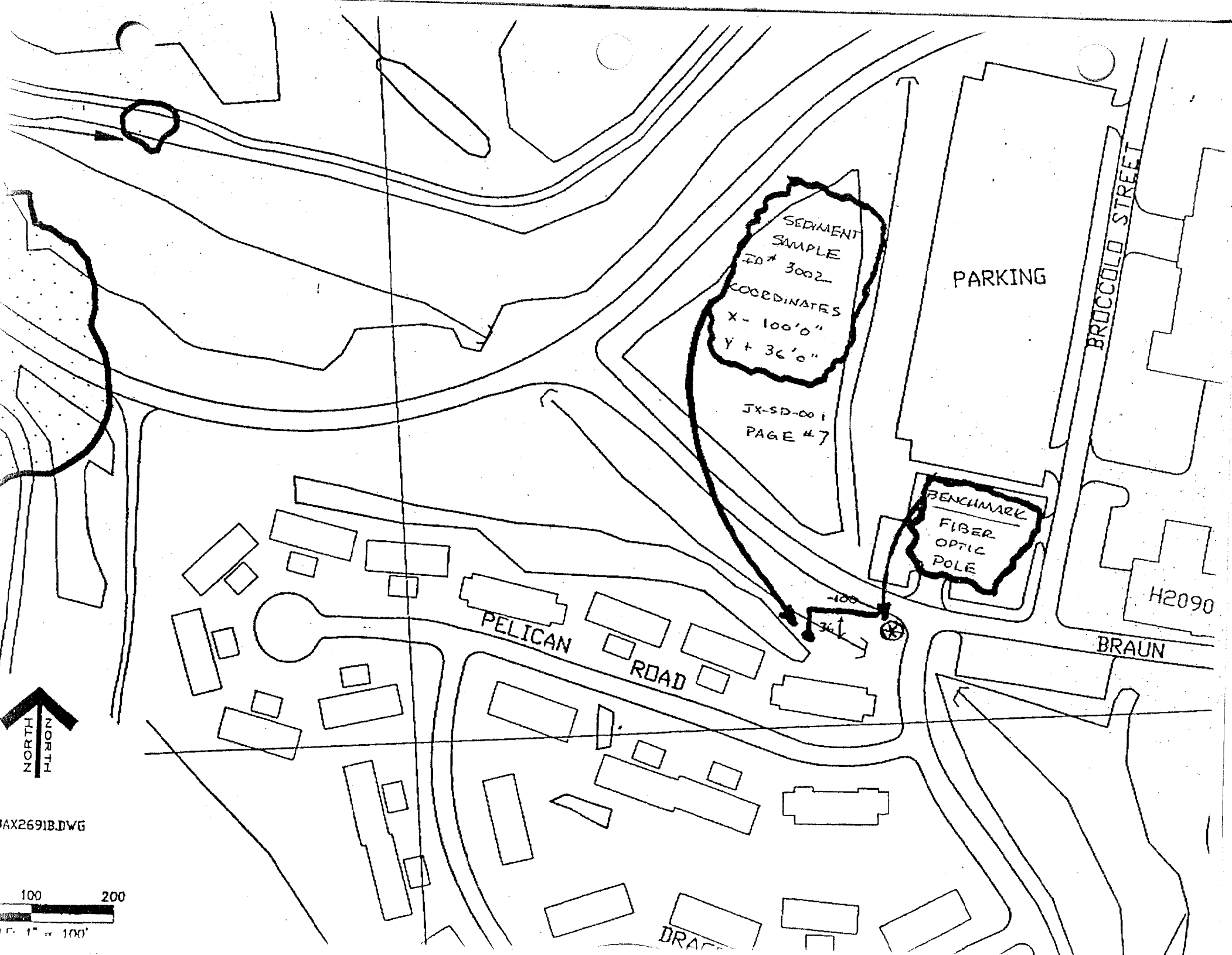
SAMPLE ID 3002 LOCATED AT BENCH MARK — FIBER OPTIC POLE

INTERSECTION HURRICANE / BRAUN.

COORDINATES X- 100' Y + 36'

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| T. Rountree | 11-15-94 | | |

FM_0015


SEDIMENT
SAMPLE
ID # 3002
COORDINATES
X - 100'0"
Y + 36'0"
JX-SD-001
PAGE #7
PARKING
BROCCOLO STREET
BENCHMARK
FIBER
OPTIC
POLE
-100
36
H2090
BRAUN
PELICAN
ROAD
NORTH
NORTH
AX2691B.DWG
100
200
1" = 100'

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

NEAR PSC 26

cc: BECH00394 Report Date: December 01, 1994 

| | |
|---|---|
| Sample ID | : JX00030 SED |
| Lab ID | : 9411324-07 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

ABB SELECTED SAMPLE

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | U | -0.0202 | +/- 0.0194 | 0.0319 | 0.100 | pCi/g | 1.0 | MDS | 11/27/94 | 1427 | 57406 | 1 |
| Potassium-40 | | 6.47 | +/- 0.596 | 0.282 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | | 1.02 | +/- 0.0920 | 0.0570 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | | 1.30 | +/- 0.185 | 0.107 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 1.42 | +/- 0.0646 | 0.0524 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | | 1.02 | +/- 0.0920 | 0.0570 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 1.40 | +/- 0.0638 | 0.0518 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 1.64 | +/- 0.986 | 1.07 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | U | 0.0804 | +/- 0.103 | 0.181 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 1.64 | +/- 0.986 | 1.07 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

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**Laboratory Certifications**

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87453 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00030 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Syson
Analytical Report Specialist

NAVY RAC PROJECT 22567
BECHTEL ID NUMBER:
SC-001 — 0007 — ____ — 1
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# NAVY RAC SED SAMPLING RECORD



Sampling Event: Sediment Sampling PSC 26 | Logbook JY-SD-001 | Form ID - 1 of 1

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX 00031 | Sediment Sampling IN moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection | Interval Start: 1027<br>Interval End: 1030 | | | |
|---|---|---|---|---|---|---|
| JX00031 01 | Environmental | Collection Method Bucket Auger | 11-15-94 Date | — Time | T. Rountree By | |

Weather Conditions: Cloudy

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)Pgs | SEIR No. |
|---|---|---|
| — 1 — | #1 Pg 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| ALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX00031 01 | — |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | — | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: ABB Located Sample.

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| T. Rountree | 11-15-94 | | |

FM 0015

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/3745 |
| NC | 233 | |
| SC | 10120 | 10532 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

PSC 26

cc: BECH00394 Report Date: December 01, 1994 

| | |
|---|---|
| Sample ID | : JX00031 SED |
| Lab ID | : 9411324-08 |
| Matrix | : Soil |
| Date Collected | : 11/15/94 |
| Date Received | : 11/16/94 |
| Priority | : Rush |
| Collector | : Client |

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | |
| Cesium-137 | U | 0.00539 | +/- 0.0165 | 0.0261 | 0.100 | pCi/g | 1.0 | MDS | 11/27/94 | 1428 | 57406 | 1 |
| Potassium-40 | | 2.69 | +/- 0.402 | 0.268 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-226 | J | 0.721 | +/- 0.0748 | 0.0455 | 1.00 | pCi/g | 1.0 | | | | | |
| Radium-228 | J | 0.752 | +/- 0.120 | 0.0843 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-228 | J | 0.723 | +/- 0.0432 | 0.0362 | 5.00 | pCi/g | 1.0 | | | | | |
| Thorium-230 | J | 0.721 | +/- 0.0748 | 0.0455 | 1.00 | pCi/g | 1.0 | | | | | |
| Thorium-232 | J | 0.714 | +/- 0.0427 | 0.0360 | 2.00 | pCi/g | 1.0 | | | | | |
| Thorium-234 | J | 2.74 | +/- 0.817 | 0.699 | 5.00 | pCi/g | 1.0 | | | | | |
| Uranium-235 | J | 0.192 | +/- 0.120 | 0.134 | 1.00 | pCi/g | 1.0 | | | | | |
| Uranium-238 | J | 2.74 | +/- 0.817 | 0.699 | 5.00 | pCi/g | 1.0 | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87455 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350

Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394

Report Date: December 01, 1994



Sample ID : JX00031 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara L. Signer
Analytical Report Specialist

NAVY RAC PROJECT 22567

BECHTEL ID NUMBER:

| SC-001 | 0007 | | 1 |
|---|---|---|---|
| SC/PO | SEQ | SHT | SUBMTL |

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# NAVY RAC SED SAMPLING RECORD



| Sa...ing Event: Sediment Sampling PSC 26 | Logbook JX-SD-001 | Form ID - 1 of 1 |
|---|---|---|

SAMPLING STATION ☐ Planned Coordinates ☒ Estimated ☐ Surveyed Coordinates

| Station ID | Station Type | Grid Plane | Northing | Easting | Units |
|---|---|---|---|---|---|
| JX00032 | Sediment Sample in moat | — | — | — | — |

SAMPLE

| Sample ID | Sample Type | Collection — | Interval Start: 1116 Interval End: 1119 | | |
|---|---|---|---|---|---|
| JX0003202 | environmental | Collection Method Bucket Auger | 11-15-94 Date | — Time | T. Rountree By |

Weather Conditions: Cloudy, light Rain

| Field Logbook(s)/Pgs. | ES&H Jrnl(s)Pgs | SEIR No. |
|---|---|---|
| — / — | #1 Pg 23 | JX.001 |

Container Information

| ANALYTES | CONTAINER | PRESSER | CONTAINER ID | COMMENT |
|---|---|---|---|---|
| BNAE/PEST/PCB | 250 ML AMBER | NONE | — | — |
| CYANIDE | 250 ML AMBER | NONE | — | — |
| ...ALS | 250 ML AMBER | NONE | — | — |
| RAD ANAL | IC CONTAINER | NONE | JX0003202 | 01 Label Lost Duct Weather |
| VOC | 125 ML | NONE 4°C | — | — |
| PAH | 8 oz. clear wide mouth | — | — | — |
| | | | | |
| | | | | |
| | | | | |

REMARKS: Located in Section ~~32~~ 32 ~~1~~

GRID # 32 COORDINATES X-148' Y+39.5'

| Recorded By: | Date | Checked and Reviewed By: | Date |
|---|---|---|---|
| Rountree | 11-15-94 | | |

FM_0015

FIELD DATA ACQUISITION FORM
WALKOVER GAMMA SCAN DATA SHEET

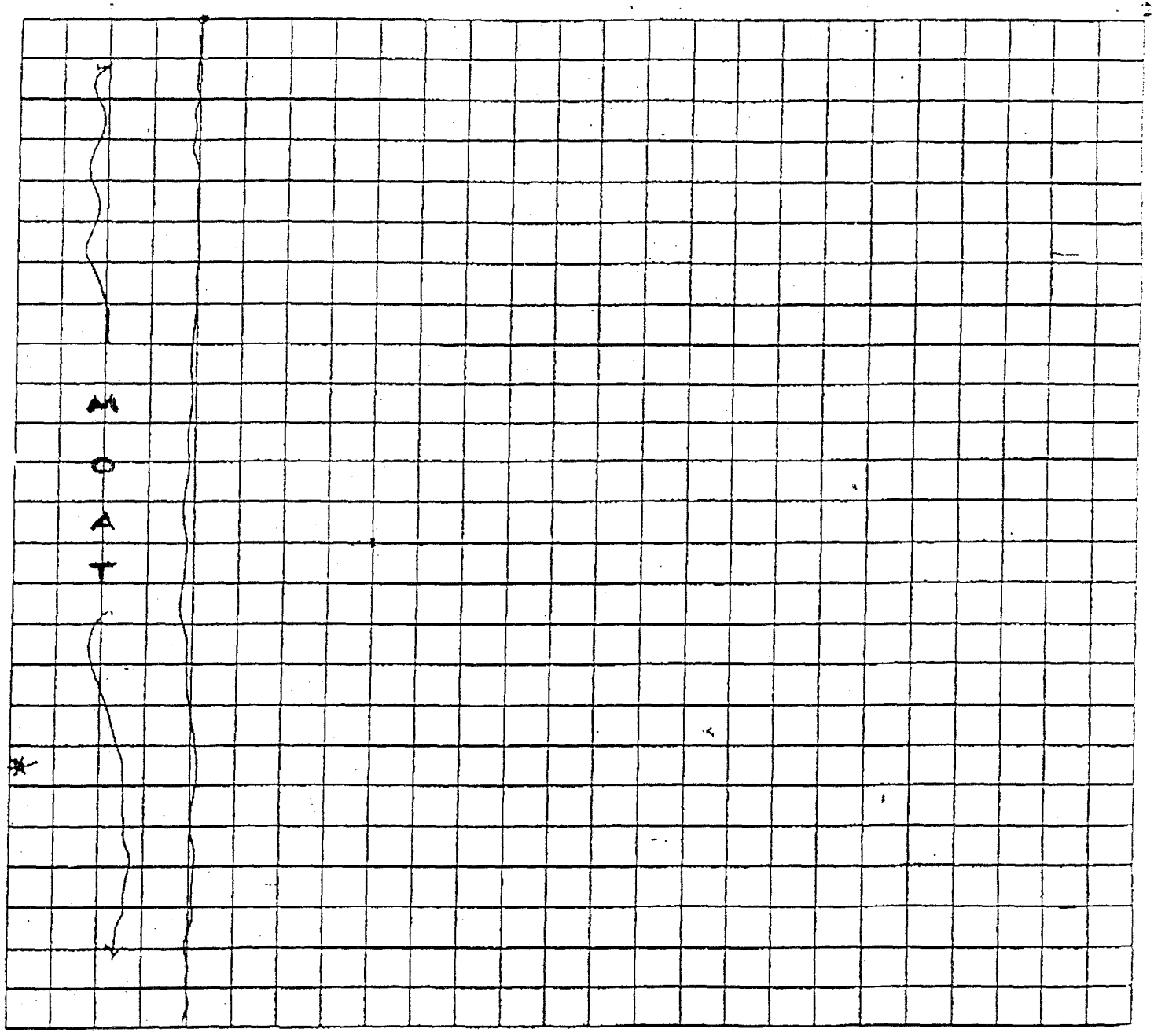
PAGE _____

Grid # 32 Detector: _____ Technicians: _____

Scaler: _____ BKG: _____

Conversion: _____ S/N: _____

152




151

Remarks SEDIMENT SAMPLING PERFORMED IN GRID # 32 SAMPLE ID # 32

COORDINATES X - 148' Y + 39.5'

REFER TO LOGBOOK JX-SD-001 PAGE 9

# GENERAL ENGINEERING LABORATORIES

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Laboratory Certifications

| STATE | GEL | EPI |
|---|---|---|
| FL | E87156/87294 | E87472/87458 |
| NC | 233 | |
| SC | 10120 | 10582 |
| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 PSC 26 GRID #32 

Sample ID : JX00032 SED
Lab ID : 9411324-09
Matrix : Soil
Date Collected : 11/15/94
Date Received : 11/16/94
Priority : Rush
Collector : Client

SAMPLE FROM MOAT

| Parameter | Qualifier | Result | | DL | RL | Units | DF | Analyst | Date | Time | Batch | M | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Radiological** | | | | | | | | | | | | | |
| *Gamma PHA - 10 items* | | | | | | | | | | | | | |
| Cesium-137 | J | 0.0522 | +/- 0.0335 | 0.0320 | 0.100 | pCi/g | 1.0 | MDS | 11/27/94 | 1441 | 57406 | 1 | N |
| Potassium-40 | | 1.80 | +/- 0.374 | 0.693 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-226 | J | 0.642 | +/- 0.141 | 0.0604 | 1.00 | pCi/g | 1.0 | | | | | | |
| Radium-228 | J | 0.954 | +/- 0.193 | 0.110 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-228 | J | 0.898 | +/- 0.129 | 0.0475 | 5.00 | pCi/g | 1.0 | | | | | | |
| Thorium-230 | J | 0.642 | +/- 0.141 | 0.0604 | 1.00 | pCi/g | 1.0 | | | | | | |
| Thorium-232 | J | 0.887 | +/- 0.128 | 0.0469 | 2.00 | pCi/g | 1.0 | | | | | | |
| Thorium-234 | J | 1.76 | +/- 1.10 | 1.07 | 5.00 | pCi/g | 1.0 | | | | | | |
| Uranium-235 | U | 0.139 | +/- 0.176 | 0.186 | 1.00 | pCi/g | 1.0 | | | | | | |
| Uranium-238 | J | 1.76 | +/- 1.10 | 1.07 | 5.00 | pCi/g | 1.0 | | | | | | |

| M = Method | Method-Description |
|---|---|
| M 1 | HASL 300 |

Notes:
The qualifiers in this report are defined as follows:
J indicates presence of analyte < RL (Report Limit)
U indicates presence of analyte < DL (Detect Limit)

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| TN | 02934 | |
| VA | 00151 | |
| WI | 99988779 | |

## CERTIFICATE OF ANALYSIS

Client: Bechtel
PO Box 350
Oak Ridge, Tennessee 37831-0350
Contact: Ms. Lori Keller

Project Description: Cecil Field/JX

cc: BECH00394 Report Date: December 01, 1994 

Sample ID : JX00032 SED

| M = Method | Method-Description |
|---|---|

This data report has been prepared and reviewed in accordance with General Engineering Laboratories standard operating procedures. Please direct any questions to your Project Manager, Winter Seibert at (803) 769-7388.

Barbara A. Sigmon
Analytical Report Specialist

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