

#### SHIELDALLOY METALLURGICAL CORPORATION

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040-07/02

DAVID R. SMITH ENVIRONMENTAL MANAGER NEWFIELD OPERATIONS

January 14, 2000

Ms. Marie Miller
U. S. Nuclear Regulatory Commission
Region I
Decommissioning and Laboratory Branch
Division of Nuclear Materials Safety
475 Allendale Road
King of Prussia, PA 19406-1415

Subject:

Demolition and Final Survey of AAF Baghouse

USNRC License SMB-743, Shieldalloy Metallurgical Corp.

Newfield, New Jersey

Dear Ms Miller:

Please find enclosed a copy of the report prepared for Shieldalloy Metallurgical Corporation (SMC) by our contractor, Integrated Environmental Management, Inc. regarding the subject demolition project. This report is being forwarded for your use and information. SMC will maintain a copy of this report on site for review during inspection.

If you have any questions about this matter please do not hesitate to contract me at (800) 762-2020 ext. 226 or via e-mail at <a href="mailto:dsmith@shieldalloy.com">dsmith@shieldalloy.com</a>.

Sincerely,

David R. Smith

cc:

w/o encl:

Nigel C. Morrison

Ellen T. Harmon, Esq.

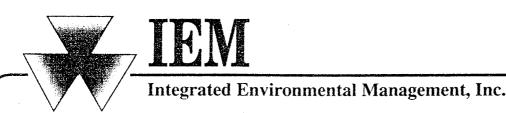
Carol Berger Jay Silberg Shieldalloy Metallurgical Corp.

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Distribute to:

Newfield Radiation Safety Committee members [HLN, SAD, JPV & FGM]



Demolition and Final Survey of the AAF Baghouse

Shieldalloy Metallurgical Corporation Report No. 94005/G-20187

# Demolition and Final Survey of the AAF Baghouse

#### Submitted to:

#### Shieldalloy Metallurgical Corporation

West Boulevard, Post Office Box 768 Newfield, New Jersey 08344 (856) 692-4200

by:

#### Integrated Environmental Management, Inc.

9040 Executive Park Drive, Suite 205 Knoxville, Tennessee 27923 (423) 531-9140

> Report No. 94005/G-20187 January 7, 2000

#### Page i

#### TABLE OF CONTENTS

INTI	RODUCTION	. 1
	Purpose	
	Scope	
FAC	ILITY INFORMATION	. 3
	Contaminants of Concern	. 3
	Release Criteria	
PRO	JECT APPROACH AND PROCEDURES	4
	Project Organization	
	Survey Objectives and Protocol	
	Radiation Safety Procedures	
	Data Conversion	
	Detection Limits	
	Measurement Uncertainty	
N ACTOR A	CUDENCENC DECLICAC	•
VILA	SUREMENT RESULTS	
	Background Determination	. 9
SUM	MARY AND CONCLUSIONS	10
TAB]	LES	11
	Table 1 - Site-specific Release Criteria	
	Table 2 - Survey Instrumentation Data	13
A PPI	ENDICES	11
	Appendix A - Personnel Qualifications	
	Appendix G. Instrument Beauty	20
	Appendix C - Instrument Records	
	Appendix D - Radiation Work Permit	
	Appendix E - Survey Results	
	Appendix F - Personnel Monitoring Records	30

#### INTRODUCTION

Shieldalloy Metallurgical Corporation (SMC) operates a facility located in Newfield, New Jersey. This facility manufactures or has manufactured specialty steel and super alloy additives, primary aluminum master alloys, metal carbides, powdered metals, and optical surfacing products. Raw materials currently used at the facility include beneficiated ores which contain oxides of columbium (niobium), vanadium, aluminum metal, titanium metal, strontium metal, zirconium metal, and fluoride (titanium and boron) salts. During the manufacturing process, the facility generates a variety of by-products that have commercial application.

SMC is licensed by the U. S. Nuclear Regulatory Commission (USNRC) to ship, receive, possess, use, and store source material pursuant to License No. SMB-743. The primary forms of source material currently present at the site include ores used as feed to metallurgical operations, byproduct slag, and baghouse dust. The byproduct slag is being marketed to the steel industry as a synthetic slag fluidizer.

#### **Purpose**

Ferrocolumbium production is performed within a single building, called "D111". This building is equipped with an operator control room, mechanical booms and heavy equipment handlers, storage containers, scales, a variety of melting pots, two furnaces, other miscellaneous items, and a dust collection system comprised of two interconnected emission control units with high-efficiency baghouses.

One of the emission control units is an American Air Filter baghouse, termed the "AAF Baghouse" in our March 25th application. This unit also accepts effluent air from the D111 furnaces at pressure. The air enters the collector through the inlet air valves, and is passed up through the Dacron filter tubes where particulates are filtered out. The air leaving the tubes passes through a clean air plenum and is discharged to the atmosphere through a roof vent that runs the full length of the baghouse.

During D111 production activities, the AAF Baghouse may be operated independently or in conjunction with the second emission control unit. The second unit is termed the "Flex-Kleen Baghouse".

Because of improvements made to the air handling system in the immediate vicinity of the smelting operation, and because maintenance performed on the Flex-Kleen Baghouse in 1998 and 1999 improved its efficiency, it was no longer necessary to operate the two emission control systems in tandem in order to achieve effective air handling/cleaning. Therefore, in light of the difficulties and expense in monitoring emissions from the AAF Baghouse, and because its failure notification



methods were inferior to those associated with the Flex-Kleen Baghouse, the decision was made to bypass the AAF Baghouse during D111 smelting operations.<sup>1</sup>

The radioactivity contained within the AAF Baghouse is of relatively low concentration (i.e., far less than 0.05% uranium and thorium by weight).<sup>2</sup> However, in spite of the fact that its use was no longer necessary, small but unnecessary personnel radiation exposures would occur during routine structural maintenance and repair. Because SMC is committed to the ALARA concept in all operations performed at the Newfield, New Jersey facility, the decision was made to remove this emission control unit from D111.

During the remedial action, which took place between May 17 and June 17, 1999, the AAF Baghouse was disassembled. Waste items and materials that were generated during the disassembly were surveyed as they were disassembled to determine whether they could be released for unrestricted use (i.e., without regard for radiological constituents). Those items that did not meet the pre-determined release criteria were decontaminated and re-surveyed, or controlled as a radioactive material.

#### Scope

The disassembly and final survey of the AAF Baghouse and ancillary equipment was performed following the guidance contained in the SMC Radiation Safety Procedures (RSPs) and applicable Integrated Environmental Management (IEM) RSPs. This final survey report contains a summary of the project and its methods, a listing of all data acquired, and a comparison of findings to the pre-determined release criteria.

<sup>&</sup>lt;sup>2</sup> Integrated Environmental Management Report No. 94005/G-7120, "Technical Basis for the Use of Baghouse Dust as an Additive in Cement Production", June 17, 1996.



<sup>&</sup>lt;sup>1</sup> Report No. 94005/G-6131, "Radiation Dose Estimates from Atmospheric Emissions from the Newfield Facility", March 11, 1997.

. Page 3

#### **FACILITY INFORMATION**

#### Contaminants of Concern

SMC is licensed to possess uranium and thorium in any form suitable for transport under Department of Transportation regulations. Previous studies of the radionuclide content of the materials typically found at the site are indicative of a natural distribution of the radioactive progeny of these series radionuclides. Therefore, the contaminants of concern for the demolition of the AAF Baghouse included <sup>232</sup>Th plus progeny in equilibrium and <sup>238</sup>U plus progeny in equilibrium.

#### Release Criteria

Radiation Safety Procedure No. RSP-009, "Contamination Control" contains the release criteria for the equipment and material surfaces at the Newfield facility. The criteria applicable to this project are shown in Table 1.

#### PROJECT APPROACH AND PROCEDURES

#### **Project Organization**

Health physics activities during this project were managed, on behalf of SMC, by Mr. Alan Duff, R.R.P.T., an employee of **IEM**.<sup>3</sup> During performance of the dismantlement, Mr. Duff was responsible for designating the temporary restricted areas in which work was performed, directing the work of other support staff, performing the survey activities, and after disassembly was complete, preparing this report. Mr. Duff is qualified as a "Radiation Surveyors" pursuant to Shieldalloy Metallurgical Corporation Radiation Safety Procedure No. RSP-006, "Training and Qualification of Radiation Personnel".

Radiological surveys were also performed by Mr. Ronn Merkel. In Mr. Duff's absence, Mr. Merkel provided other health physics support to the project. Mr. Merkel is also qualified pursuant to RSP-006.

Technical oversight for the project was the responsibility of Ms. Carol Berger, C.H.P., also an employee of **IEM**. Ms. Berger reviewed and approved all project plans, assisted in the review of the quality of data collected and in the preparation of the this report, and provided an interface between SMC and project personnel.

Appendix A contains a summary of the qualifications of all **IEM** project personnel. Appendix B contains the Field Activity Daily Logs maintained by **IEM** while on-site.

Representatives of SMC observed some or all of the demolition and survey activities while they were on-going. In addition, SMC was given an opportunity to review and comment on a draft before this final survey report was issued.

#### Survey Objectives and Protocol

Instrumentation used to acquire measurement data was appropriate for the type of radiation expected, of sufficient sensitivity and accuracy to detect the radioactive materials found at the SMC facility, and of sufficient quantity to support the activities. Each instrument was labeled with a unique identifier (e.g., serial number of detector and rate meter) to enable traceability between instrument and survey records. Table 2 contains a listing of each instrument type, its use during performance of the final status surveys, and its nominal background response, and detection efficiency. Additional details on the type, calibration and use of the instruments may be found in Appendix C.

<sup>&</sup>lt;sup>3</sup> Summit Compliance was contracted by SMC to perform the AAF Baghouse demolition operations. Mr. Robert Bennett of Summit acted as the field project manager throughout the project. A crew of up to four (4) Summit employees were utilized during the project to perform the disassembly operations.



Prior to the start of work in each day, the performance of each instrument was evaluated pursuant to RSP-008, "Instrumentation". Appendix C contains the daily instrument check forms, including the measured background values.

Measured contamination levels at the work site were compared with the release criteria shown in Table 1. One hundred percent of the surfaces of the disassembled items were scanned by moving the detector at a rate of one to two inches per second with the detector in close proximity to the surface (i.e., within a few millimeters). When the health physics technician detected elevated activity (i.e., count rates above background) in a particular location, he would pause and obtain a stationary count in that location. Any area exhibiting residual radioactivity above the applicable criterion was marked, remediated, and re-surveyed.

#### Radiation Safety Procedures

Health and safety provisions were established to permit the disassembly project to be conducted without adverse impacts on worker health and safety. SMC Radiation Safety Procedures (RSPs) and applicable IEM RSPs were utilized as the primary guidance documents for this project on matters of radiation safety. The topics from these procedures that were applicable to this project included, but were not limited to:

- Work area entry (access control);
- Control of radiological work;
- Radiation safety training;
- Emergency procedures;
- ALARA provisions;
- Contamination controls;
- Protective clothing;
- Personnel Monitoring
- Non-radiological hazards;
- Use of instrumentation; and
- Survey methods.

A Radiation Work Permit (RWP) was prepared and approved for implementation prior to the start of work. A copy of the RWP is contained in Appendix D. Personnel performing the demolition operations were breathing zone air (BZA) samplers to monitor their internal exposure.

#### Baghouse Disassembly

The baghouse was disassembled between May 17 and June 17, 1999. The first steps in the disassembly involved the removal of the remaining baghouse dust and the filter bags from the baghouse. The bags were disconnected from the chains that supported them and lowered into a dump truck positioned adjacent to the baghouse. Residual baghouse dust was swept from ledges and horizontal surfaces inside the baghouse and vacuumed out with a vacuum truck equipped with a dust collection system and HEPA filtered exhaust. Both the bags and the baghouse dust were transported to the storage yard and placed on the existing baghouse dust pile.

The internal surfaces of the baghouse were surveyed for residual alpha activity prior to the dismantlement of the baghouse. No areas of contamination that exceeded the release criteria were noted on the internal surfaces of the baghouse with the exception of some isolated areas on support beams, hoppers, and the hatch door. These areas were all successfully decontaminated, resurveyed, and released for conventional disposal/recycling.

A silo adjacent to the baghouse also contained baghouse dust. The bottom of the silo was removed with a cutting torch and the contents were placed into a dump truck for transport to the Storage Yard. The silo was then cut from its support beams and lowered to ground level with a crane for survey and further disassembly. No contamination in excess of the release criteria were noted with the exception of some support beams. These were successfully decontaminated, re-surveyed and released for conventional disposal/recycling.

Ventilation ducts that connected D111 to the AAF baghouse were disconnected from the roof of D111 and lowered to the ground using a crane. Once on the ground, the ducts were surveyed and found to contain no residual radioactivity above the release criteria. They were subsequently cut apart using a cutting torch and staged for conventional disposal/recycling.

The baghouse itself was disassembled using a trackhoe equipped with a grapple attachment. As pieces were removed, each was surveyed to ensure any newly-exposed surfaces met the release criteria. The concrete pad that provided support to the baghouse was left in place.

#### Data Conversion

Total (fixed plus removable) contamination data were converted to the units of net activity by the following methodology:

$$A_{total} = \frac{cpm - BKG_{ave}}{E} \times \frac{100}{A}$$

where  $A_{total}$  = the total surface activity (dpm/100 cm<sup>2</sup>), cpm = the counts per minute measured by direct survey, BKG<sub>ave</sub> = the average background count rate for this measurement methodology



(cpm), E = detection efficiency of the instrument used (counts per disintegration), and A = the active surface area of the detector (cm<sup>2</sup>).

The removable surface contamination data were converted to units of net activity by the following methodology:

$$A_{removable} = \frac{cpm - BKG_{ave}}{E}$$

where  $A_{removable}$  = the removable surface activity (dpm/100 cm<sup>2</sup>).<sup>4</sup> For this case, the background consisted of clean (unused) smears counted in the same counter.

Ambient gamma exposure rate data were converted to units of net exposure rate by the following methodology:

$$R_{net} = R_{aross} - BKG_{ave} \times CF$$

where  $R_{net}$  = the net measured exposure rate ( $\mu R/hr$ ),  $R_{gross}$  = the gross measured exposure rate ( $\mu R/hr$  or cpm), and CF = an optional conversion factor to convert count rate instrument readings into units of " $\mu R/hr$ " if instrument read-outs were in "counts per minute". A similar conversion was used for measurements of total (fixed plus removable) beta/gamma surface contamination.

Personnel air monitoring was performed pursuant to RSP-008, "Instrumentation". Once the filters were counted, the results were converted into personnel exposures, in units of DAC-hours, by:

$$E (DAC-hours) = \frac{\frac{A_t}{V} \times t}{DAC}$$

where  $A_f$  = the alpha activity on the air filter ( $\mu$ Ci), V = the volume of air drawn through the filter (millilters), t = the duration of monitoring, and DAC = the Derived Air Concentration (DAC) as shown in License No. SMB-743.

#### **Detection Limits**

The detection limit for surface activity measurements (counts) acquired over a pre-set time period was determined by the following methodology:

$$MDA = \frac{2.71 + 4.65 \sqrt{BKG_{ave} \times t}}{t \times E \times \frac{A}{100}}$$

where MDA = the activity level (dpm/100 cm<sup>2</sup>),  $BKG_{ave}$  = the background count rate for this measurement type (cpm), A = the detector area (cm<sup>2</sup>), and t = the measurement count time (min).

<sup>&</sup>lt;sup>4</sup> If the area smeared is less than 100 cm<sup>2</sup>, the result will be recorded as "dpm per smear".

The MDA for an instrument operating in the ratemeter mode (e.g., for surface activity measurements or ambient exposure rates) was determined by:

$$MDA = \frac{4.65 \sqrt{\frac{BKG_{ave}}{2t_c}}}{E \times \frac{A}{100}}$$

where t<sub>c</sub> = the meter time constant (min). Alternatively, the detection limits for scanning measurements can be approximated, based upon an audibly discernable increase in count rate by the following methodology:

$$MDA = \frac{R_a \times B_{ave}}{E \times \frac{A}{100}}$$

where  $R_a$  = the audibly discernable increase in instrument response by the individual surveyor.

#### Measurement Uncertainty

The rate of radioactive decay is not constant with time and is therefore described by a Poisson probability distribution. Based on such a distribution, the best estimate of the standard deviation (s) on a number of counts (c) is the square root of the counts. Likewise, the standard deviation in a count rate over the count time (t) is:

$$s_r = \frac{\sqrt{C}}{t}$$

For the measurements conducted during these surveys, the number of counts due only to background will be a significant portion of the total counts. Thus the uncertainty (s<sub>i</sub>) associated with the background was taken into account by:

$$s_r = \sqrt{\frac{c}{t^2} + \frac{BKG_{ave} \times t_{BKG}}{(t_{BKG})^2}}$$

where  $BKG_{ave}$  = the mean background count rate, and  $t_{BKG}$  = the time period over which the background counts were acquired.

#### **MEASUREMENT RESULTS**

#### **Background Determination**

Background measurements were obtained in unaffected areas of the SMC facility in accordance with **IEM** Radiation Safety Procedure No. RSP-018, "Surveillance" These ranged from three (3) to eight (8) counts per minute (alpha) with the Ludlum Model 2224 ratemeter/scalers with the Model 43-89 detectors. Background values for the Bicron Microrem gamma survey instrument averaged six (6) to seven (7) microrem per hour. Appendix C contains the results of the background determinations.

#### Residual Contamination

Appendix E contains the results of contamination surveys of the materials and equipment removed from the AAF Baghouse, and the concrete pad that held it. Pieces that were monitored during disassembly were, for the most part, free of residual radioactivity above the release criteria. Some pieces of the support structure were found to contain up to a maximum level of 3,300 dpm/100 cm² (alpha). These pieces, and all others that exceeded the release criteria, were pressure washed to remove the contamination, re-surveyed, and released for conventional disposal/recycling.

With one exception, all pieces of the baghouse and its support structure were verified to meet the release criteria, and were thus released for conventional disposal/recycling. The exception was one piece of equipment, a small hopper from the top of the silo. This item was transferred to the Storage Yard, where it will be addressed at a later date.

The concrete pad that supported the baghouse and its associated ventilation equipment was surveyed and found to contain residual beta activity up to 19,800 dpm/100 cm² beta. Because smears of the concrete pad were negative for the presence of removable alpha activity, the residual radioactivity on the pad is fixed to the surface.

#### **Personnel Monitoring**

Appendix F contains the records of personnel (air) monitoring for those individuals who participated in the demolition of the AAF Baghouse. All analytical results were less than the nominal detection limit of the counting/measurement system. Individual exposure estimates were incorporated into the SMC dosimetry record files pursuant to RSP-004, "Radiation Protection Records".



#### SUMMARY AND CONCLUSIONS

Between May 17 and June 17, 1999, the AAF Baghouse was emptied of filter bags and baghouse dust, disassembled, and decontaminated, as necessary. With few exceptions, surveys of the disassembled baghouse demonstrated that it could be released for unrestricted use. The exceptions included the residual baghouse dust, filter bags, and a few disassembled pieces.

In addition, the cement pad that held the former baghouse was also found to contain fixed activity above the release criteria. This area will be surveyed on a planned and periodic basis as part of the routine surveillance activities for D111. It will be posted as a "radioactive materials area" and eventually remediated when D111 is decommissioned.

SHIELDALLOY METALLURGICAL CORPORATION
"Demolition and Final Survey of the AAF Baghouse"
January 7, 2000

Page 11

**TABLES** 

#### Table 1 - Site-specific Release Criteria

ТҮРЕ	NUCLIDE <sup>1</sup>	REMOVABLE <sup>2,4</sup>	TOTAL <sup>2,3</sup> (FIXED PLUS REMOVABLE)
Surface	U-nat, U-235, U-238 and associated decay products	1,000 dpm α/100 cm² above background	5,000 dpm α/100 cm² above background
Surface	Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I- 133	200 dpm/100 cm² above background	1,000 dpm α/100 cm² above background
Surface	Mixture of U-nat and Th-nat		600 dpm α/100 cm² by <i>direct</i> frisk above background <sup>5</sup>
Surface	Mixture of U-nat and Th-nat		3000 dpm α/100 cm² fixed above background

 $<sup>^{1}</sup>$  Where surface contamination by both  $\alpha$  and  $\beta$ -gamma-emitting radionuclides exists, the limits established for  $\alpha$  and  $\beta$ -gamma-emitting radionuclides should apply independently.



<sup>&</sup>lt;sup>2</sup> As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>&</sup>lt;sup>3</sup> The levels may be averaged over 1 m², provided the maximum surface activity in any area of 100 cm² is less than three times the guide values. For purposes of averaging, any square meter of surface shall be considered to be above the activity guide  $\underline{G}$  if: (1) from measurements of a representative number (n) of sections it is determined that  $1/n \sum_n S_i \ge G$ , where  $S_i$  is the dis/min-100 cm² determined from measurement of section 1; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm² area exceeds 3G.

<sup>&</sup>lt;sup>4</sup> The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. (Note - The use of dry material may not be appropriate for tritium.) When removable contamination on objects of surface area less than 100 cm<sup>2</sup> is determined, the activity per unit area should be based on the actual area and the entire surface should be wiped. Except for transuranics and Ra-226, Ra-228, Ac-227, Th-230, and Pa-231 α emitters, it is not necessary to use wiping techniques to measure removable contamination levels if direct scan surveys indicate that the total residual surface contamination levels are within the limits for removable contamination.

<sup>&</sup>lt;sup>5</sup> Assumes removable activity is the limiting value.

<sup>&</sup>lt;sup>6</sup> Activity must be shown to be not removable activity.

#### **Table 2 - Survey Instrumentation Data**

INSTRUMENT MODEL	DETECTOR	USE	NOMINAL BACKGROUND	DETECTION EFFICIENCY
Bicron Microrem	Internal gamma scintillation detector	Walkover gamma survey	urem/hr	N/A
Ludlum Model 2224 scaler/ratemeter	Ludium Model 43-89 dual alpha/beta contamination	Contamination surveys of items for unrestricted release	Alpha- 3 cpm or less  Beta- 300 cpm or less (10 uR/hr field)	17% alpha (Th-230)
Eberline SAC-4	Alpha scintillation	Alpha smear counting	Typically 0-5 cpm or less	<sup>-</sup> 30% alpha (Th-230)

**APPENDICES** 



Appendix A - Personnel Qualifications



#### R. Alan Duff - Lead Health Physics Technician

#### **Professional Qualifications**

Mr. Duff has over twenty years of experience in nuclear and hazardous materials project management, design support, surveillance, operational health physics, training, and decommissioning activities. He has prepared numerous plans, procedures, and license documents for U. S. Department of Energy facilities, U. S. Department of Defense facilities, U. S. Nuclear Regulatory Commission licensees, and commercial client facilities that are regulated by agreement states. Mr. Duff is well versed in the area of civilian and government radioactive and mixed waste transport and disposal requirements. He is registered by the National Registry of Radiation Protection Technologists (NRRPT).

#### Education

Advanced Radioactive Material Transportation and Disposal Class, 1989 and 1993

IT Corporation Project Management Course (40 hours), 1992.

40-Hour OSHA HAZWOPER (29 CFR 1910.120) Training, 1987.

Eight-hour Supervisor Training, 1990

Eight-hour OSHA Annual Refresher (29 CFR 1910.120), 1997.

Canberra Multichannel Analyzer Operations Class, 1988.

Operational Water Chemistry and Radiological Controls, U.S. Navy, 1982

Engineering Laboratory Technician School, U.S. Navy, 1980.

Nuclear Power Training Unit (prototype), U.S. Navy, 1980.

Naval Nuclear Power School, U.S. Navy, 1978.

#### Registrations/Certifications

Registered Radiation Protection Technologist (RRPT), National Registry of Radiation Protection Technologists

#### Experience and Background

Present Project Manager, Integrated Environmental Management, Inc., Knoxville, Tennessee.

Present Provides high-quality project management and remediation services to commercial and government clients. As a member of the client's response team, works with clients to:

Develop scopes-of-work and bid packages for specialty subcontractors handling highly focused assignments; identify those subcontractors who will provide the greatest value to the client; manage teams of specialty subcontractors to ensure that the client's goals and expectations (technical, regulatory, and financial) are met from the beginning until project completion; provide insights into future regulatory issues and their impact as

input to the client's long-range business planning and cost forecasting process; provide site remediation/decommissioning services for radioactive and hazardous materials; and develop project specific plans and procedures to conduct on site activities. Mr. Duff also

serves as the Radiation Safety Officer (RSO) for IEM operations.



- 1994 Senior Environmental Specialist, AWK Consulting Engineers, Inc., Pittsburgh,
- Pennsylvania While assigned to the Oak Ridge, Tennessee office, was responsible for performing technical and administrative duties required to satisfy customer needs on site characterization and pre-remedial design support projects and for all aspects of D&D projects. Responsible for preparing project plans, project work plans, task specific Health & Safety Plans, and budgets/schedules for these projects. Also responsible for identifying and implementing decommissioning and decontamination methods for these projects.
- 1987 Project Manager, Health Physics Supervisor, Nuclear/Mixed Waste Engineering
- 1994 Services, IT Corporation, Knoxville, Tennessee. Provided project management and health physics support services for nuclear and mixed waste projects throughout the United States.
- 1978 Engineering Laboratory Technician (ELT), Leading Petty Officer, Radiological
- Controls Shift Supervisor, United States Navy. Supervised a division of 40 personnel, provided support for nuclear powered submarines, and performed over 250 error-free shipments of radioactive materials. Served as Leading ELT and Engine Room Supervisor on the USS Grayling, SSN 646.

#### **Professional Society Memberships**

Health Physics Society (Plenary Member)

American Nuclear Society

Conference of Radiation Control Program Directors (Advisor to the Radioactive Waste Management Committee E-5 and to the D&D Committee E-24)

International Society of Decontamination and Decommissioning Professionals

#### **Awards**

Navy Achievement Medal for conducting the first Trident Class submarine ion exchange resin discharge and solidification.

IT Corporation Project Management Associate

#### **Example Project-Descriptions**

- Project Manager for escalated decommissioning a State-licensed site that manufactured, tested, and distributed gauging devices in anticipation of the sale of the company and the possibility of its moving its operations to another location. Responsible for preparation of work plans, negotiations with regulatory agencies, decontamination of indoor and outdoor areas, performance and documentation of a final status survey, shipment of waste, and project-specific health and safety.
- Project Manager and health physicist for the remediation of a building foundation drainage system and the processing of over 100,000 gallons of water contaminated with cobalt-60 up to levels of one (1) μCi per liter for a commercial client.



Responsible for coordination of a water processing subcontractor, an excavation subcontractor, and off-site analytical laboratory activities. Also interfaced with on-site U. S. Nuclear Regulatory Commission, U. S. Environmental Protection Agency, and a variety of state and local agencies.

- Project Manager for the decommissioning and decontamination of three facilities at Sandia National Laboratory contaminated with radioactive and mixed waste. Responsible for the coordination of resources for the development of project plans, development of Project Work Plan, and maintaining project budget and schedule commitments.
- Project Manager for the excavation and disposal of radium waste cells for the Corps of Engineers at Bergstrom Air Force Base in Austin, TX. Developed all project plans, supervised field efforts, and coordinated waste disposal activities.
- Project Manager for the decontamination and final release survey of a 70,000 ft² facility that manufactured cesium-137 level gauges. Decontamination efforts involved overhead areas, work area concrete floors, and removal of soil under the floor slab. Facility was released from their license following a verification survey by the state radiological licensing agency. Developed state approved decommissioning plan and final status survey report.
- Project Manager for the packaging and disposal of 55,000 Curies of cobalt-60 teletherapy sources. Sources were loaded into cask liners in the facility hot cell and loaded into Type B casks for shipment for disposal. Also supported the packaging and disposal of several low level waste drums and HEPA filters that required the use of shielded Type A and B shipping containers.
- Project Manager for the decommissioning and decontamination of IT's Oak Ridge Mixed Waste Analytical Laboratory. Developed the decommissioning and decontamination plan that was approved by the State of Tennessee. Also supervised the field crew during final surveys of facility.
- Project Manager for the decommissioning and decontamination of a magnesiumthorium waterfall grinding booth at Tinker Air Force Base in Oklahoma.
   Responsible for the development of project plans, schedule and budget management, and disposal of radioactive and mixed wastes.
- Project Manager for the decommissioning of a commercial facility which had
  previously processed ores containing uranium and thorium. Generated the
  decommissioning plan submitted to and approved by the U. S. Nuclear Regulatory
  Commission, and was responsible for schedule, budget, and on site activities.



- Project Manager for the removal of a 22 MeV particle accelerator from a major university medical center. Developed State-approved decommissioning and decontamination plans, arranged for waste disposal and transfer of the accelerator to a university in Beijing, China, and was responsible for budget, schedule and all on site activities.
- Project Manager for the decommissioning and decontamination of two radioactive source manufacturing laboratories at Chevron Research and Technology. The laboratories housed a neutron generator and were contaminated with tritium, carbon-14, cesium-134, and cobalt-60. Negotiated plan approvals with the State agency, and was responsible for budget, schedule, and all on site activities.
- Project Manager for the routine quarterly surveillance and special radiological projects at a metallurgical facility licensed by the NRC. Conducted radiation, contamination, and airborne radioactivity surveys as well as personnel bioassay and dosimetry program and environmental monitoring program each quarter. Provided health physics coverage for non-routine activities such as baghouse and stack testing, heats of specialty materials, and recovery of radioactively contaminated equipment improperly released from site. Responsible for the generation of quarterly surveillance reports.
- Project Manager for the development of a conceptual decommissioning plan for a maintenance facility located in South Carolina. The plan was generated to provide support for the facility's decommissioning funding plan.
- Health and Safety Manager/Project Manager at the U. S. Department of Energy's
  Fernald site thorium silo and bins decommissioning and decontamination project.
  Developed the project-specific health and safety plan, and interfaced with the
  client on health physics and health/safety issues. This project received safety and
  quality awards from the client.
- Health Physics Supervisor responsible for the sampling of underground storage tanks with radioactive and mixed wastes at Brookhaven National Laboratory.
- Health Physics Supervisor for a transuranic (TRU) waste repackaging project. Supervised the characterization, repackaging and shipment of 130 containers of high-activity americium-241 and plutonium-238 hot cell waste. The waste was packaged to meet the WIPP waste acceptance criteria and was transported (highway route controlled quantity) to the Idaho National Engineering Laboratory (INEL) for storage.
- Health and Safety Manager for the U. S. Department of Energy's Fernald Plant K-65 Silo sampling project. Developed the health/safety and sampling plans. The



silos contained up to 0.5  $\mu$ Ci of Radium-226 per gram and were the largest single source of radon gas in the U.S.

- D&D Technical Manager for the decommissioning of the U. S. Department of Energy's LEHR facility at the University of California at Davis. Developed project decommissioning and decontamination plans and field procedures.
- Health Physics Supervisor for the excavation of waste materials which included mixtures of uranium and explosives.
- Technical writer for the Fernald Remedial Investigation/Feasibility Study (RI/FS). Provided technical guidance to engineering staff, generated reports on radioactive and mixed waste packaging, transport, and disposal.
- Technical writer for the development of a logic flow diagram for identifying radioactive and mixed wastes at the U. S. Department of Energy's Portsmouth (Ohio) Gaseous Diffusion Plant.
- Proposal Coordinator for over 40 business proposals for nuclear decommissioning and decontamination projects including job walk downs, cost estimation, scheduling, and technical content of proposals.

#### Ronn Merkel - Health Physics Technician

#### **Professional Qualifications**

Mr. Merkel has over nine (9) years of experience in the radiation protection field, with emphasis on decontamination, site surveillance and applied health physics.

#### Education

Shoreham Wading River High School (diploma)

Suffolk Community College (Summer Session)

Christ for the Nations Bible College (AS degree)

Computer Aided Design (Certificate)

Drafting (3 years)

OSHA 40-hour Waste Worker Training (Certification 9140B0155)

U. S. Department of Energy Core Course (Health Physics)

Radiation Worker Training - MK Ferguson (June, 1994)

General Employee Training - MD Ferguson (June, 1994)

#### Experience and Background

December 1995-Present - Health Physics Technician, Integrated Environmental Management, Inc. (Knoxville, Tennessee) - Duties include surveillance activities, instrumentation usage/control, decontamination, site characterization, documentation, and other general health physics duties.

June, 1994-November, 1995 - Sr. Health Physics Technician, STEP, Inc. (Oak Ridge, Tennessee) - Duties included all aspects of health physics, radiation and contamination surveys; performance of free-release surveys; packaging of radioactive waste; instrument calibration; and site health physics.

February, 1994-April, 1994 - Sr. Health Physics Technician, UCAR Carbon (Cleveland, Ohio) - Duties included free-release survey o facility contaminated with <sup>137</sup>Cs, decontamination of areas that were observed to be greater than background readings; setup of all applicable instrumentation; shipment of radioactive waste.

August, 1993-December, 1993 - Health Physics Technician, Comanche Peak Power Plant (Granbury, Texas) - Duties included radiological surveys of surfaces, equipment and personnel; control point operations; counting room operations; and other health physics duties.

January, 1993-September, 1993 - Health Physics/Chemistry Technician, Terra Analytical Laboratory (Granbury, Texas), - duties included setup of a fully-equipped analytical laboratory; assisted in preparation of procedures to obtain radioactive materials license;

purchase, setup and calibration of various analytical equipment; and drafting operating procedures for lab equipment.

May, 1992-December, 1992 - Sr. Health Physics Technician, Radion Sterilizers, Decatur, Georgia - Duties included supervision of decontamination technicians, performance and documentation of radiological surveys, initiation of Radiation Work Permits, routine air sampling, packaging and shipment of radioactive waste, setup and coverage of systems, daily source checks of survey instruments, analysis of soil samples, preparation (drafting) of free-release survey maps, and other general health physics duties.

February, 1992-May, 1992 - Health Physics Technician, Bartlett (Assigned to Perry Nuclear Power Plant, Cleveland, Ohio) - Duties included radiological surveys of rooms, equipment and personnel; control point operations at entrance and exit of auxiliary building, and other general health physics duties.

August, 1991-December, 1991 - Jr. Health Physics/Senior Decon, Vogtle Unit 1, Waynesboro, Georgia - Duties included surveying and handling of radioactive waste and laundry, decontamination and release of tools and equipment, pre-release surveys and routine air sampling. Qualified in the use of various health physics instrumentation.

April, 1991- May, 1991 - Temporary Chemistry/QC Technician, Wheatland Farms, Inc., Dallas, Texas - Duties included sampling and chemistry analysis of all processed products. Analysis included %salt, fat content, pH, viscosity, conductivity, weights, and others. Also responsible for ensuring that work was conducted safely and with quality.

January, 1989-March, 1990 - Chemistry/Counting Room Technician, Alpha Nuclear Laboratories, Inc., Dallas, Texas - Duties included preparation and analysis of samples for Pb-210, total radium content, gross alpha and beta on solids and liquids, Po-210, and isotopic radium. All were performed in accordance with EPA protocols and ASTM-recommended methods.

July, 1988-December, 1988 - Jr. Health Physics/Senior Decon, Vogtle Unit 1, Waynesboro, Georgia - Duties included surveying and handling of radioactive waste and laundry, decontamination and release of tools and equipment, performance of pre-release surveys and routine air sampling; qualified in the use of various health physics instruments.



#### Carol D. Berger - Program Manager

#### **Professional Qualifications**

Ms. Berger has over twenty years experience in nuclear and radiological activities with emphasis in strategic planning, radiation dosimetry, instrumentation, and applied health physics. As a co-founder of **IEM**, Inc., Ms. Berger is actively involved in performance of radiological dose assessments, regulatory interactions, site decommissioning, program evaluations, program development, pathway analyses, risk assessments, dosimetry evaluations, assessment and control of sources of non-ionizing radiations, waste management programs, environmental monitoring programs, and detection and quantification of low-levels of radioactivity.

#### **Education**

M.S., Health Physics, San Diego State University, San Diego, California; 1979 M.S., Radiation Physics, San Diego State University, San Diego, California; 1977 B.S., Physics/Chemistry, San Diego State University, San Diego, California; 1972

#### **Certifications**

Certified Health Physicist (Comprehensive): American Board of Health Physics, 1983 Re-certified: 1987, 1991, 1995, 1999

#### Experience and Background

1994 - Founder, Integrated Environmental Management, Inc., Rockville, Maryland.

Present Provides high-quality strategic environmental management services to commercial and government clients. As a member of the client's response team, works with clients to promote an understanding of what is required to achieve and/or maintain compliance in the eyes of all pertinent regulatory agencies, individually or jointly; develop an overall strategy for achieving compliance and reduce liabilities in a technically-sound, legally-defensible, and fiscally-conservative business manner; recommend specific solutions that are compatible with the client's operating

philosophy; and provide insights into future regulatory issues and their impact as input to the client's long-range business planning and cost forecasting process.

1989 - <u>Senior Technical Consultant, IT Corporation/Nuclear Sciences, Washington, D.C.</u>
 1994 Performed health physics consulting for government and commercial facilities in Internal and External Dosimetry; Radiation Monitoring; Environmental Monitoring; Instrumentation; Emergency Response and Preparedness; Site Decommissioning; Radioactive Waste Management; Radiation Risk Assessment; Training; Licensing and Regulatory Negotiations; and Non-ionizing Radiation

- 1986 <u>Senior Health Physicist, IT Radiological Sciences Laboratory, Knoxville, Tennessee</u>
  1989 Performed health physics consulting for government and commercial facilities in Internal and External Dosimetry; Radiation Monitoring; Environmental Monitoring; Applied Health Physics; Instrumentation; Radioactive Waste Management; Training; and Non-ionizing Radiation.
- 1983 Radiation Dosimetry Group Leader, Oak Ridge National Laboratory, Oak Ridge,
  1986 Tennessee. Responsible for internal and external dose assessment and programs for
  ORNL employees, visitors and contractors. Experience included Internal and
  External Dose Assessment; Monitoring Program Design and Implementation;
  Instrumentation Development; Site Characterizations; Personnel Management; and
  Training.
- 1978 Internal Dose Group Leader, Oak Ridge National Laboratory, Oak Ridge.
   1983 Tennessee. Responsible for development of the ORNL Whole Body Counter Facility for detection and quantification of the actinides in-vivo. Experience included: Internal Dose Assessment; Monitoring Program Design and Implementation; Instrumentation Development; Special Studies; Personnel Management; and Training.
- 1978 Adjunct Faculty, Oak Ridge Associated Universities, Oak Ridge, Tennessee.

  1986 Professional training courses and general classes in the following health physics and radiation protection areas: Internal Dose Assessment; In-vivo Monitoring and Bioassay Methodologies; Instrumentation, and Applied Health Physics.
- 1979 Health Physics and Dosimetry Task Group Member, President's Commission
   1980 on the Accident at Three Mile Island, Washington, D.C. Tasks included: Internal Dose Assessment from Whole Body Counting Results; Estimates of Source Term from in-plant Monitoring Systems; Atmospheric Dispersion Modeling and Population Dose Assessment; and Development of Health Physics Sequence of Events.

#### **Professional Society Membership**

American Academy of Health Physics (President, 1995; Executive Committee, 1995-1997; Chair of Strategic Planning Committee, 1997)

Health Physics Society

Baltimore-Washington Chapter - Health Physics Society (Treasurer, 1993-1994, Board of Directors, 1998-1999)

Sigma Xi - Scientific Research Society

American Bar Association, Section of Natural Resources, Energy, and Environmental Law Institute

#### **Publications**

Over 30 professional publications; over 40 oral presentations; over 100 technical reports; more than 15 training courses taught.

#### Other Appointments/Awards

East Tennessee Chapter - Health Physics Society (President, 1986; President-Elect, 1985; Secretary, 1981-1982)

San Diego Chapter - Health Physics Society (Charter member)

American Board of Health Physics, Comprehensive Panel of Examiners, 1989-1993.

ASTM Task Group E-10.04.27 "Transuranic Wound Analysis"; 1986 to present

ANSI Standards Committee (ANSI N13.41) on Multiple Badging; 1986 to 1996 (Chairman, PlanCo-59 Working Group, 1990 to 1996)

ANSI Standards Committee (ANSI N13.39) on Internal Dosimetry Programs; 1994 to present

NCRP Scientific Committee 46-10, "Assessment of Occupational Exposures from Internal Emitters", 1989 to present.

Member of the Health Sciences Advisory Council for the School of Health Sciences, Purdue University, 1995 to 1998.

DOE/IAEA Whole Body Counter Intercalibration Committee (1980-1986)

Consultant to Knoxville Academy of Medicine, Mass Casualty Simulation (1984-1985)

Consultant to the National Cancer Institute to Evaluate Devices and Techniques to Determine Previous Radiation Exposure under Public Law 98-54 (Award for participation presented by Oak Ridge Associated Universities, April, 1988.)

Steering Committee Member, U. S. Department of Energy Task Group on the Education of Future Health Physicists - 1989 to 1991.

Technical reviewer and referee for Health Physics, Nuclear Technology, and Radiation Protection Management

IT Corporation Distinguished Technical Associate - June, 1992.



Appendix B - Field Activity Daily Logs

# INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Page \_\_/\_ of \_\_/\_

Facility: SMC New Field	
	Job/Task Number: 94005, 20
Date.	7003,20
Client Name: Shieldallon Metallurgical Corp.	
Address of Work Site: Wet Blvd. New Fied, NT.	
Description of Work Setup for bachouse disassem	AND EVENTS
0700 On Site, Marke of Duff Met W/Rob B.	ennett or 30mm.
0715 Signed in w/quard Q guard house.	0 1. 0). 4
0130 Hela in italia	sed work plan 4
activities to be performed of precaut	ions to be taken
0830 completed training on project, making	preparations to
commence work performing instrument	
0845 Retrieved Pentok VacPac System & Unle	
not shipped with	chris Futrick, hose
	noon to lay.
1045 Issued BZA samplers to workers.	. ( ¿ ¼
10:55 Worken Cuffing a Drapping Bag	
Dump Truck, moving them to storage	ard to unload & store.
1200-1230 Lunch, 1300-Recommenced work @ b	achovac
1330 Commenced walkover & survey at eastern	end of strage yava,
area has had surface soil removed ~ 1'-3	depth, Hose (yazuum) Ariin
1530 Secured Surveying in Storage yard, Sec	wed work at boshove
1600 Performing paperwork in inst. office (Duff	green, preparing
air sumplets for use tomorrow.	
1630 left 5:te, N/4 of bags complete.	
No Firstur Entires know	0
DIVITION AND A	
Other Special Orders and Important Decisions:	10 1.1/51
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:  Significantly more materials in loags	than expected, 5:10 ~ 1/3 toll.
important Telephone	Calls and Interactions:
Weather Conditions: Fort 17 Control	
Personnel on Site: Duff, Merkel, Bennett, White, Taylor, Sc	hnorbus, butter, D.Sm.th
	()40/
Name (print): R.A. OJFF Signature:	<i>YYYY</i>
L, N. N. OV.	

# INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG Page \_\_\_\_\_ of \_\_\_\_

	Δ			
Facility: SMC	Jewfield			
Date: 5/18/99		Time: 0700	· · · · · · · · · · · · · · · · · · ·	Job/Task Number: 94005.20
Client Name: 5	nieldallou	Metallurg: La	Corp.	
Address of Work Site:	West B	va. New Fiel	しいよ	
Description of Work	Setup For	- bachouse	d:sassembl	ງ
	CRIPTION	OF DAILY		AND EVENTS
0700 On site	preparine	instruments	For days us	
0730 At bac	house, issu	1 /	ps to person	1/ 1 -
	noval into		DUFF Q S	torage yard performing
Ywatkov	er Survey.			
0815 Encounte	<u>ed a proble</u>	u W/BZA F:	ter papers c	logging up & Stopping pumps
1200-1245 Lun	oh .	0	. 1 1	
1300 Recomme	med storey		of baghouse b	Y la the second succession
1530 Secured	worker.	Bag removal		Tete Storme yard survey
~ 1/3 com	Person	merke 0	lab prepart	2 As was to
· · · · · · · · · · · · · · · · · · ·	AND DEA	Dungs of Fither	Halans de	5 Parternore.
1600 DUFT	Market 16	71. 3.77		
		•		
		No .		
		Furt	her	
			untries	
				(/)
		•		
Changes from Plans and	d Specifications, and	Other Special Orders and	Important Decisions:	
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:				
Weather Conditions:	Cloudy, light	tdrizzle, ~5 moh	Important Telephone	Calls and Interactions:
Weather Conditions: Cloudy, light drizzle, Important Telephone Calls and Interactions:  Wind From NE~5 mph  Personnel on Site: Duff, Merkel, Bennett, White, Taylor, Schnorbus, Butler.				
Name (print):	L. DUFF		Signature:	M

# INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Page \_\_\_ of \_\_\_

Facility: SMC Newfield				
Date: 5/19/99 Time: 0700	Job/Task Number: 94005.20			
Client Name: Shieldallon Metallurgical	Corp.			
Address of Work Site: West Blvd. New Field	tu, l			
Description of Work Bashovse bag removal,	survey of storage yard			
DESCRIPTION OF DAILY	ACTIVITIES AND EVENTS			
0630 Merkel on site, preparing in sto				
0645 Duff on site preparing instru	ments for use.			
0700 Merkel at bag house w/ Even, con				
0715 Duff @ storage yard, commenced				
Sooke WD. Smith, Since slag	seing found in Stor. yard right up to			
	o perform a walkover Ysurven			
Pouts: le F feronce no Fen	2			
1100 Recommend storage yard sivery				
1200-1230 Lunch				
1300 continued work on hachovel d				
1445 secured work for the day, bas,	removal complete.			
1530 Duft & Merkel lett Site.				
10 5.10				
That with the				
CM				
	PO			
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:				
Weather Conditions: Rain, warm, wind calm.	Important Telephone Calls and Interactions:			
Personnel on Site: Duff, Merkel, D. Smith, R. Ben	nett, white, Taylor, Schnor bus, Butter			
Name (print): R. Alan DAF	Signature:			

### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Page \_\_\_ of \_\_\_

Facility: SMC New f	-:eld			
Date: 5/20/99	Time:	0700		Job/Task Number: 94605.20
Client Name: Shield	alloy Metallu	rgical Co.	<u>-0 </u>	
Address of Work Site: We	st Blud. N	lew Field	NJ	
Description of Work Bas	work decont	an instion	, storage y	ordsurvey
DESCR	IPTION OF	DAILY A	CTIVITIES	AND EVENTS
0630 Merkelon	site, prepari	ing instru	iments for	use.
0100 DUFF on s	te, crew c	onmenced	Sucepina	upper levels of baghouse
to remove	gross aunits	5. <del>C</del> 70.5	dual dust.	
0730 Duff @ 5	torage yard	- COMPUM	Med Murs KOV	er & survey. Spot frisk
ot upper 1	evels of bas	house Sh	ow all are	ias should meet release
criteria.	<u> </u>	. 1	- 2 L -	12/ c
Draw Ser	Tavel between	eh bagun	1000-3000	y oxy-acetylene torch. 2pm/100cm2 or total:
1200-1230 Lunch	remove ha	WE SHOWN	, 1880-3000	2 / 188 CM 4 / 1874
1300 Recommene	ed work.			
		ver 8 sur	very of excar	vated areas, commenced
& walkove				weas of clevated measurement
1530 Completed	work at the	buchos	e for the	hay.
1545 Completed	walkover as	rothed fo	ence perime	tir. Some elevated
locations	were locate	ed 4 ma	rked on sur	very maps of w/tlags.
1630 Duff/mer	kel left si	ite for	the lay.	
	No	Further		
			entries	
				2
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:				
None				
Weather Conditions: Clear Fro Personnel on Site: , Duff, 1		~5 1-01- T		Calle and Interesting
Weather Conditions:	, mile, wind	ا ۱۳۰۰	Important Telephone	Calls and Interactions:
Personnel on Site: Duff.	Merkel, D. Sm.	th, schno	orbus, White,	Butler, Taylor :
		· · · · · · · · · · · · · · · · · · ·		<del>~ /</del>
Name (print): R. Alan	DIFF		Signature:	
1 Link	<u>- VV                                  </u>			

### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Page \_\_\_\_\_\_\_\_\_ of \_\_\_\_\_\_\_

Facility: SMC Newfie	id			
Date: 5/21/99	Time: 0700		Job/Task Number:	94005.20
Client Name: Sh: eldall	on Metallurgical	Corp.		
Address of Work Site: Wes	FB/vd. New Fie	& NT.		
	ouse decontamina			
DESCRI	PTION OF DAIL		AND EVE	NTS
0630 Merkel on 5H	e preparing just	-	day's Use.	
0700 Duff of crew	. 4/ .	/_ 1 1	-levels of	behouse &
0830 Preparing P	vent ductings	ports at 5:10.	VIOO Sal	ace week
0915 Issued BZ	A's to Bldg. DI	11 personnel	performing	Flexklein
mehouse n	a înterance.	Ų	<u>ر</u>	
1030 Removed re	presidual du	st from 5:10 ac	giacent to A	AF bag house.
1200-1230 Lunch	I R FF F	· - 110 01	he TO hel	• • • •
1300 Resumed wo	rk, Dutt pent	orning 2 mg at	TO VALUE	A exchange
1450 TLD exchan	of the lanchon	se Prox or	U. W VAILATI	Hoson
1545 DAF/Ments				
			·	
	Vi	Further	****	
		Entrie	3	
			<u> </u>	
Changes from Plans and Specifica	tions, and Other Special Orders	and Important Decisions:		·
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:				
Weather Conditions: Svnmy	, warm, wind from	Important Telephone	Calls and Interactions:	
Weather Conditions: Svnmy Sを ~ S Personnel on Site: Dvff, Ma	rkel, Bennett, white	Tay lor, Schnort	us, Butlan	
Name (print): R. Alan	~ DUFF	Signature:	W/M	
		- t	· · · · · · · · · · · · · · · · · · ·	

## INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Page \_\_\_\_ of \_\_\_

Facility: < MC Now Hill					
SILCIUM	Job/Task Number: 94005,20				
Date: 5/24/99 Time: 0700	Job/Task Nulliber: 17003.600				
Client Name: Shieldalloy Metallurzical Corp-					
Address of Work Site: West Blvd. Newfield NJ.					
Description of Work AAF Bashov & decon/disassenby.					
DESCRIPTION OF DAILY ACTIVITIES	AND EVENTS				
0630 Merkel on site prepared insturments & a:	r samplers for days use				
0200 Duff on site. Frew at bachaves, decont	aminding inside of				
AAF baghouse (sweeping residual dust From Up					
W/brooms). Duff/Markel decorning pen					
to return.					
1200-1230 Lunch					
	as concerns about metal				
Dieces requiring more acressive decontamin	•				
C. Berser on Dossible afternatives. (Release					
total by linest Frisk Need limit 1 to	allow use of 1000 (Th)				
+ 5000 (U) apm/100m2 fixed limits).					
1530 Secured work for the day.					
D FF / Is I I I I I I I I I I I					
1500 DUTT MEKEL LEFT SITE					
. 1					
Vo C. House					
Thetaile					
Dr. V.	0				
	7				
	·				
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:					
None					
Weather Conditions: Rain, warm, wind from Important Telephone	Calls and Interactions:				
walomph Don	<u>X</u>				
Weather Conditions: Rain, warm, wind from Important Telephone (Warn to make Non Personnel on Site: Doff, Merkel, White, Schnarbus, Butler, Dave S	inith.				
Name (print): R. Alan DJF Signature: PA	$\sim$				
Ninian Duti	<i>~//</i> /				

Page \_\_\_ of \_\_\_

Date: 5/25/99  Time: 0.700  Client Name: Shield allow Metallurgical Corp.  Address of Work Site: West Blyd., New Field, NJ  Description of Work AAF backarse decontamination.  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  EXOD Merkel as site preparing instruments of air scaplers for use.  0.700 Duff on site, workers are paring to use vacuum truck to remove year dwall higherse dust. Merkel preparing Pontek Vac-Pac sysfor return. Duff performing quarterly radiation/contimination survey of vacuum mid levels of bactorise of trappers Wivac truck.  1200 Completed decond survey of vac pac system, making arrangents for units return to Pontek.
Client Name: Shield allow Metallursian Corp.  Address of Work Site: West Blyd. New Field NJ  Description of Work AAF bashovse decontamination.  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  KOO Merkel on site preparing instruments of air samplers for use.  0700 Duff on site, workers preparing to use vacuum truck to remove yes; dwall bushovse dust. Merkel preparing Pentek Vac-Pae sys  for return. Duff performing quarterly radiation (on timination surve)  0730 Vacuuming mid levels of bashovse of troppers Wachtuck.  1700 Completed decord survey of vac-pae system, making arrangements.
Description of Work AAF backovse decontamination.  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  EXOD Merkel as site preparing instruments of air samplers for use.  0700 Duff on site, workers preparing to use vacuum truck to remove residual bughorse dust. Merkel preparing Poutek Vac-Pac sys  For return. Duff performing quarterly radiation (contamination surv  0730 Vacuuming mid levels of bashovse of hoppers W/vac truck.  1700 Completed decond survey of vac pac system, making arran
Description of Work AAF backovse decontamination.  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  EXOD Merkel as site preparing instruments of air samplers for use.  0700 Duff on site, workers preparing to use vacuum truck to remove residual bughorse dust. Merkel preparing Poutek Vac-Pac sys  For return. Duff performing quarterly radiation (contamination surv  0730 Vacuuming mid levels of bashovse of hoppers W/vac truck.  1700 Completed decond survey of vac pac system, making arran
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  EXOD Merkel as site preparing instruments & air samplers for use.  0700 Duff on site, workers preparing to use vacuum truck to remove yes; dual bughorse dust. Merkel preparine Pertek Vac-Pac sys for return. Duff performing quarterly radiation (contamination survey)  0730 Vacuuming mid levels of bashovse & hoppers W/vactruck.  1700 Completed decard survey of vac pac system, making arran
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  ROD Merkel or site, preparing instruments & air samplers For use.  0700 Duff on site, workers preparing to use vaccountruck to remove  ves: dual bughoise dust. Merkel preparine Pentek Vac-Pac sys  for return. Duff performing quarterly radiation/continuination surv  0730 Vaccouning mid levels of bashovse & hoppers W/vactruck.  1700 Completed decord survey of vac pac system, making arran
oron of on site, workers the parity to use vacuum truck to remove yes: dual bughouse dust. Merkel preparity Pentek Vac-Pac sys for return. Duff performing quarterly radiation/contamination survey or Vacuuming mid levels of bashouse of hoppers W/vactruck.
oron Duff on site, workers the parting to use vacuum truck to remove yes: Awal bughouse dust. Merkel preparitie Dentek Vac-Pac sys for return. Duff performing quarterly radiation/contamination survey or Vacuuming mid levels of bashouse of hoppers W/vactruck.
for return. Duff performing quarterly radiation/continuination survey of Vacuuming mid levels of backovse & troppers W/vactruck.
for return. Duff performing quarterly radiation/contamination survey of Vacuuming mid levels of bactouse of hoppers w/vactruck.
1200 Completed decond survey of vac-pac system, making arran
1200 Completed decond survey of Vac-pac system, making arran
The section to Do take
MENTS POR DRIESTE DAY
In mar 120 lanch
1300 Recommend vacuuming of beginning fest decon of me
11430 Market lett 5te. Vac-Dore Stream to wed over 10 street for shiption
1515 Secured work at backouse test decorat metal from vert du
should a reduction of 50% (Reduced From ~3000 dpm/100 cm² to
~1500 dpm/100 cm²) with minor effort using wire brusts & housely
clement paper towels. Workers emptied 2 of 6 hoppers too
w/vacuum truck. 3 Truckbads of dust were moved today
to the storage yard from the bein house.
1630 Met W/ Dave Smith, discussed test decon results, storage yard
Survey results.
1700 Doff left Site, completel surveys Wexception of DIII.
No E. N.C
No Further Entires las
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:
None
Weather Conditions: Sunny, mild, windfrom Important Telephone Calls and Interactions:  South ~ 5 mph  Personnel on Site: Doff, Markel, D. Smith, Bennett, Schnerbus, white, Brther, Fry later.
Personnel on Site: Doff, Merkel, D. Smith, Bennett, Schnorbus, white, Brther, Try land
Name (print): R. Alan DIFF Signature: PHOW

Page \_\_\_ of \_\_\_

Facility: SMC New Field				
Date: 5/26/99	Time: 0.700		Job/Task Number:	94005.20
Client Name: Shieldalloy Meta	Muraical Corn	).		
Address of Work Site: West Bly				
Description of Work AAF Buchou	se decontan:	nation/disas	sembly.	
DESCRIPTION	OF DAILY	ACTIVITIES	AND EVE	NTS
0600 Merkel on Site, prep	varing instrumen	ts for toda	y's use.	
0700 Duft on site cr	ew continus	my vacoumi	in of middle	
of baghouse. Con				
truck dunping	removed may	erials on d	<u>ust p:le.x</u>	Storage year.
1200-1245 Wuch	, , ,	1 1		11 2 14
1300 Crew continued 16-1500 Completed um	by a silver	Dochavee )	EF/11-	et lab office
counting = means	- convolution	Summer Borns		
1600 Left site, gave	quick debr	ef for s	mith on <	tatus of
bachovee surveil	laure activit	ies performo	O. Turned	over lead F
Project to Merk	el Doff te	furzy to hor	me office	0
		<u>,</u> <u>,</u>		
	<u>.</u>			
	\ Va			
	F.,	the Entries		,
		Entries	t a tau	
·		P	46)	
Changes from Plans and Specifications, and C	Other Special Orders and I	mportant Decisions:		
None		important bedisions.		
	_			
Weather Conditions: Clear, warm,		Important Telephone C	alls and Interactions	•
Personnel on Site: Duff, Merkel,	Bernett, Schn	orbus, white		
Name (print): R. Alan Duff		Signature:	)W	
			717	

Page \_\_\_ of \_\_

Facility: SMC/NewField			
Date: 5 - 27 - ዋና	Time: . 0600	Job/Task Number: G4005,20	
Client Name: Sherldalloy Met. Corp			
Address of Work Site: West Blud Wa	ufield NIT		
Description of Work AAF Baghouse	Decor.		
DESCRIPTION	OF DAILY AC	TIVITIES AND EVENTS	
0600 Meakel onisite, Priep	aring instruments	BZA	
0700 MAGCO Crave Co. or			
		c to complete Dust renoal	
0200 Begin Riggins Si	lo FOR ARMOVAL	by Bernett, MAGCO	
0900 Sila Completed, May		tion For Duct work.	
JIM UALINNI TAK			
0900 VACTOWER DIZIVER	hearing BZA	1 /	
1230 First Piece DOWN	-inst tiece of c	Just work out; on D-111	
Material in Bottom	of Diction	Contamation, 5-6 rucks of	$-\parallel$
1330 VACTOWCK to en			$\dashv$
1430 Cuttine and Price	of ductument	, 2 workers in U.Side Rooms	
Cleaning and hope	ers.	)	
<u> </u>			
			الــــــا
Changes from Plans and Specifications, and Oth	ner Special Orders and Importa	ant Decisions:	
Weather Conditions: SUNNY, Mild 5		ortant Telephone Calls and Interactions:	
Personnel on Site: Merkel, D. smith	Robb Benett, 5 charles	white / magos	
Name (print): Don Meth	Sign	ature:	

Page \_\_\_\_ of \_\_\_

Facility: Sheild Alloy Met corp Wewfield			
Date: 3 - 28 - 99 Time: . 0600	Job/Task Number: 94005.20		
Client Name: Sheildly Metalarged Coup			
Address of Work Site: West Blud, Newfield MS	J.		
Description of Work AAF BAG Louse Decon			
	ACTIVITIES AND EVENTS		
0600 Meakl In Prep instruments A.	RSANDE DUMES.		
1000 Continue cut out of AIR Du	et on top D-111		
Workers Still Using UAC TRU	CK in EAST Side fooms 1ST level.		
0900 AMFT Section of Duct WC			
Surveyed INSIde out, N	a levels above (inity believes		
Sportly Levels OF 100-125	CAMO		
to restified D. Snoth win J. UALIANI	to hose down Piles of Dust.		
1030 12-15 FT Piece of Duct ON	George Surveyed No levels Above		
limits			
Worker used UAC bottom Floor			
2N 0'			
11.30 3N Piece Amound 8-10 Feet.	Surveyed per Containation detacted		
12:00 Cuch			
1300 WORKIN ON YE Prece ( Elbour)	<b>.</b>		
Alizable in Rettan level 1140 for at Flora			
1400 lenous on grows 4th Piece Surveyed MO Continuentio detected			
1400 Kenoved on ground 9th Piece Surreyed NO Contemperation detected			
1430 Merkel in office on Paper	aul.		
* SPOKE directly to D. Smith to h	ose down Piles of dust. he spid		
"The wasn't soins to worky About it".			
7(110) 7 0 51.023 770			
Changes from Plans and Specifications, and Other Special Orders and I	mportant Decisions:		
CALL D. Smith Motify of WAterzing Pi	es or past thankerny and		
Weather Conditions: SUNNY, CLEAR, COOL	Important Telephone Calls and Interactions:		
Cik Breeze	/ * <del>**</del>		
Personnel on Site:  Merkel Devrett white			
Personnel on Site:  Merkel, Bernett white,  Name (print): Ron much	Signature:		

Page \_\_\_\_ of]\_\_\_\_

Date: 6-1-99 Time: 0600 Job/Task Number: 9405.20	
Client Name: Sheldalleg Metalungical coxy	
Address of Work Site: West . Blud , Newfield NJ	
Description of Work AAF Bas Loux Decow	
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS	
0600 Merkel In Source Check inst., CAL. Air /Sample pumps.	
0700 2 WORKERS. UAC. DUST FORM LAST hoppen Scotty on Roof Peop	
to cut out Final Section at Vent Duct.	
1000 FIMAL PIECE OF duct work Removed 45 Feet long.	
Surveyed inside + outride, Inside 60-80 cpm Elminso.	ler)
outside Top 35-144 com Elmin scalens	
1/30 Bennett, white Making Blanks For Boof Povefrations	
lineh	
1330 Bennett, white on loof Putting Blanks in Noce 1330 D. Smith Stopped By. to take Some Pictures; Gave him AN update.	
1330 D. Smith Stopped By. to Take Some Pictures: Gave him An	
vodate.	
1430 CRAME OPERATIONS U/ MAGCO Complete; Surveyed Crave inside, our	relo
1800 Crang OFFS/te	
VACTORCK Emplying	
1530 Benvill and crew offsete.	
No Further Entires	
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
Por	
Weather Conditions: Important Telephone Calls and Interactions:	
Personnel on Site:	
markel, Barnett MAGCO CRANE Co.	
Name (print): Romett MASCO CRANE Co.  Signaturg: Signat	

Page \_\_\_\_ of \_\_\_\_

			<u> </u>
Facility: SMC Newfield			
Date: 6-2-99	ime: 0660	Job/Task Number:	94005,20
Client Name: Stellbelloy met Con	p		
Address of Work Site: West Blud A	lenfield H.T.		
Description of Work AAF BAghouse	Decow		
DESCRIPTION	OF DAILY ACTIV	The state of the s	NTS
Old Meskel onsite Cal.	an lungs instru	oto .	
0700 NO Air Souple Pu			
0800 Cutting up (Ange Se		irk.	
0900 Finishing with NAC	Truck	· · · · · · · · · · · · · · · · · · ·	-
1000 VACTRUCK gone	o empty Final	Coad	
Prepus to Decon	UAC Frede		
11:00 Power WAShing DAM	Truck, Lg Dum	Truck	
1300 Barkel Surveying	UAC TRUCK U	to Truck Clean o	2xcept
BAGNOUSE FORTION	DAGLOUSE PORTION	N ON truck Shows	, to have
190 - 180 (PM & 0	N BAGS + Coose Dus	it is Botom of B.	Ashouse
MOD CAILED CAROL Bensen;	MAN of Action to	my to get Bogs out	- ot truck
Cost depending + Ropl	ar. DACCom ou	F Residual dust in	Bayhouse
*			
1500 CleAnin up 1600 Source Checking			
1800 Source E weeking	INST Rundy		
	<u> </u>		
	<del> </del>		
Changes from Plans and Specifications, and Other	Special Orders and Important De	cisions:	
None			
Weather Conditions:  ' () Wercast Braza	1 '^	Telephone Calls and Interactions:	
0		1 OCIUTATE	
Mertel Benett who	t Eisco	<del>)</del>	
Name (print): Ran Muhul	Signature:	nuly	

Page	of	
· ugc		

Date: (6-B3-99 Time: 0600 Job/Task Number: 94005.20  Client Name: Shelled Allow Met  Address of Work Site: West Blud Newfield MT  Description of Work  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OCOD Negkel and Sething up writer supply + Pressare waster  From Decon of Bother Flore AAFRAGADORS.  * I worker From Fisco Dusit to Genous Rags From Was Truck  Works in Fullfree Rasp. Tyrk, Gloves.  O930 Scotty Tohn Renounce Force Around TRANSFrence.  EISCO Worksons Finish Romany Rags.  1000 Eisco to englite Residual Dust From Bags, Decow Bag Louse Truck)  With lik water.  1130 Decon Complete Bornett + Crew to Lunch.  1200 Survey Affected Around to House, Affected decon Truck Baylouse  Was Cess BKG. BKG=7  DOO Begin Cutting Duct work on ground Methal' Supreying  Loure Room of AAF Baylove. Affer Decon.		'		
Date: 6-83-99 Time: 0600 Job/Task Number: 94005.20  Client Name: Shell Allow Met  Address of Work Site: West Blud New Field NJT  Description of Work Decon D-111 A A F BAG hoose  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OGO Merkel 0~six Source Clecking Instruments.  O700 Bernnett + Crean Setting up writer support + Pressone waster  From Decon of Botham Flore A A FRAGAROGE.  * 2 weakers From Fisco Busik to Recover Bags From Was Truck  Workes in Fullface Resp. Tyrkk, Gloves.  O930 Scoth John Burgary, Rave Around TAXWS Traver.  EISCO Workers First Nonzery Bags  1007 Eisco to empty Residual Dest From Bags, Decow Bag house Travek)  With Lik works.  1130 Decon Complete Bernett + Crew to Lunch.  1200 Survey Affected Aroun of Hruck; After decom Truck Baglouse  Was Cess BKC. BKG = 7  Boo Bernett + Crew Jutting up Fence Around tomsformer yard.  130 Begin Cutting Decomposity Merkel' Scienceing.	Facility: SMC Newfield			
Client Name: Skeild Allow Met  Address of Work Site: West Blue Newfield NIT  Description of Work Decon D-111 AAF BAG hoose  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OGOD Merkel ansit Source Clecking Instruments.  O700 Brownest + Crew Sething up worter Supply + Professione Washer  From Decon of Bottom Flore AAFRAGAROSE.  * 2 Worleas From Fisco Ansit to Annous Rags From Vac V Nuck  Workins in Fullface Resp. Tyrk, Gloves.  O930 Scoth, John Ronging Farce Around Transformer.  EISCO Workers Finish Ronging Rags.  1000 Eisco to empty Residual Dust From Bags, Decow Bag house (Travek)  With Lik Water.  1130 Decon Complete Bornett + Crew to Lunch.  1200 Survey Affected Aroun of Hruck; AFter decon Travek Baglouse  Was Tess BKG. BKG=7  1300 Bernett & Crew Jutting up Fence Around Fransformer yard.  130 Begin Cetting Suct work on ground, Merkel' Scipninging  Lower Rorm of AAF Baglove. AFTER Decon.		Job/Task Number: 94005.20		
Description of Work Decon D-111 A A F BAG house  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OGO Merkel ansit source Clecking Instrumets.  OTOD BENNETH + Crem setting up writer supply + Pressure Waster  From Decon of Bottom Flore AA FRAghrosse.  * 2 Workers From Esco Onsit to Renow Rags From User Truck  Workers IN Fullface Resp. Tyrk, Gloves.  O930 Scotty John Renowing Fence Around Transformer.  EISCO Workers Finish Ranging Rags.  1000 Eisco to empty Residual Dust From Bags, Decow Bag house (Truck)  With Lik Water.  1130 Decom Compute Remoth + Crem to Lunch.  1200 Survey Affected Areas of Hruck; After decom Truck Bagtovie  Was Cess BKG. BKG=7  1300 Begin Cutting Duct work on grown, Merch! Scienceying  Lower Room of BAF Bagtove. AFTER Decom.	Client Name: Sheild Allow Mot			
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OGO Merkel ansit Source Clecking Instrumets.  O700 Benneth + Crew Setting up water supply + Pressure waster  From Decon of Bottom Floria AAFRAghrosse.  * 2 Workers From Eisco Onsit to Ornous Rags From War Truck  Workers IN Fullface Pasp. Tyrk, Gloves.  O930 Scotty John Pennsung Fence Around Transformer.  EISCO Workers Finish Dansung Rags.  1000 Eisco to anothe Residual Dust From Bass, Decow Bag house (Truck)  With Lik Water.  1130 Decom Complete Benneth + Crew to Lunch.  1200 Survey Affected Around of Hruck; After decom Truck Baylouse  Wasters BKG. BKG=7  1300 Benneth + Crew Lutting up Fence Around transformer yard.  130 Begin Cutting Duct work on grown, Merhal' Scienceying.  Lower Room of BAF Baylous. After Dacon.		4 NIT		
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS  OGO Merkel ansit Source Clecking Instruments.  OTO Bennett + Crem Setting up writer Supply + Pressure waster  From Decon of Bottom Flora AAFRAGAROSSE.  * 2 Workers From Eisco Musit to Penoue Rags From User Truck  Worker in Fullfree Resp. Tyrk, Gloves.  O930 Scotty John Renowing Ferro Around TRANSFrence.  EISCO Workers Finish Danoung Rags.  1001) Eisco to empty Residual Dust From Bags, Decon Bag house (Truck)  With Lik water.  1130 Decon Complice Boundt + Crem to Lunch.  1200 Survey Affected Areas of Hruck; After decon Truck Baylouse  WAS Tess BKG. BKG = 7  130 Bennett + Crem Jutting up Fenre Around transformer yord.  130 Begin Cutting Duct work on ground, Merch! Scienceying  Louch Room of BAF Baylous. After Daon.	Description of Work Decon D-111 AAF BASh	wose		
For Decon of Bottom Flora AAFBAghorse.  ** 2 Workers From Fisco Busit to Ornous Bags From Usa Truck Workers IN Fullface Resp. Tyrk, Gloves.  0930 Scoth, John Banowing Ferre Arrowd TRANSFormer.  EISCO Workers Finish Rangery Bags.  1000 Eisco to empty Residual Dust From Bags, Decon Baghouse (Truck) With Lik Water.  1130 Decon Complete Bornett + Cum to Lunch.  1200 Survey Affected Areas of truck; After decon Truck Bagtouse Was Cess BKG. BKG = 7  1300 Bennett + Cum Jutting up Fence Around fransformer upred.  130 Begin Cutting Duct work on grown, Merhel Scienceging Lover Room of BAF Baglows. After Decon.				
For Decon of Bottom Flora AAFBAghorse.  * 2 Workers From Fisco Busit to Ornous Bags From Unit Truck Workers IN Fullface Resp. Tyrk, Gloves.  0930 Scoth, John Banowing Ferre Around Transformer.  EISCO Workers Finish Rangery Bags.  1000 Eisco to empty Residual Dust From Bags, Decow Baghouse (Truck) With Lik Water.  1130 Decom Complete Bornett + Cum to Lunch.  1200 Survey Affected Areas of truck; After decom Truck Baghouse Was Cess BKG. BKG = 7  1300 Bennett + Cum Jutting up Fence Around framsformer yard.  130 Begin Cutting Duct work on grown, Merhel Scienceging Lover Room of BAF Baghous. After Decom.	0600 Merkel onsit Source Clea	King Instruments.		
# 2 Workers From Eisco BNSITE to Denous Bags From Use Truck  Workers IN Fullface Pesp. Tyrk, Gloves.  D930 Scoth, John Benowing Ferre Around TRANSFormer.  EISCO Workers Finish Donaing Rags.  1007 Eisco to empty Residual Dust From Bags, Decow Bag Louse (Truck)  With Lik Water.  1130 Decom Complete Bornett + Crew to Lunch.  1200 Survey Affected Areas of truck; After decom Truck Baylouse  WAS Tess BKG. BKG = 7  1300 Bennett + Crew Jutting up Fence Around transformer yord.  130 Begin Cutting Duct work on grown, Merhel Scipneying  Lover Room of BAF Baylouse. After Dacon.	0700 Bennett + Chen Setting up 1	WATER Supply + PRESSURE WASTER		
# 2 Wookers From Eisco Busit to Penaue Rags From War Truck  Wookers IN Fullface Pesp. Tyrk, Gloves.  D930 Scothy John Removing Ferro Around Transformer.  EISCO Wookers Finish Rangery Rags.  1000 Eisco to empty Residual Dust From Bags, Decow Bag house (Truck)  With Lik Water.  1130 Decom Complete Bornett + Cum to Lunch,  1200 Survey Affected Areas of truck; After decom Truck Baylouse  WBS Cess BKG. BKG = 7  1300 Bernett + Cruw Putting up Fence Around fransformer yard.  130 Begin Cutting Duct work on grows, Merhel Schrueying  Lower Room of BAF Baylove. After Decom.	For Decon of Bottom Flora	AAFBAghoose.		
1000 Eisco to empty Residual Dust From Bags, Decow Baghouse (Truck) With Lik Water.  1130 Decon Complete Bennett + Crew to Lunch.  1200 Survey Affected Areas of Hruck; After decon Truck Baghouse WAS Cess BKG. BKG=7  1300 Bennett + Crew Dutting up Fence Around fransformer yard.  130 Begin Certain Duct work ow ground; Merhel Scipureying Lower Room of AAF Baghove. AFTER Decon.	* 2 Workers From Eisco BNS	to to senous RAGS From Use Truck		
1000 Eisco to empty Residual Dust From Bags, Decow Baghouse (Truck) With Lik Water.  1130 Decon Complete Bennett + Crew to Lunch.  1200 Survey Affected Areas of Hruck; After decon Truck Baghouse WAS Cess BKG. BKG=7  1300 Bennett + Crew Dutting up Fence Around fransformer yard.  130 Begin Certain Duct work ow ground; Merhel Scipureying Lower Room of AAF Baghove. AFTER Decon.	Worker IN Fullface Resp.	Tyrek, Gloves.		
1000) Eisco to empty Residual Dust From Bags, Decow Baghouse (Truck) With Lik Water.  1130 Decom Complete Bernett + Crew to Lunch. 1200 Survey Affected Areas of truck; After decom Truck Baylouse Was Cess BKG. BKG = 7  1300 Bernett & Crew Dutting up Fence Around fransformer yard.  130 Begin Cetting Ductwork ow ground; Merhel' Schweying Lower Poom of BAF Baylove. AFTER Decom.	0930 Scoth John Renown Ferry	a Around TANISTRAMES		
1000 Eisco to empte Residual Dust From Bags, Decon Baghouse (Truck) With Lik Woter.  1130 Decon Complete Bernett + Crew to Lunch.  1200 Survey Affected Areas of truck; After decon Truck Baylouse WOS Cess BKG. BKG = 7  1300 Bernett + Crew futting up Fence Around fransformer yord.  1300 Begin Cetting Ductwork on ground, Merhel Surveying Lover Room of AAF Baylouse. AFTER Dacon.	EISCO Workens Finish Rom	ong Bags.		
With lik Water.  1130 Decon Complete Barnett + Crew to Lunch.  1200 Survey Affected Areas of truck; After decon Truck Baylouse WAS Cess BKG. BKG=7  1300 Bernett + Crew Putting up Fence Around fransformer yard.  130 Begin Cutting Ductwork ow ground, Merhel Surveying Lover Room of BAF Baylove. After Decon.	<u> </u>			
1130 Decon Complete Barnett + Crew to Lunch.  1200 Survey Affected Areas of truck; After decon Truck Bay Louse WAS Cess BKG. BKG = 7  1300 Bernett + Crew futting up fence Around fransformer yard.  130 Begin Cetting Ductwork ow ground; Merhel Schweying Louen Room of AAF Baylove. AFTER Decon.		Just From BAGS; Decow BAG house (Truck)		
1200 Survey Affected Areas of truck; After decan Truck Baylouse WAS Cess BKG. BKG = 7  1300 Bernett + Crew futting up Fence Around fransformer yard.  1300 Begin Cutting Ductwork on grown, Merhel Scienceying Lover Room of BAF Baylouse. AFTER Decon.	With Like Water.			
1200 Survey Affected Areas of truck; After decan Truck Baylouse WAS Cess BKG. BKG = 7  1300 Bernett + Crew futting up Fence Around fransformer yard.  1300 Begin Cutting Ductwork on grown, Merhel Scienceying Lover Room of BAF Baylouse. AFTER Decon.	1130 Day C 1th 12 th			
1300 Bennett + Crew Dutting Up Fence Around fransformer yard.  1300 Begin Cetting Ductwork on ground, Merchel Scienceying  Lower Room of AAF Baglove. AFTER Decon.		· · · · · · · · · · · · · · · · · · ·		
1300 Bennett + Crew futting up Fence Around fransformer yord.  130 Begin Cutting Ductwork on ground, Merhel' Scipreying  Lower Room of AAF Bostova. AFTER Dacon.	1.205 Case DVC BVC-	HOUCK After decan Inucle Bay Louse		
Lover Room of BAF Bashove. AFTER Dacon.				
Lover Room of AAF Bashovse. AFTER Dacon.	130 Begin Cutting Ductwork on ground, Merhel Surveying			
	Lover Room of BAF Bastove. AFTER Dagon.			
1500 Barrett + Crew Cutting Over work				
Merhel Surveying Egypt ment. IN Botlom Fdoor of	Merhel Surveying Es	110+ mest. IN Botlom Edges of		
AAF BAYLOUSE.	AAF BASLOUSE.			
	,			
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	Changes from Plans and Specifications, and Other Special Orders and I	mportant Decisions:		
None	None			
Weather Conditions: 72° Important Telephone Calls and Interactions:	Weather Conditions: 72°	Important Telephone Calls and Interactions:		
Sunny, Breezy 1: NA	_	NA		
Personnel on Site: Merkel Bennett D suith white	Personnel on Site:  Mere Kell Remarks	J		
, , , , , , , , , , , , , , , , , , , ,	Name (print): Ran Mark !	Signature. Which is		

Page / of ( Smc. Facility: 94005.20 Date: Job/Task Number: Client Name: Should Alloy moth longical inc Demo AAF BAGLOUSE Description of Work DESCRIPTION OF DAILY ACTIVITIES AND EVENTS 0600 (D)700 to tean Bldg down SCRAD Netwoon ground. MARKIN Elacted 1100 ON GROOM (unch. 1200 1300 MISSAGE. 2 UNDEKUS Seperated into Structural, GRATE, Sounce check 145+ Changes from Plans and Specifications, and Other Special Orders and Important Decisions: Weather Conditions: Important Telephone Calls and Interactions: Personnel on Site: Benett Name (print):

Signature

Page \_\_\_ of \_\_\_

Facility: 5 MC	
Date: 6-8-99 Time: 0615	Job/Task Number: 94005, 20
Client Name: Sheild allow metaluricust	la ce
ll	hield WT.
10	BASLOWE
DESCRIPTION OF DAILY A	CTIVITIES AND EVENTS
0615 Merhel onsite	
0700 Scoth John onsite;	John cutting siles
Scotty is on Drapple	Soperating steel
0800 Benett ousite pres	raine to level renander
of Boghouse.	
V	
1000 Called allan Concerna	: Relause limits
1100 hoppers From 1st floor	Bashow are on ground
12-2	
1200 lunch.	
1300 Merhel Surreying J.	
1300 Merhel Durwyng J.	Toppers.
1400 D. Smith is onsite:	(1Ding Engageter
, in the second	Cooling Symptom.
1500 Completion of Cutting	as Sila
15:30 Scotty John Jeune Si	te
570	
1600 Merhal Souck Check	ing enstructs -
	,
Changes from Plans and Specifications, and Other Special Orders and Imp	portant Decisions:
None	
l	mportant Telephone Calls and Interactions:
Sumy Hot 95°	allan & Belease lints
Personnel on Site:	math
Name (print):	Sionature:
Han Mark	Signature:

	FIELD ACTIVITY DAILY LOG	Page of
5 44 A		

Facility:	3mC			
Date:	6-9-99	Time: 043	30	Job/Task Number: 94005.20
	e: Sheild Alloy Me			
Address of	Work Site: N. West	Blud New	Field NT.	
Description	of Work Demo D-1	11 AAF BAG how	se `	
	DESCRIPTION	V OF DAILY	ACTIVITIES	AND EVENTS
063		o Source	Cleck justi	eunets
0.70	D White, John	Jimmy C	IN Site Se	HING UD TO
	CUT Steel +	- Decon	Corrigated	tiw.
00	O Bennett onso	e Fired	Jimmy Beca	ruse of Missing too much
<u> </u>	merky Sur	reging Pieces	s of Stee(	that used to be silo
03	work that	Los CAR	to be Nou	lower; PARF of Duct
	<u> </u>	WMS CONNEC	THE DI	
100	D Scotly Decoun	m Callicated	Side	
	J	3	71223	
	D Scotly + John	Cutting over	end Pipes Fao	m D-111 -> AAF BAShare
120	70 Lunch.			
13	00 Scotly + Joh	~ Bensuing	(2) 200 hp 1	Notors From Ventitation
	- Jacon			· ·
14	D Maintenance:	Stopped By	o chech ow	the 2 motors they
	well SAlunge	- Herr		·
1	00 scotty . John	- any d	oun overtend	r.p.o
	No funtto End		unily	
Changes from	om Plans and Specifications, and O	ther Special Orders and	Important Decisions:	
		Nove		
Weather Co	onditions:	- 0 a. 1	Important Telephone C	alls and Interactions:
il	DUNNY, HOT 78	~ %*	1 Now	
Personnel of Mensial	n site: . White, Beneat i	John, Timy	^	
Name (prin		1 9	Signature	0

Page \_\_\_ of \_\_\_

Facility: 5 m C
Date: 6-10-99 Time: CLOO Job/Task Number: 94005.20
Client Name: Sheild allog Metalurgies in
Address of Work Site: p. west Blue Manfield NT.
Description of Work Decon, Deno AAF Rashows
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS
0600 Merkel in Source Check Instruments.
0200 Scotly + John onsite Cutting overlead Pipe
From D-111 -> AAF BAghouse
0800 R. Bennett onsite Moving Palletts For D. Smith
0830 3 WAY CALL to AllAN + CAROL; EVACUATION DRILL
0900 Bennett Moving Scrap From BACK to D-111 For
DISPOSAL with Rest of Scrop From D-111
Surveyed SCRAP. Edrainage Tile, Mise metal
IS TO TOWN I DE MAIN TO
1000 Talked to Bennet About Staging AREA For
Clean Pieces of Steel Awaiting Cutting; W. side
OF G-WAREhouse IN Berned AIZEA.
1100 Scoty & John loading Cut metal in 15 Red off.
1,00 section of the control of the last off.
1200 Lunch
1300 CLEARING AAF BAYLOUSE SLOW FOR LAYDON/ DECOM AREA.
1400 Surveying Structural Steel, Scotty Spreading structure Rile
1500 Scotly + John Cleaning up market Still Surveying
1600 Merhel to Office to Sounce Check Tristruito
1630 leaving side to faithe anties
3
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:  CREATE A STAGENG AREA FOR SCRAP AWAITIN CULTUS.
Beside G WAReford
Weather Conditions:    Important Telephone Calls and Interactions:   Allaw, Canpl 3 Way (Condown Aken)
Personnel on Site: Norbal Scotly John Bernett, Smith
Name (print): Signature:

Page \_\_\_ of \_\_

		V
Facility: SMC		
Date: 6-11-99 Time:	0700	Job/Task Number: 94005.20
Client Name: Sheeld Alloy Metalunical		
Address of Work Site: N. West Blud		
Description of Work Surveying SCRAP	Decom	
DESCRIPTION OF D	AILY ACTIVITI	ES AND EVENTS
0500 Swhite, merhal Jo	oh onsite	
0800 Surveying Structur	ac Steel Pile	
Scotty Spreading	Bilo 15000	/Time.
0900 Survey 4 hoppen	s After Dec	ow.
V		
1100 Continue Survey a	E structure pi	le .
moved duct work	to Caydour	snew. Dustuant was
Surveyed and in	place; John	Yourn washed the tops
+ Sides of each	one PRIOR to	Stagenz
1200 Conch	P	
1300 Continue Survey à	Structure Stee	ele
John Cutting u	p Tank.	·
1400.		
1500 Moter stopped for 1600 Source check 7	nestoing Replace	d Mylan, Source Clashel
No freethy Estain		
To tacks the	<del></del>	
Changes from Plans and Specifications, and Other Special C	orders and Important Decisions:	
Pone		
Weather Conditions: Clean Cool 70° Bress	Important Telepho	one Calls and Interactions:
Personnel on Site:	<i>F</i>	V
Name (print):	Signature	nuho

Page \_\_\_\_ of \_\_\_

Facility: SMC	
	Joh Took Numbers 244
	Job/Task Number: 94005.20
Client Name: Shell Allay Actalogical 100 C	
Address of Work Site: PWeSI Blud Newfield HJ	
Description of Work Demo Decon D-111 AAF BAS horse  DESCRIPTION OF DAILY ACTIVITIES	
0630 Merkel IN Clarge Mylar on	Inst.; Source
(beck meters.	,
0700 Scotty. John owsite; Cutting Merhel Fixing Signs on Ste	Structure Steel
Methel Fixing Signs on 5to	PRAGE MARd. Posts
	/
0900 Meekl to Fedox to Sent timestects	
1100 D. Smith Stopped Ry to See Progress; Cutting Strenting Steel.	Scotly, John Still
cutting Strentinal Steel.	J ,
1200 Cunch.	
1300 Merhel writing Surveys.	
•	
1500 John Scoty Cutting Structured	ctool
no further arties	
	***************************************
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
None	
Weather Conditions: Important Telephone C	Calls and Interactions:
RAINY 80° Hourd. None	- 41
Personnel on Site:	
Name (print): Ron Muhl Signature:	~L

Page of SMC Facility: Date: 6-15-99 Time: 94005.20 Job/Task Number: Client Name: Address of Work Site: Description of Work **DAILY ACTIVITIES AND EVENTS** 0700 <u>Unas</u> 0900 1100. BKG on less 1200 1300 1400 1500 Further Enlaves Changes from Plans and Specifications, and Other Special Orders and Important Decisions: Weather Conditions: Important Telephone Calls and Interactions: Overcast Personnel on Site:

Signature

Name (print):

Page \_\_\_\_ of \_\_/

	. , , , , , , , , , , , , , , , , , , ,
Facility: 5MC	
Date: 6-16-99 Time: 070	Job/Task Number: 94005, 20
Client Name: Sheild Allon Metalungical in	
Address of Work Site: H. west Blud	
Description of Work Deno, Decon AAF BA	ihov se
DESCRIPTION OF DAILY	ACTIVITIES AND EVENTS
0630 Meskel opsite source	checking postarments
0700 meeks Surveying Mi	sc Pifes.
Scotly Deconny Fine	1 Pieces of Duct-work; John
cutting steel	
0800 Markel writing Sur	
0930 calling Allan, For	Final Instructions
1030 Surveying Final Picce.	of Ductural
1200 To Fedex to Ship	BZA + meter to Ohio
1300.	
1300	
1400 wade Suny Ron Electric	al Parcel
· · · · · · · · · · · · · · · · · · ·	
Changes from Plans and Specifications, and Other Special Orders and	mportant Decisions:
Nanc	
Weather Conditions:	Important Telephone Calls and Interactions:
Cloudy Cool 70°	MIMM DUH
Personnel on Site: Scotts Tohu Pour	
Name (print):	Signature:
Kon Mark	1 - MIIMM

Page \_\_\_ of \_\_\_

5 mc Facility: Job/Task Number: 94005,20 Date: Address of Work Site: D-111 APF BAShowse Description of Work **DESCRIPTION OF DAILY ACTIVITIES AND EVENTS** 0710 Changes from Plans and Specifications, and Other Special Orders and Important Decisions: None Important Telephone Calls and Interactions: Weather Conditions: Personnel on Site: Merkel, D. Swith, Bennett, White, Schnorbus Signature: Name (print):

Page 27

Appendix C - Instrument Records



### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. CONTAMINATION SURVEY INSTRUMENT DATA SHEET

	505,20			Detector			Meter	, , , , , , , , , , , , , , , , , , , ,
Site Location/Background	ind Location: SMC TNSt. OFF: C	NewFields e	Type: Ludlum43-1	Serial No. 7 146 748	Probe Area (cm²)	Type: Ludlu- 2224	Serial No: 1467/8	Operating/Voltage:
Check Source No:	3785		Check Source No: 🗸			Check Source No: -		
Radionuclide: Th-230	Activity: 6500 dpm	Date: 9/18/91	Radionuclide:	Activity:	Date:	Radionuciide:	Activity:	Date:

	T		s	tart of Shi	ift Backgrou I	md				······································		end of Shift	Backgroun	ıd		,	Daily Sout		Daily Source	e Check (β)	MDA" - S	caler Mode			
Date	<u> </u>		(cpm fo	or a	minu	te count)					(cpm fo	<u> </u>	minut	e count)		· · · · · · · · · · · · · · · · · · ·	(0	x)		T	(dp	om)	Bat. OK	HV OK	Initials
ļ	-	<u> </u>	lpha			Be	ta			Alı	pha			B4	eta T	r	Source (com)	EH.	Source (cpm)	EH.	α	β	32 0	"" •"	""
	1:	2	3	Av.	1	2	7	Av.	1	2	3	Av.	1	2	3	Av.			•//	1		677			
1/2/4	17	3_	4	4.		1	<u> </u>		-(	3	3	3	$\leq$	- ~/	<u>A -</u>		1238	19.0%	MA	MA	63.2	MA	<u> </u>	NTA	877
5/12	3	3	4	4				-	니	Ч	3	4					1138	18.24	1 P/A	PA	66.0	NA	į.	AU/A	RM
5/10	5	14	5	5	-	WA	אר	4	ij	4	4	4		- 1/	h		1167	17.3%	NA	NIM	73.6	NIA	~	NIA	ES .
5/20	ع) ارد	5	ان	نا		N/A	_h	VA_	5	4	4	4		- N/	A		1255			214	73.4	NA	· V	N/A	10
5/21	4	5	5	5	-	N: / >			5	.5	5	5		N	A -		1166	17.9%	NIA	NA	73.2,		1	WIA	100
5/24	3	12	4	3	_	MA		_	5	6	5	5		<i>μ</i>	n	_	114.8	17.6%	NIA	N/A	61.2	WA	٧.	NA	<b>Ø</b>
525	1	1/2	-2	1	_				7.	5	•7	5	_	b/e				17.7%	<del>                                     </del>	WIA	84.8		./	1.//	922
	44	**	1000	2	1		~~	M	*	2	22,	h.A.	يصيم	100				170	7/2	22	na		222	7/4	2
124	17	77	8	8					3		5	3		11.11			1721	20.48	W/s	. /		. /			03
6-7	1,	+×	-			MA				4	-			WA					7,	m/3	77.8	WA	V .	N/A	
6-10	16	+-		1		N/A			7 6		6	6		N/A		<u> </u>	1203	18.48		NA	81.6	NA	~	WA	(2)
6-11	17	17	la	1	<u> </u>	NA				<u></u>	6	6		W/A		_	1216	18.68	P/A	W/A	80.7	n/A	V	m/A	P
6-14	13	17	8	8	_	NA			7	7	7	7	_	WA		<u>-</u>	1228	18.8	WA	NA	84,4	NA	/	da	B
6-15	17	16	17	7		WA			7	4	7	17		NA		<u> </u>	1239	13.9	NA	NA		WA	1	MA	B
4-14		2.71 + 4	.65 √BK	[G_ *		NA			6	7	7	7		וניאו	A -		1256	19.2	n/A	n/2	- 78.2	MA	1	mis (	S
** M	DA = ·		E × -		- 1																				

#### SHIELDALLOY METALLURGICAL CORPORATION CONTAMINATION SURVEY INSTRUMENT DATA SHEET **RSP-018**

Project Description:	AAF Bashouse/	2 <sup>ND</sup> Qtr.995uve:lb	~	Detector			Meter 🛵	1 due /13/00
Background Location	n: SMC Newif trument off	ield, Lab	Туре:	Serial No.	Probe Area (cm²)	Type: Elserline SAC-4	Serial No:	Operating Voltage: 750
Check Source No:	3185		Check Source No:			Check Source No:		
Radionuclide: TL-230	Activity: 6500dpm	Date: 9/18/91	Radionuclide:	Activity:	Date:	Radionuclide:	Activity: "	Date:

Date		(cpr	Start on for a	of Shift	Backg min	round ute co	unt)			(cpr	End on for a	f Shift	Backg mir	round	unt) X	/	Daily S Chec	Source k (a)	Daily Source Check (β)		MDA** - Scaler Mode (dpm)		
		Alp	ha			Ве	eta			Alp	ha	/		Ве	ta	,	Source		Source				initials
	1	2	3	Av •	1	2	3	Av	1	2	3	Av	1	2	3	Av •	(cpm)	Eff.	(cpm)	Eff.	α	β	
3/25/40	2.4	4	J/ A	>	4	- 12/	A -	>.	<			P	<u> </u>			>	2028	31.2%	MA	NA	31.8	N/A	BAD
5/26/99		<u></u>	3/4 -	>	<u> </u>	- 19	1 —	>	6				_			>	2014	31.0%	2/2	MA	31.0	N/A	mo
6/15/99			1/1	>	2	/م -	<b>\</b> _	$\gg$	<u> </u>			N				2	1936	29.81	N/A	N/X	34.7	N/A	PHO FARM
6/17/99	2.5	<del></del>	1/4-	->	~	- 13	<u> </u>	>	4			N			<u>^</u>	>_	2021	31.1%	N/A	1/1	32.4	N/x	AS CRA
																							<u> </u>
																	·						·
																	•						
																					·		
																				ŕ			

"

MDA . 2.71 + 4.65 \( \begin{align\*} \frac{\text{Background}}{\text{charges}} \)

Background checked pariodically during Shift

to Letermine: \( \text{f} \)

Where MDA = the activity level (dpm/100 cm²), BKG<sub>avg</sub> = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = instrument (mi

efficiency, and A = probe area (cm<sup>2</sup>).

### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. EXPOSURE RATE SURVEY INSTRUMENT DATA SHEET

Project No. 94005, 20		Detector ·		Meter	
Site Location/Background Location: SMC Newfield DZOZINST: OFFS CE	Type:	Serial No.	Type: Bicron Microne	Serial No: Bage W	Operating Voltage:

Check Source Number	Radionuclide:	Calibration Activity and Date:
3100	Cs-137	1.24 WC: / 9/12/91

	Units		Start of Shif	t Background			End of Shift	Background		Daily	
Date	-	1	2	3	Avg.	1	2	3	Ave.	Response (µR/hr)	Initials
5/17/9	nken/m	7	6	7	7	<u> </u>	7	4	7	750	pro
5/13 4	Mranth	6	7	6	4	6	6.	7	6	750	Rn
5/19/99	Moulha	5	le	6	Ç	7	4	6	6	750	Rn
5120191	UP / Kee HK	6		5	<u>پ</u>	7	7	6	7	800	pro
5-21-90		7	6	7	<u> </u>	6	7		7	300	RU
5-24-11	wella	5		_7	7	<u> </u>	7	6	1	800	æ
5-25-99	uefne		7	6	7	6	7	b	4	750	
5-26-99	us / he	4	Ģ	)	l <sub>e</sub>	7	6	<u> </u>	7	800	Ø
3-27-5	uplan		7	7	フ	8	7:	7	7	880	<b>P</b>
5-28-4		10	J.	7	ر	·J	ی	8	ີ)	700	Ø
6-1-99	methor	G	le	7	6	6	<u> </u>	8	7	800	0
6-2-97	us/hn	4	L	7	6	.7	8	フ	7	200	H(D)
6-3-95	ve /hn	<u> </u>	7	6	7	1	6	6	6	800	Ø
6-4-99	Mure	ר _	4	10	6	7	7	<u> </u>	7	<i>300 -</i>	Ø.
6791	uppn	_ 7	٦	6	7	8	7	6	7	800	Q)
6-8-49	upper	6	7	7	7	7	le	7	7	300	
6-9-99	nelka	_7	7_	7	7	3	le	7	7	850	<b>AD</b>
6-10-99	uphe	<u> </u>	<u> </u>	.6	<i>b</i>	٠	le	7	4	300	<b>(D)</b>
6-11-99	metho	-لو	7	4	6	<u> </u>	$\overline{}$	7	7	800	(Pd)
6-14-99			7	Ų	7	6	6	7	Q	800	DY.
6-15-99		(e	7	7	7	6	6	Le	6	7570	QQ.
6-16-4	wim		6	ጋ	7	6	7 .	.7	7	750	(Qu)
6-17-99	usphal	7	L.	4	4	٠.6	Le .	6	6.	750	pv
	. •										
				•.	• .						

### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. CONTAMINATION SURVEY INSTRUMENT DATA SHEET

		14005.05		Detector			Meter	
Site Location/Backgrou	ind Location: らMの コスエルSナー(	C Hewfield Office	Type:	Serial No. 32118	Probe Area (cm²)	Туре: 2224	Serial No:	Operating Voltage:
Check Source No:			Check Source No:✓			Check Source No:		
Radionuclide:	Activity: 6500 Dpm	Date: 9-18-91	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:

			S	tert of Shi	ift Backgrou	und					1	ind of Shift	Backgroun	đ			Daily Sou	rce Check			MDA" - S	caler Mode		Ī	l e
Date			(cpm fo	or a	minu	rte count)					(cpm fo	r a	minut	e count}			(c		Dally Source	ce Check (β)		em)		1	
		. Al	pha			Ве	ta			Al	oha			Be	ta		Source		Source				Bat. OK	HV OK	Initials
	1	,2	3	Av.	1	2	3	Av.	1	2	3	Av.	1	2	3	Av.	(cpm)	Eff.	(cpm)	Eff.	α	В			
5/n/g	2	3	4	3		WA			3	4	3	3 .		-WA			1169	17.9%	N/A	N/.4	60.1	WA		MIA	Rn
5-1841	3	4	<u>'3 .</u> .	3					4	3	4	4	•					17.6%		NA	61.2	7	~	NA	RM
5 /14/14	3	'4	4	4	/	NA			3	4	4	4		N/A			1142		7	N/A		,	_	M/a	RM
2/24/95	6	6	7	6		-101			5	5	4	5		- 11/2			1248	19.2%	NA	NIA	73.4	NA	V	NIA	gg.
5-249	7	3	6	7	_	11/4			le	5	4	Ç	_	WIA			1/32	17.3%	W/A	N/A	86,8	WIA	. ~	W/A	en
5.25.9	7.	6	8	1		NA			7	ד	8	7		MA			1114	17.03	WA	MA	88.3	7	~	wh	P.
5-26-9	b	ا ا	7	10		2/2			6	1_	7	7	_	N/A			1204	18.4%	Ma	Ma	76.6	NA	~	wite	$\alpha$
5-27-99	l	8	2	<u> </u>		M/A			_7_	5	7		~	NA			1166	17.8%	a-/A	مآس	84,3	NIA	/	NIA	Z/
5-28-17	4	6	1	4		W/A	-		<u>ل</u> ه.	7		7	_	~   A			1236	18.9%	MA	~ip	74.6		./.	NIA	Ew .
6-1-99	8	7_	7	$\gamma$		UA			7	لما	Lp.	6		Wh	_~		1188	18.2%	WIA	NA VIA	82.5	الر	1	No	PI
6.2	1	જ	7	٦					8	જ	7	8	-	2	<b></b>					NA	81.6	- (*	· V	WA	pu
6-3	7	7	7	7		w/_	4		6	8	7	7		N			1189				87.9	N/A	1	ルル	₩.
6-4	8	٦	8	8		- 2/4	<u> </u>		6	7	8	7		2/	•		1177	18.0%		14/1	88.1	NA	1	N/A	Rino

\*\* MDA = 
$$\frac{2.71 + 4.65 \sqrt{BKG_{avg} \times t}}{t \times E \times \frac{A}{100}}$$

where MDA = the activity level (dpm/100 cm²), BKG<sub>we</sub> = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = instrument efficiency, and A = probe area (cm²).

#### SHIELDALLOY METALLURGICAL CORPORATION CONTAMINATION SURVEY INSTRUMENT DATA SHEET RSP-018

Project Description:	17003.60			Detector		Meter				
Background Location	: SMC Ne	w Field	Ludion	Serial No.	Probe Area (cm²)	7224 Type:	Serial No:	Operating		
D.	202-Inst.	office	43-89	132118	100	Ladium	(1979)	Voltage:		
Check Source No:	3785		Check Source No:			Check Source No:				
Radionuclide:  Th-230	Activity: 6500 dpm	Date: 9-19-91	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:		

Date					Backg min			,		(cpr		f Shift		round ute co	unt)			Source ck (a)	Daily Source Check (β)		MDA** - Scaler Mode (dpm)		
		Alp	ha			Ве	eta			Alp	ha			Ве	ta								Initials
	1	2	3	Av ·	1	2	3	Av	1	2	3	Av	1	2	3	Av	Source (cpm)	Eff.	Source (cpm)	Eff.	α	β	lintais
6-7	11	7	6	8		NA			8	7	7	7		N/A			1220	18.6%	H/A	MA	<b>8</b> 5.3	MA	(2)
6-8	7	8	8	8		No			7	7	6	7		-11/		<u> </u>	1262	19.33	NA	MA	82.2	NA	B
6-9	7	フ	7	J		-N/A			b	5	5	5	_	NIA			1194	13 28	ν/ <sub>A</sub>	Na	82.5	MA	B
6-14	5	le	Ļ	J <sub>e</sub>		ĸ/A	_		6	5	6	6		WA			1224	18.7	MA	NA			₽ P
						-													,				
																							:
													:										
					,																		
																		·					

 $MDA = \frac{2.71 + 4.85 \sqrt{BKG_{evg} \times t}}{t \times E \times \frac{A}{t}}$ 

where MDA = the activity level (dpm/100 cm<sup>2</sup>), BKG<sub>avg</sub> = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = the instrument efficiency, and A = the probe area (cm<sup>2</sup>).



#### Designer and Manufacturer of Scientific and Industrial Instruments

#### CERTIFICATE OF CALIBRATION

LUDLUM MEASUREMENTS, INC. POST OFFICE BOX 810 PH. 915-235-5494 501 OAK STREET FAX NO. 915-235-467:

SWEETWATER, TEXAS 79556, U.S.A.

CUSTOM	ER SHIELDALLOY M	METALLURGICAL				ORD	ER NO	227320/238032
Mfg.	Eberline	э Мо	del	SAC-4		_ Serial No.	863	5
Mfg		Mo	del			_ Serial No.		
Cal. Date	3-Jan	<u>-99</u> Cal Due	Date1	3-Jan-00	Cal. Inte	erval <u>· 1 Y</u>		
Check mar	rk 🗹 applies to applie	cable instr. and/or de	lector IAW mfg. spec	:. T	<u>73</u> •F	RH	_20_% Al	699.8 mm l
☐ New	Instrument Instrum	nent Received 🛛 W	ithin Toler. +-10%	] 10-20% 🔲 🔿	ut of Tol.	] Requiring R	epair 🗌 Ott	ner-See comments
	hanical ck. esp. ck o ck.	<ul><li>☐ Meter Zeroed</li><li>☑ Reset ck.</li><li>☐ Alarm Setting</li></ul>		Background S Window Oper Batt. ck. (Min.	ation		☐ Input Sen☐ Geotropi	
	ated in accordance						711- 1 1	
Instrument '	Volt Set900	_V Input Sens	0 mV Det. Ope	er	_ V at	mV	Dial Ratio	=
☐ H/	V Readout (2 points)	Ref./Inst		v	Ref./inst.		/	v
COMME	ENTS:							
	•	,						
			•			•		
		*						
							•	
			•					
Gamma Celbrat	ion: GM detectors positioned pe			<del>~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~</del>	ACNT DE	21D	INICTRIBATE	\ IT
	RANGE/MULTIPL	·	ERENCE . POINT		MENT REC UND REA		INSTRUME METER REA	
				<u>-</u>				
						<del></del>		
				<del>-</del>	<del></del>	<del></del>		
				_				
				<del></del>	1		·	
·	Uncertainty within ± 10%			T and				brated Electronics
·	REFERENCE CAL POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	•	RENCE POINT	INSTRU RECEIV	MENI VED	INSTRUMENT METER READING
Digital				Log				
Readout	400 K cpm 40 K cpm	40011 (0)	<u>40011 (0)</u>	Scale	- <del> </del>	•		
	4 K cpm	401	401					
	400 cpm	<del></del>	<u>40</u> ( ·			•		
Ludhum Adama	40 cpm	<u>. 4</u> (		transplie to the New	land ladibala		Toobseless ask	Also collispation facilities
other internation	rements, inc. certifies that it onal Standards Organization n system conforms to the req	n members, or have been de	rived from accepted value	es of natural physica		ave been derive	d by the ratio typ	
	ce Instruments an		-1-1774 GIRD 74 Off 020-177	<u>,</u>		01010 0	TOXOS GOILDIO	non decine iteree
	mmais/N □1162 □ C	•	i □ T1008 □ T879 〔	⊒E552 □E551			☐ Net	dron Am-241 Be S/NT
Alph	na S/N <u>Pu23</u>	9#8743	Beta S/N			Other _		
☑ m 50	00 S/N	48 🗆	Osciiloscope S/N	· .		☑ Multimete	r S/N	61730074
Calibrate	ed By: Some	Marting			_ Date _		Jan-99	
Reviewe	d By:	1/100 AWG	sudo		Date _	17	Jon 9	2



#### Designer and Manufacturer of Scientific and Industrial Instruments

LUDLUM MEASUREMENTS, INC.
POST OFFICE BOX 810 PH. 915-235-5494
501 OAK STREET FAX NO. 915-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

### Bench Test Data For Detector

Detector	Int.	Serial No. N/4			
Customer_ <u>SHI</u>	ELDALLOY META	ALLURGICAL		Order #.	227320/238032
Counter	SAC-4 S	erial No. <u>868</u>	<del></del>	Counter Input Sensitivity	// <i>//</i> m\
Count Time	min buckgro	und fel min source	· e	Distance Source to Detector	surface
Other			·		•
High Voltage	Background	Isotope <u>Pu239</u> Size <u>12.8 K.cpm</u>	Isotope		
<u> 750 :</u>	,	904			
<i>10</i> 0	0	979		·	
<u>850</u>	0	1009			
- 900	/	7027			
9.50	0	999			
	1	1015			
10.50	4	1044			
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·					
<u> </u>					
		·			



FORM C22A 09/17/98

### of Scientific and Industrial Instruments

#### **CERTIFICATE OF CALIBRATION**

POST OFFICE BOX 810 PH. 915-235-5494
501 OAK STREET FAX NO. 915-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

4				•			.,		
CUSTOME		IVIRONMENTAL MGNT						229961/239	307
Mfg	Ludium Measuren	ments, Inc. Mod	el	2224		Serial No.	14671		
Mfa.	Ludium Measuren	ments, Inc. Mod	el	43-89		Serial No.	. PR 146	748	
Cal. Date	18-Mar-	-99 Cal Due [	Date	18-Mar-00	Cal. Ir	iterval1	<u>Year</u> Mete	rface20	2-783
	•	cable instr. and/or dete						ut 703.8	mm Hg
		ent Received Wil			Out of Tol.	□ Requiring R	Repair 🗆 O	ther-See comm	ents
-		•			nd Subtract		☐ Input Se		
Mech F/S Re	anicaick.		L	j backgrou 7 Window (	Operation		☑ Geotrop	•	
₩ Audio		Alarm Setting o			Min. Volt)		<u> </u>		
		with LMI SOP 14.8 rev 1	<del></del>		l in accordance		P 14.9 rev 12	/19/89.	
		_ V Input Sens. <u>Com</u>		_			Threshold		m
	Readout (2 points)	<u>.</u>							v
							<del></del>		
COMME	<b>NIS:</b> nreshold: 120mV								
	reshold: 3.5mV								
	Window: 30mV								
	<b>i chec</b> k but not with detector n					-			
Firmware		or connected							•
		:// 20 1 00							
2 narrom	ent caliprated	with 39 inch a	ore						
Gamma Calibratio	on: GM detectors positioned per	rpendicular to source except for A	A 44-9 in which the front of p	robe faces source	l.				
<u> </u>			RENCE		TRUMENT RI	EC'D	INSTRUMI	ENT	
	RANGE/MULTIPLE		POINT		FOUND RE		METER RE		
	X 1000	400Kcpi			400		100	ク	_
	X 1000	100Kcpr			100	2		100	_
	X 100	40Kcpi	m		400		40		_
	X 100	10Kcpr	m		100			_/00	-
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	X10	1Kcpi			/00	<del></del>		_/00	-
	<u>X1</u>				400		40	100	-
	X1	100cpi	<u>m</u>		100			100	-
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				<del></del>				librated Electro	- nically
*(	Uncertainty within ± 10%								
	REFERENCE	INSTRUMENT	INSTRUMENT	l.	REFERENCE	INSTR RECE	UMENT	INSTRUMEN	
	CAL. POINT	RECEIVED	METER READING	1.	CAL. POINT	RECE	IVLO	METER REA	DING
Digital Readout	400 K cpm	399889	399889	Log Scale					
	40 K cpm	39988	39988						
-	4 K cpm	3999	3999						
_	400 cpm	400	400	ľ	·				
	40 cpm	40	40						
Ludium Measur	rements, Inc. certifies that th	e above instrument has been	calibrated by standard	s traceable to t	he National Institut	e of Standards and	i Technology, or	to the calibration for	scilities of
other internation	nal Standards Organization system conforms to the requ	members, or have been defi uirements of ANSI/NCSL Z540-	ived from accepted vali 1-1994 and ANSI N323-19	jes ot natural pi 97	nysical constants o	State	of Texas Calib	ration License No	). LO-196
	e instruments and/								
Ct-137 Gam	mas/N D1162 DG	5112 M565 5105	☐ T1008 ☐ T879	□E552 □	E551		□n	eutron Am-241 Be	e S/N T-34
			Bela S/N- <u>76-99/47</u>			va Other _			
<u>√</u> m 50		:	Oscilloscope S/N_			Multimet	er S/N	57390613	
	d By: Lowad				Date	18 Mar	- 99		
Davida	2n	- Ha-,				31100			



POST OFFICE BOX 810 PH. 915-235-5494
501 OAK STREET FAX NO. 915-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

### Bench Test Data For Detector

Dete	ector	43-89	_ Serial No	98 14674	8		Orde	r#. <u>22</u> 99	61/239307
		NTEGRATED ENV				Alpha	Input Sensitiv	ity120	mV
Cou	nter	2224	Serial No/	46718					mV
	<del>-</del>	1Minute							mV
						Distance Sou			
Oiii									
	ligh /oltage	, Back Alpha	ground Beta	Isotope Size - Alpha	<i>Pu-23</i> 9 12 800cpm Beta	Size_ <u>z</u>	5978cpm Beta	Isotope_ Size_ Alpha	<u>7c - 99</u> 1 <u>4300 c, 2111</u> Beta
	600	A Aprila	196	4966	407	2	10500	8	2641
-		0	263	5/99	491	1	12727	7	3728
-	650	0	270	5227	811	2	134/8	9	4902
	675	,	244	5241	1717	0	14422	Ь	62531
	<i></i>						***************************************		
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		portional defector portional defector				ur static test using r static test using		alpha/beta co	ounter.
Sig	nature _	Conrad-	Talendo				Date	0 18 Ma	r 99

# M

FORM C22A 09/17/98

#### of Scientific and Industrial Instruments

#### **CERTIFICATE OF CALIBRATION**

POST OFFICE BOX 810 PH. 915-235-5494 501 OAK STREET FAX NO. 915-235-4672 SWEETWATER, TEXAS 79556, U.S.A.

CUSTOME	R INTEGRATED EN	VIRONMENTAL MO	NT					ORDER N	10	229961/239	307
				^	MICRO R	EM	Seric	I No. <u>B</u>	296W		
Mfg		N	Model				Seric	l No			
	19-Mar-							1 Year	Meterfa	ce <u>0-20</u>	0 ∪R/h
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3		ent Received									_
	anical ck.	✓ Meter Zero				ound Subtract			input Sens.		
F/S Re		Reset ck.	ou .		Window	Operation			Geotropisn		
☐ Audio		Alarm Settir	ng ck.		Batt. ck.	(Min. Volt)	V[				
	ated in accordance v	rith LMI SOP 14.8 re	ev 12/05/89.	Ø.	Calibrate	ed in accordan	ce with LA	AI SOP 14	.9 rev 12/19, eshold	/89.	m۷
strument \	Volt Set	V Input Sens	mV	Det. Oper	•	V at _	<del></del>	mV Dic	al Ratio	=	
☐ H\	/ Readout (2 points)	Ref./Inst.	· ·	/		V Ref./In	st		/		v
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amma Celbrat	ion: GM detectors positioned per	pendicular to source excep	t for M 44-9 in which	the front of prob							
i			EFERENCE			ISTRUMENT F			STRUMEN		
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!	X100		nR/hr			150			150		-
	<u>x10</u>		uR/hr uR/hr			50			5	<u></u>	-
•	<u>x10</u>		uR/hr			145			150		-
	<u>xl</u>		uR/hr			100			100		-
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udium Meas	urements, Inc. certifies that the lonal Standards Organization	e above instrument has	been calibrated to	by standards t	raceable t	o the National Institutional Institution					
ihe calibratio	n system conforms to the req	uirements of ANSI/NCSL	2540-1-1994 and A	NSI N323-1997	7			State of Te	xas Calibrati	on License No	o. LO-1963
Reference	e Instruments and	or Sources:	🗆	[] <b></b> [	] ecco '1	Z ccc			- Neut	ron Am-241 B	e S/N T-304
	mma S/N 1162 1						_ [] Oth	er	•		
_ Alpi	na S/N		beld s/N .	- 6/1							
	00 S/N										
Calibrate	ed By: Conrac	Soludo				Date	: <u>1911</u>	at 49			<del></del>
Reviewe	ed By: Thomas	Hami		·		Date	∍3TU	Jan 91	9		

Page 28

Appendix D - Radiation Work Permit



### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. RWP LOG

IEM Project No.: 94005.20 (AAF Bashouse D'sassenbly)

Permit No.	Preparer /	Date Authorized	Date Terminated	Brief Description of Work
FEM/SAC -99-01	R. Alan Duff/BHDyy	5/17/99	6/17/99	AAF Baghouse Disassembly
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### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. RADIATION WORK PERMIT

Permit No: IEM/	smc-99-01		Type: Job Specific - Exte	nded   Routine
Expiration Date: 6/	17/99	•	IEM Project No.: 94005.	20
Description and Location	of Work: Decontai	m ination	+ disassembly & See Work	Plan
	of AAF	Baghouse		
	1480 -/		FORMATION	
General Area Dose Rates	, 13	uRem/m	See Map	·
Maximum Accessible Dos	se Rates (mA/hr)	to whem/	<b>⅓</b> See Map	
Removable Contamination	n (dpm/100 cm²):	<100 2p	Moderne 7 of See Map	
		ALARA	REVIEW	
Estimated Total Dose (Ma	eximum Individual):    TB	D Attached	Actual Total Dose (Maximum Individ	ual):
Pre-job Briefing by:	P. Alan Duff		Post-job Briefing by:	
Dose Reduction Techniqu	es to be Employed: M:	imize tim	e spent in baghouse,	, respiratom
protec	tion, HEPA vac	UVm Kuk	to a	
4	J 1 1 1 V	253	(eact	
		DOSIMETRY R	EQUIREMENTS	
□ TLD/Film Badge	☐ Finger Ring	□ SRPD	<b>∦</b> BZA	☐ Alarming Dosimeter
□ Stay-Time Estimate:	□ Other (Specify): $\mathcal{N}$	A	•	
		PROTECTIVE	EQUIPMENT	
Coveralls	□ Lab Coat	□ Hood	Rubber Gloves	Booties
□ Rubbers ·	Respirator	□ Taped Sear	ms HP Coverage	□ Stationary Air Sampler
□ Pre-job Bioassay	□ Post-job Bioassay	□ Special Brie	efing in:	•
Other Precautions and Spo	ecial Instructions: Fv: ≤	sk upon	ex:+ from work an	ras
Authorized by (signature of	of RSO): By	W	Date: 5/17/5	7
Authorized by (signature of	of CHP): BNDM P	er telecom	Date: 5/17/96	3
Terminated by (signature	1117	JAN. T.	Brener Date: 6/19/	<del>1</del> 9G

RSP-008

Survey	Numb	er <u>AA</u> F	- 05	17		Date	e of S	urvey_	5/1	7 Ag
Survey		Survey why offe Storage hed: Ye		F F F		Survey Per Signature Print Name	PN R.A	by:	J FF	
<u> </u>	Ins	trument (1)			Instrum	ent (2)				ument (3)
Model:		um azat	43-89	Mod	el: Bicro	n Micro	rem	Model:	224	1/44-10
Serial No		7	132118	Seria	al No. BZ	196W		Serial N	0. 1145	35
Calibratio	n Due:	3/18/00	)	Calib		3/19/00		Calibrati	ion Due:	1/4/00
Efficiency		17.9 do		Effic	iency $\mu$	/A		Efficienc	су	N/A
MDA			KG3cpm	MDA	N/A CF	P/A BK	3 7 WR	MDA	N/A	CF MA BKG 7"
							) Am	bient	Instrumen	Comments and Additiona
Survey			Contamin	ation L	evels		1	on Levels	t Used	Information
Point	Fixed	Beta/g	amma		Aiph	a	(micro	R/hour)		
	(F) or Total (T)	cpm/area	(dpm/100	cm²)	cpm/area	(dpm/100 cm²)				4.
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Appendix E - Survey Results



				RSF	2-008				
Survey	/ Numl	ber <u>SM</u> (	C-0518°	19	Dat	te of S	urvey	5-18	3-99
D-	y Descri	sag house		e mou A (.	Signature	2 n	erKe		
	ln:	strument (1)		Instrun	nent (2			Instr	rum :nt (3)
Model:	Ludlo	m 2224/L	13-89 N	10del: BICRON	Micron	410	Model:		
Serial No	D. 119	791/1321	18 s	erial No. BZ	96W		Serial N	lo.	
Calibrati		3/18/0	<b>a</b> c		/19/00	<u> </u>	Calibrat	tion Due:	
Efficienc	. 1 1.	9/2 17.	0 10	fficiency N			Efficien	СУ	
MDA C	1.2dpm	CF 5.7 B	$\frac{3}{N}$	IDA ~/A CF	~/A BK	G 6 may	MDA		CF BKG
						•			
Survey Point			Contaminatio	n Levels	· · · · · · · · · · · · · · · · · · ·		pient n Levels	Instrumen t Used	Comments and Additional Information
Survey Point	Fixed (F) or	Beta/g	Contaminatio	n Levels	а	Radiatio		3	
1	1	Beta/g cpm/area	<del> </del>	Alph	ia (de n 100 mri	Radiatio	n Levels	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total		gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total	cpm/area	gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total	cpm/area	gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total	cpm/area	gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	
1	(F) or Total	cpm/area	gamma	Alph	(de n 100	Radiatio	n Levels R/hour)	3	

RSP-008

Survey	/ Numi	ber <i>S]</i>	MC-05	199		-000 Dat	e of S	urvey	5-19	-99		
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	In	strument (1)		Ī	Instrun	nent (2			Insti	rument (3)		
Model:	/ udl.	m 2224/c	17 - 89	Mod	del: BICROW	Micara		Model:				
Serial No		19791/13		Seri	ial No. BZ9	6 W	<b></b>	Serial N	lo.			
Calibratio		3/18/08	=	Cali	bration Duo: 3	115/00		Calibrat	ion Due:			
Efficienc	٧	7.5%		1	ciency	~//s		Efficien	CY			
MDA 6			KG Hoon	MD			Guertin	MDA		CF BKG		
Survey	Conta			nation Levels			Ambient Radiation Levels		Instrumen t Used	( omments and Additional		
Point	Fixed (F) or Total	Beta/ç cpm/area	gamma (dpm/100 c		Alph			R/hour)				
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RSP-008

Survey	/ Num	ber <b>5</b> #	46-052	109	9	Dat	e of S	urvev	5-70	0.00		
						Dat	.6 01 0		_ 3 - 70	7 - 1 - 1		
Survey	Survey Description: D-111 Baghouse						Survey Performed by:					
	Removal of Dust From Top To Bottom, Vaccoun & Sweeping.						Ron Merz Kel					
	Bo Hon	~. VACCUI	un tSu	ecpi	~3	Signature	<u> </u>	· ( C/2 1/				
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Drawii	ng Atta	ched: □ Ye	es		NO .	Le-	·m_	Mer	Kil			
	in	strument (1)			Instrum	Instrument (2				Instrument (3)		
Model:	Model: Ludlon 7274/43-89				del: Bicnon		Model: M/A					
	Serial No. //979/ /32/18				ial No. BZ964	<b></b>	Serial No.					
Calibrati	Calibration Due: 3-18-00				Calibration Du :: 3/19/00				Calibration Due:			
	Efficiency 9.2%				Efficiency ////			Efficiency				
MDA					MDA N/A CF N/A BKG 7MA			MDA CF BKG				
	<u> </u>		Ci-				T .		T .			
Survey Point	Contamination Levels						l .	bient on Levels	Instrumen t Used	( omments and Additional Information		
	Fixed (F) or	Beta/g	gamma	Alpha			(m cro	R/houri				
	Total (T)	cpm/area	(dpm/100 c	:m <sup>E</sup> )	дрт ⊣а	ide n 100 int)						
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# SHIELDALLOY METALLURGICAL CORPORATION RADIOLOGICAL SURVEY FORM

				٠	RSP-	800						
Survey	y Num	ber <u></u> ろM	C-052	199		Da	ate of S	urvey	5-	21-99		
		iption: 0st Decon ched:	ppea	level noms	Survey Performed by:  Ronn Merkel  Signature  Print Name							
	Instrument (1)					nent (2 Instrument (3)						
Model: 2224 / 4389				Mod	Model: BICRON LER				Model: N/A			
Serial No	Serial No. 44779/146748				Serial No. Bage U				Serial No.			
Calibration Due: 3 - 18 - 00				Calibration Du-:: 3-19-00				Calibration Due: N/A				
Efficiency 17.9 % X				Efficiency ~/~				Efficiency w/A				
MDA	73.2dp	LCF 5.6 B	KG 4	MDA	N/A CF	<b>Р</b> /Д В	KG 7 /	MDA	w/s	CF N/A BKG		
Survey Point		Contamination Levels						bient in Levels	Instrumen t Used	( omments and Additional Information		
	Fixed (F) or	Beta/gamma		Alpha			(m cro	R/hour)				
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## INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

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# SHIELDALLOY METALLURGICAL CORPORATION RADIOLOGICAL SURVEY FORM

Survey	/ Num	ber <u>S</u> M	<u> </u>	59	9 A	Dat	e of S	Survey	5-2	5-99
	Descr	VAC TR			sb Survey.	Survey Pe	.0	•	Ment called	
	In	strument (1)			Instrum	ent (2			Insti	rum ant (3)
Model:		2221/43	89	Мо	del: Bickon			Model:		
Serial No	).	119791/13		Ser	rial No. B-296W			Serial N	lo.	
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## INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

Survey Number	SMC-052599A	

Page \_ 7 \_ of \_ 2 \_

Insti	rumer	nt/SN:	2224	/ 431 //	89 3791	/132	118	Cali	ibratio	n Due:		3- 18	- α	)		Site	Name	:.≤n	1C				Date	5.25	Time	700
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l	Model:		2224/43	87	Mod	del: Biceso			Model:	~/A	
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## INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

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urvey Number	SMC 052599 B				Page <u>2</u> of	<u>a</u>

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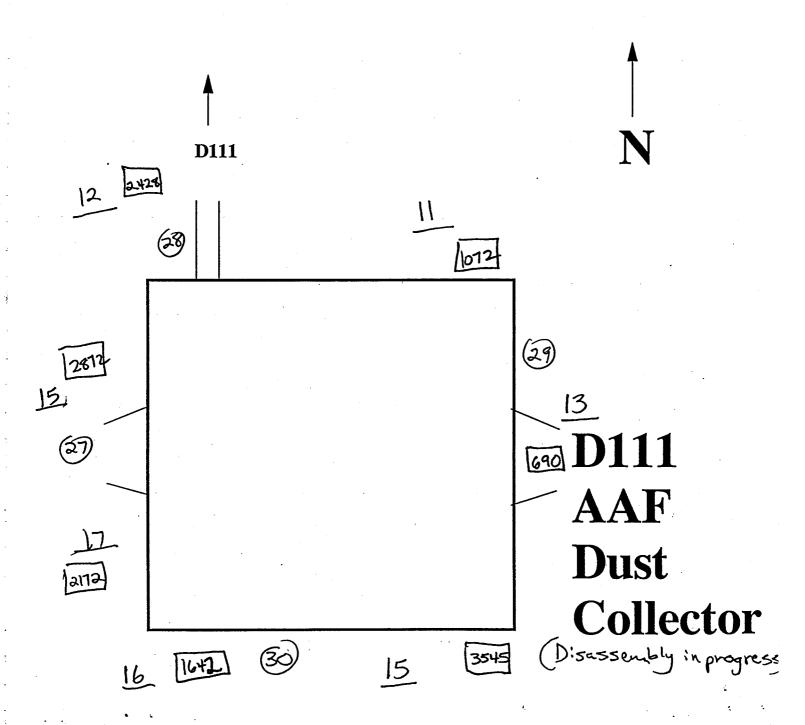
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### INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC.

RADIOLOGICAL SURVEY FORM

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rab	), 20 mt	er 2 1991 Int conta is listed	mination Re	vei] =	oos.	Survey Per Signature Print Name	BY( R. A	DY.	) Juff		
	in	strument (1)		_	- Instrum	nent (2)			Instr	ument (3)	
Model:	لنا	llum 2224 46718/146		Mod Seria	lel: Bicro	n Microre	2m	Model: Serial N	Eberl	ine SA	c-4
Calibratio	on Due:	3/18/00	2	Calit		11400	. :	Calibrati		1/13/99	
Efficience		17.7%		-	iency P/A	N/A BKG	37 uren	Efficienc		31.2%	
MDA 8	15~PM	CF 5.7 BI	KG7epma/	MDA	A P/A CF	/A BKC	3 / <u>/</u> My	INDA	31.8dpm	F NA	BKG 24 '
Survey			Contamin	ation L	evels			bient on Levels	Instrumen t Used		s and Additional ormation
	Fixed (F) or Total (T)	Beta/g cpm/area	amma (dpm/100 d	cm²)	Alph cpm/area	a (dpm/100 cm²)	(micro	R/hour)			
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# - denotes smear location

# - denotes total alpha contamination
in dpm/100cm2 well

# - denotes exposure rate in microR/hr

Survey	/ Num	ber <u><b>≾м८-0</b> 6</u>	0199 €	3		Dat	e of S	urvey	6-1	-99	
	Descripes:	ption: Decon 5 couse; 6 BA		F 7		Signature	an 1	d by: Mer.Ko Werland	P		
		strument (1)			Instrume	ent (2 <sup>-</sup>			Inst	rumant (3)	<u> </u>
Model:	ullun	~ 2024 /	4389	Мо	del: Buchon			Model:	NIA		
Serial No	o. 119	791 / 132	118	Ser	ial No. B-296			Serial N		IA	
Calibrati	on Due:	13-18-	Ð	Cali	bration Dub: 3-1	9-00		Calibrat	ion Due:		
Efficienc	<u> </u>	18.2%		Effi	ciency PA			Efficien	بر cv	J/# -	
MDA 5	82.52	CF 5.5 B	KG 7 CP	MD	A P/A CF	A BKC	3	MDA		CF	BKG
Survey Point			Contamin	ation I	Levels		2	bient on Levels	Instrumen t Used	( omments a	
	Fixed (F) or Total (T)	Beta/g cpm/area	gamma (dpm/100 c	:m <sup>2</sup> )	Alpha opm . ⊣a	(dpm 100	(m ero	R/houri			
GRAJE BAG Platos						+ m²)	10	up/hn.	1	surveya c Accessible Compo	packeble hours
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## INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC.

Survey Number <u>SMC-060199</u>	RADIOLOGICAL SURVEY  3	FORIVI	Page of
Instrument/SN: 2224   43 81	Calibration Due: 3-18-00	Site Name: 5 MC	Date / Time:
Instrument/SN Bran BJ96W	Calibration Due: 3-(9-00	Location: Newfield	
Instrument/SN	Calibration Due:	•	
NJA	NA	Kelease Scarey	Paron to Demo.
Survey Performed By (Print): Ronu V	Mer Kel	Survey Performed By (Signature	e): (
Battery OK PHV OK	Source Check OK	Grid Dimensions:	x inches bentimeters
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1 240 level			
2 pt Floor, A	λ Λ	λ	<del></del>
3 BAGHOUSE; BAG ROOMS. //	111 1111	//////	
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23 000 = BAG BIAT	es area hannes.		manufacture of the second of t
24	5 Does No pyenov		
25			
Notes: Floop of Rooms is	Grate, with the BAY Plat	es in center over	2 hoppers.
WALLS ARE STRUCTURA	comte, with the Byplate Skel Covered with C	ornighted Find Do	ons Steel
ALL ACCESSISIE AREAS.	Surryed By direct FICISK	Levels observed	se with
80 - 140 cam our high	L Skel Covened With Co Sunnyad By dinect Frisk Levels Hein was NO class owels.	ase miner wip.	

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Survey	/ Num	berSM	1C-060	296	<u></u>	Da	te of S	urvey	6.2	- 99
	24>					Signature	IN M	len/al	7	
Drawin	g Atta	ched: ★Y	es	□ N:	0	Ko	nnp	1epl	4	
	In	strument (1)	·		nstrur	ment (2			Insti	rument (3)
Model: ¿	udlum	2224/43	89	Mode	el: Bicron	)		Model:		
		91//321		Seria	1 No. B296h	<u>)                                    </u>		Serial N	lo.	
Calibratio	on Due:	3-18-00		Calibration Duo: 3-19-00				Calibrat	ion Due:	
Efficience	У	18.4%	7	Effici	<u> </u>			Efficien	cy .	
MDA 8	1.6dp	wcf 5,4 E	skgx17 cp	MDA		₽/A BK	G6 WREN	MDA	(	CF BKG
Survey Contant			Contamina	ation Le	vels			oient n Levels	Instrumen t Used	( omments and Additional Information
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# INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC. RADIOLOGICAL SURVEY FORM

Survey Number	Page Z	_ of _ <u>_</u> _
Instrument/SN: <sup>222</sup> 4/4389 /19791/132118	Calibration Due: 3 - 18 - 60 Site Name: 5MC Date:	۶ Time:
Instrument/SN BICRON BOYOW	Calibration Due: 3-19-00 Location: Newfield NT	
Instrument/SN	Calibration Due:  Purpose:  Roucus Clasharba Unitaria	. 1
Survey Performed By (Print): RONN M	Merkel  Survey Performed By (Signature):	
₽Battery OK - PHV OK	Source Check OK Grid Dimensions: x inches	
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Notes: I RUCK WAS DECONNE Truck was Clean which was 140-1 Bags will Be remo	ed outside, Inside holding TANK upon survey, NO Activity of above BKG except BAy house Po 80 cpm d.  80 cpm d.  oved And disposed of per D. 5 mith, CARol Benger	ntion

Surve	y Num	ber <u>SM</u>	C-0604	99	· · · ·		Da	ite of S	Survey	6	-4-9	9
Surve	Survey Description:  Release Large DunpTruck  "Yoke"  Drawing Attached: PYes   No						Survey Performed by:  Signature  Rown Merkel  Print Name					
Drawii	Drawing Attached: ☐Yes ☐ No									<del></del>		
	In	strument (1)			lr	nstrum	nent (2)			Inst	rument (3)	
Model:	2224	14389		Model: Bicnon			Model:	<u> </u>				
Serial N		/ 'ጋየ/		Serial No. Bague				Serial No.				
Calibrati	ion Due:	3-18-0	<b>b</b>	Calibration Due: 3-19-00			00	Calibration Due:				
Efficienc	су	182		Effic	iency N	A			Efficien	су		
MDA	88.1	1°CF 5.6	skg g 🕏	MDA	٧/١	CF	N/A BI	KG 6 WAY	MDA	(	CF	BKG
Survey	· •						***************************************	1	bient on Levels	Instrumen t Used		s and Additional ormation
Point	Point Fixed Beta/gamma (F) or				Alpha , (micro			R/hour)				
	Total	cpm/area	(dpm/100 d	cm²)	cpm/area		(dpm/100					

Survey Point		H_44 44 444	Contamination L	evels		Ambient Radiation Levels	Instrumen t Used	Comments and Additional Information
Fomt	Fixed (F) or	Beta/ç	gamma	Alph	na .	, (microR/hour)		
	Total (T)	cpm/area	(dpm/100 cm²)	cpm/area	(dpm/100 cm²)			
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## INTEGRAGED ENVIRONMENTAL MANAGEMENT, INC. RADIOLOGICAL SURVEY FORM

Surve	ey Nu	ımbeı			<del></del>																	Pag	ge		_ of _	
Insti	rumen	t/SN:						Cali	bratio	n Due	•					Si	te Nar	ne:					Date	):	Tir	ne:
Insti	rumen	t/SN						Cali	bratio	n Due:	:				•	Lo	cation	1:								
Insti	rumen	t/SN						Cali	bratio	n Due:	: .					Pu	ırpose	:							***	
Surv	ey Pe	rform	ed By	(Print):						-						St	ırvey l	Perform	ed By	(Signa	ture):					
□ Ba	attery	ОК			<b>C</b>	HV O	<b>к</b> .				□ Se	ource	Check	ок		Grid Dimensions: x inches □ feet □ centimeters										
	Α	В	С	В	Е	F	G '	н	1	J	к	L	м	N	0	P	٥	'R	s	Т	U	T <sub>v</sub> .	w	х	T v	z
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Notes	:	_																								

**RSP-008** 

Survey Number AAF-061	599	Date of	Survey	6-15-99
Survey Description: 4- Piece Connected the two I  100% Direct Freisk & ACC FOR UNRESTRICTED USE, NO Exceeded the 600 DPM/100 BOOD DPM/100cmz Fixed of  Drawing Attached: Yes	was releasable	Survey Perform Signature  Print Name	who	
Instrument (1)	Instrume	ent (2)		Instrument (3)
Model: Ludlum 2224/4389	Model: Bicron	N	NIA	
Serial No. 146748/146718	W	Serial No.	wh	

3-19-00

BKG 7

Calibration Due:

CF

BKG

Efficiency

MDA

Calibration Due:

Efficiency

MDA

Calibration Due:

Efficiency

MDA

-18-00

BKG

CF

Survey Point			Contamination Le	evels	Ambient Radiation Levels	Instrumen t Used	Comments and Additional Information		
Point	Fixed (F) or	Beta/g	jamma	Alph	na	(microR/hour)		·	
	Total (T)	cpm/area	(dpm/100 cm²)	cpm/area	(dpm/100 cm²)				
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Survey	Numi	ber 06	1599A	· · · · · · · · · · · · · · · · · · ·		Dat	e of S	urvey_	6-15	5-99
AC TI F	Descri C Gard Le Red IX 29		were zin of m/100cm	2000 3000 0 S	thin penylocm <sup>2</sup> d ired.	Survey Re Signature Print Nam	mu one r	d by: bl Men 1	ul	
	In	strument (1)			loctrus	nent (2)		<u> </u>		
Model:				Mod				Model:	instr	rument (3)
		1 2224 /438			al No. B-296			Serial N	o.	NA
	Serial No. 146748 / 146718       Serial No. 6         Calibration Due: 3 - 18-50       Calibration Due							Calibrat	ion Due:	w/A
	Efficiency 18.9%				eiency P/A	1.)		Efficien	су	
MDA		CF B	KG 7	MDA	CF	MA BK	G 7 2	MDA	(	CF BKG
Survey Point			Contamin	ation L	evels			bient on Levels	Instrumen t Used	Comments and Additional Information
roint	Fixed (F) or	Beta/g	jamma		Alph	: a	(micro	R/hour)		
	Total (T)	. cpm/area	(dpm/100 d	:m²)	cpm/area	(dpm/100 cm²)				
								-		
					,					,
		``								
42										·
										·

Survey Number SMC-061599B	Date of Survey (9-15-99
Survey Description: Direct Frick 1003 d ALL Cevels observed were within Release Criteria (3000 DAM/100 CM2 Fixed And 600 DAM/100 CM2 Direct. alpha)	Survey Performed by: Signature
Drawing Attached: ∠Yes □ No	Print Name
Instrument (1) instru	ment (2) Instrument (3)

Instrument (1)	Instrument (2)	Instrument (3)			
Model: Ludlom 2224/4389	Model: BICRON LIR	Model:			
Serial No. 146748/146718	Serial No. 3 Z96 - W	Serial No.			
Calibration Due: 3-18-00	Calibration Due: 3-19-00	Calibration Due:			
Efficiency 18.9% x	Efficiency N/A	Efficiency			
MDA CF BKG 7	MDA NA CF NA BKG 7 4A	MDA CF BKG			

Survey Point	Contamination Levels Ambier Radiation L							Comments and Additional Information
rom	Fixed (F) or	Beta/	gamma	Alpha (microR/hour)				
	Total (T)	cpm/area	(dpm/100 cm²)	cpm/area	(dpm/100 cm²)			
		44				/		
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Project No:	Page of
Subject:	
Performed by:	Date:
Checked by:	Date:

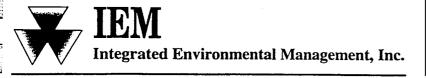
Integrated	<b>Environmental</b>	Management,	Inc.

#1 Side View FAH moToR FRONT VIEW Duct work ATTACKES



Project No:	Page of
Subject:	
Performed by:	Date:
Checked by:	Date:

#2	Side view
FRONT	MOTOR FAM  Duct work ATTACK

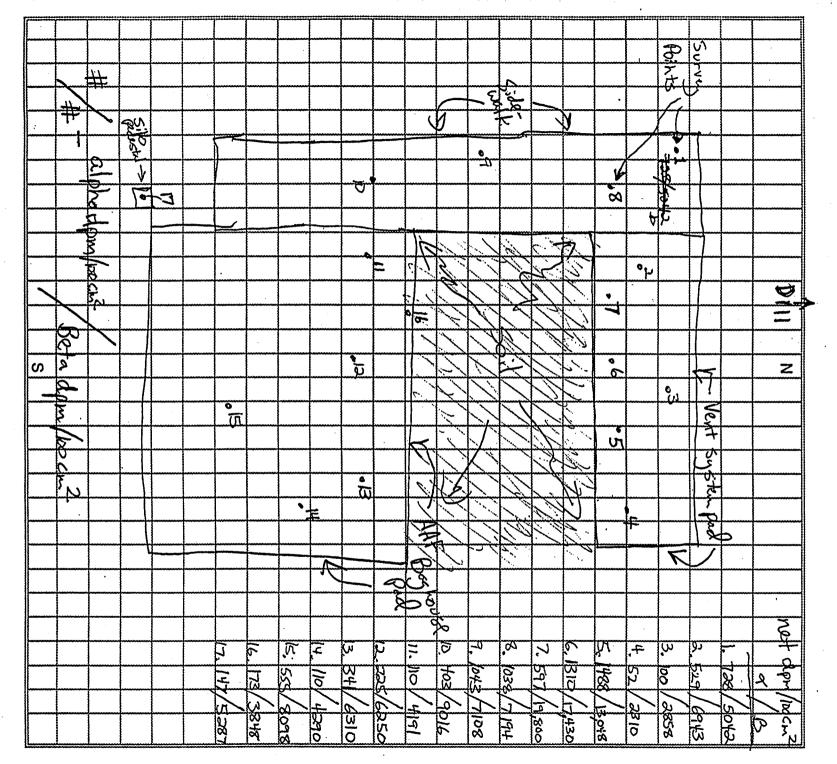


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To D-111 1200F
Clean out Hatch
FANS ATTACH HERE

RSP-008

Survey Number SMC-090999 Building/Area Concrete Park Date of Survey



Survey Warriser	5010017			rage	· 01 <u>/</u>
Instrument/SN: //9791//3-1/8	Calibration Due:	Building Number:	30-1		
Instrument/SN	Calibration Due:	D-111 AAF G	/Personnel to be f	Released:	
BREDON BAGEW	3-19-60	LAYDOWN A	ReA		
Instrument/SN ~ (A	Calibration Due: ►1 A	Reason for Release Su Release AS	rvey:	. •	
Battery Check OK	Source Check OK	HV Check OK	□ Other (speci	fy):	
Radionuclide (s): Th 232 UP38	Release Criteria:  Background (indistinguishable)  Other (specify):  COD off // Colombia	Basis for Release Crite Procedure No. RSP-005 USNRC Regulatory Gui	de 1.86	= NUREG-1500 ——Other (specify):	
	3000 van 100 cm2 of Fried	C. Berger	CALCULATION		- 0
Background Data:	Efficiency Data:	Scan Speed:  Calculation Attached  7-2"/ Sec	Action Level (c	pin, seacionally,	pam x sock n
•		Results			
criteria for release:	nnel were surveyed and meet the	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)
Silo Platroi	em Structure,	Beam +1 & foot po	33000m/100	ar Sefaside Duc	1700 d m/io cit
ACIAS dis	Assembly 100% of	Beam #2 6 FT a	1	1 (1	١ .
GRAtemy wer	re Releasable	Beam # 3 10 FT PC	1	i	1000 Den/100
75% of 541	re Releasable nuctions (Beams) Releasable Listed to Right	som #4 Leg	330001m/100cm2	cc 11	1400 DPM /100
4.4					
C Continuation Sheet Attached					·
Notes, Calculations, Drawings,					
I-BEAMS ARE	APAOX 24" wide				
12-14 Feet Long	. After Decon				
Cut into 3-41			1		
Smears taken	on deconned				
items showed	l no detectuble				
activitiy				-	
Continuation Sheet Attached	$-\eta$				
Survey performed by (print):	rivauna	Signature:	whe		Date: 6 - 4-1
ASO Approval (print):	BH DIN R.A.D.FF	Signature:			Date: 6/15/19

## SHIELDALLOY METALLURGICAL CORPORATION

RELEASE SURVEY DOCUMENTATION RSP-008

Survey Number 060199

Page of

Instrumentish Dicean  OFFELD  Solver Check OK  Solver Che	Instrument/SN: 2224/4334						
Instrument/SN  Calibration Due:  M/A  Source Check OK  Pacted NK  Reason for Release Survey:  Kelets Ductivant B3 Cleny 3 CRept  Readonuclide (st:  Th 332  U 238  Release Criteria:  - 8 setsground  Satisfroynehible for Street Continuation of the set of	Instrument/SN Bicker	Calibration Due:	Location of Equipment/Personnel to be Released:				
Plattery Check OK  Plattery Chec	B 296 W	3-19-00	LAYDOWN AREA D-IN BAGINOUSE				
Radionuclide (a):  The 332  U z 38  Release Criteria: - Background Data: - Can Specify: - Calculation Attached - C				•	al. a		
Redianachide (a):  Th 3.3.2  U 238  Release Criteria: - Background Indistinguishable) - Charles Issaed: - Charles Issaed							
Th 332  U 238    Continuition   Cont	Battery Check UK	Source Check OK	HV Check OK	☐ Other (speci	fy): 	•	
U 238	11		1	ia:			
Background Data:    Committee   Contamination   Contam	11	(indistinguishable)	1	le 1.86	= NUREG-1500		
Background Data:  Efficiency Data:  CACUATION  Scan Speed:  CACCUATION  Action Level (cpm, stationary):  Calculation Attached  1-2"/3ec  Results  Results  With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:  DVCTWORK  1 ST PICCE  1 Elbow APAex 12 FT  1 I'L FT PICCE  4 First Picce  5 Panyl off  Condamination (include writs)  Condamination of the property of the prop	-	600 pm/100 cm2 direct	☐ Calculation Attached		Other (specify):		
CCPM 1 17.82 \( \frac{1}{7.82} \) Calculation Attached 3000 PM X & EFF 334 CM    Calculation Attached 3000 PM X & EFF 334 CM   Calculation Attached 3000 PM X & EFF 334 CM   Calculation Attached 3000 PM X & EFF 334 CM   Calculation Attached 3000 PM X & EFF 334 CM   Calculation Attached 2000 PM X &		3000 dem/100 cm2 & Fixed	C. Berger	CAlculation	nμ		
Results  With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:    Very Two Results   Item/Person   Initial Level of Contamination (include units)	Background Data:	Efficiency Data:		Action Level (d	opm, stationary):	L C F C	
With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:    USTWORK   USFT PICCC   All PICCS   All PICCS   SPAND OFF     I UFT PICCC   S	6c7m2	17.82×	1 .	- Calculation Al		Σ, .	
matrials, equipment and personnel were surveyed and meet the circuitan for releases:    VCTWORK					334 C/M		
All Pieces were  1 13 FT Piece 1 Elbow Apax 12 FT 1 I'll FT Piece 4 Flat Pieces  What doctwork Surveyed Mo Condam instron Blove on Close to 3000 dand Fixed Pieces were Spranged off on author 18 presention Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1 1 1	materials, equipment and person	ted on the right, the following nnel were surveyed and meet the	Item/Person	Contamination	Action Taken	Contamination	
I Elbow Apax 12 FT  I LIV FT Piece  4 FIAT Pieces  ** ALC doctwork Surveyed Mo  Condam instron Above on Close to  3000 dpm of Fixed Pieces were  5 Pranged off on autistic 12 Praction  Continuation Sheet Attached  In stallar batween  But were UAR ious Lenths  Ductwork was a surveyed to the AAF baylows.  Continuation Sheet Attached  Survey performed by (print): Rangement)  Signature: Wandle	1 45 FT PIECE		· · · · · · · · · · · · · · · · · · ·		ALL PIECES WARD		
Elbow APAex 13-11   14 FT Piece   Surveyed   Ho	1 18 FT PIECE				1		
# ALC doctwork Surveyed Mo Contamination Above on Close to Bood dam of Fixed Piccas were Spranged off on entirely 15 precention Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  Ductwork Measurements Above But were Uarious Lenths  Installed between Bl.g. DIII roof the AAF baybove.  Continuation Sheet Attached  Survey performed by (print): Ranguement)  Signature: Wannel  Date: 6-9-9	I Elbow APROX	12 FT			1 '		
ALC doctwork Surveyed AD  Contamination Above on Close to  3000 dpm of Fixed Pieces beere  Spanned off on autside 125 precention  Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  4.5  Ductwork Measurements above  But were Uarious Lenths  Installed batween  Bldg. DIII roof of the AAF baybere.  Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Wandle	1 14 FT Piece			<b> </b>	(extensor) And		
Consamination Alove on Close to  Sood dam of Fixed Picces were  Springed off on entire is packetion  Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  4.5  Ductwork Measurements Above  But were various Lenths  Ductwork was installed between  Blog. Dill roof of the AAF baybore.  Continuation Sheet Attached  Survey performed by (print): Rommand Signature:	4 FIAT Pieces		<u></u>		Surveyed.		
Consamination Alove on Close to  Sood dam of Fixed Picces were  Springed off on entire is packetion  Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  4.5  Ductwork Measurements Above  But were various Lenths  Ductwork was installed between  Blog. Dill roof of the AAF baybore.  Continuation Sheet Attached  Survey performed by (print): Rommand Signature:							
Consamination Alove on Close to  Sood dam of Fixed Picces were  Springed off on entire is packetion  Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  4.5  Ductwork Measurements Above  But were various Lenths  Ductwork was installed between  Blog. Dill roof of the AAF baybore.  Continuation Sheet Attached  Survey performed by (print): Rommand Signature:	* All doctwood	4 Sugareed Alm					
Soro dam of Fixed Pickes were  Spranged off on autside its packetion  Continuation Sheet Attached  Notes, Calculations, Drawings, etc.  1.5  Ductwork Measurements About  But were UAR ious Lenths  Ductwork was installed between  Blg. DIII roof of the AAF boylows.  Continuation Sheet Attached  Survey performed by (print): Romand Signature: Date: 6-9-9	)I - •	<u> </u>					
Notes, Calculations, Drawings, etc.  Ductwork Measurements Above But were Uarious Lenths  Ductwork was installed between  Bldg. Dill roof of the AAF baylove.  Survey performed by (print): Remarked  Signature: Date: 6-9-9	li '	•					
Ductwork Measurements above But were various centre  Ductwork was installed between  Bldg. DIII roof of the AAF baylows.  = Continuation Sheet Attached  Survey performed by (print): Romand Signature: Date: 6-9-9	SPRAYED OFF ON Continuation Sheet Attached	outside its procaution					
Ductwork Measurements above But were various centre  Ductwork was installed between  Bldg. DIII roof of the AAF baylove.  = Continuation Sheet Attached  Survey performed by (print): Romand Signature: Date: 6-9-9		etc.					
But were various lenths  Ductwork was installed between  Bldg. DIII rooff the AAF baylover.  = Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Date: 6-9-9	7.5'	ै क					
But were various lenths  Ductwork was installed between  Bldg. DIII rooff the AAF baylover.  = Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Date: 6-9-9		45					
But were various lenths  Ductwork was installed between  Bldg. DIII rooff the AAF baylover.  = Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Date: 6-9-9		1					
But were various lenths  Ductwork was installed between  Bldg. DIII rooff the AAF baylover.  = Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Date: 6-9-9	2	j <del>-</del> ∠ . l					
Ductwork was installed between  Bldg. DIII roof of the AAF bagbore.  = Continuation Sheet Attached  Survey performed by (print): Rommand Signature: Date: 6-9-99	Bul work Meas	in sent About					
Survey performed by (print): Remuch Signature: Date: 6-9-9	<u> </u>						
Survey performed by (print): Remuch Signature: Date: 6-9-9	installed between						
Survey performed by (print): Remuch Signature: Date: 6-9-9	DIO DILL SECTION TON						
Survey performed by (print): Remuchal Signature: Date: 6-9-9	DI29. UIII 1001	1 INT MAT BOSHOW	•				
Survey performed by (print): Remuchal Signature: Date: 6-9-9							
	Continuation Sheet Attached						
BSO Approval (print): BYW RANFF Signature: BYWW Bare 6/0/49	1	Rommerhil	Signature:	ruhl		Date: <b>6-9-9</b>	
Date. / 16/11	BSO Approval (print):	BYDIN R.A.D.FF	Signature:	W		Date: 4/18/99	

RSP-008

Survey Number 06 1099 6-10-99

Page of +2

	<del></del>					
Instrument/SN: Lodlon 146178/ 146748	Calibration Due:	Building Number:	F BAghous	s e		
Instrument/SN BICRON B 296W	Calibration Due: 3 - 19 - 00	Location of Equipment/Personnel to be Released:  AAF BAGLOUSE LANDOWN AREO.				
Instrument/SN	Calibration Due:	Reason for Release Sur	vey:	steel		
Battery Check OK	Source Check OK	HV Check OK	□ Other (specif	fy):	-	
Radionuclide (s): Th・ユ3 み ひ・ユ3 そ	Release Criteria:  Background (indistinguishable)  Other (specify):  Goo of m/ioo cn 2 O need d.	Basis for Release Criteric Procedure No. RSP-009 USNRC Regulatory Guid Calculation Attached	de 1.86	= NUREG-1500 — Other (specify):	-	
Background Data:	Efficiency Data:	Scan Speed: Calculation Attached 1-2" /Sec	i .	pm, stationary):	(2°64)	
		Results				
criteria for release:	enel were surveyed and meet the	item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)	
Surveyed Aprel pieces of Stan	oximately 70-80	I-Beam	12000m/10042	Set Aside FOR Decon	\$CODAN/100	
	Surveyed was	I-Beam	2400 000 Hace	2 4 11	1300'Dem10	
		Door.	1600 can/1000	2 11	1300 wan/100	
set aside F		Angle Iron	290000m/1000	2 11 11	2000 DAM/100CM	
They Are List	ted to Right		·			
C Continuation Sheet Attached						
Notes, Calculations, Drawings, e	etc.					
Stecl Was	VARIOUS Centles				·	
+ SizEs					-	
Deconned:t	Unious controls emswere sneared no detectable				·	
activity.	•					
Continuation Sheet Attached						
Survey performed by (print):	TOTAL IVERS	Signature:	pul	2	Date:6-10-90	
BSO Approval (print):	R.A.DJFP	Signature:	m	<u> </u>	Date: /18/41	

## SHIELDALLOY METALLURGICAL CORPORATION

RELEASE SURVEY DOCUMENTATION

RSP-008

	5MC
Survey Number	061099

Page 2 of 2

Instrument/SN: 146748	Calibration Due: 3 - 12 - 07)	Building Number:	AAF	Bashouce		
Instrument/SN Bicner B-296W	Calibration Due:	Location of Equipment/Personnel to be Released:				
Instrument/SN	Calibration Due:	Reason for Release Survey: Reason for Release Survey:				
Battery Check OK	Source Check OK	PHV Check OK	□ Other (specif	•		
Radionuclide (s): The 232 U - 238	Release Criteria:  Background (indistinguishable)  Other (specify):  COD PPM/100 CM2 DIPLE  3000 PPM 100 CM2 Fixed	Basis for Release Criteria:  Procedure No. RSP-009  USNRC Regulatory Guide 1.86  Calculation Attached  Reacea Calculation  Calculation				
Background Data:	Efficiency Data:	Scan Speed:	Action Level (c	pm, stationary):		
7 gpm or	18.42 0	Calculation Attached	Calculation Att			
		Results				
With the exception of items list materials, equipment and person criteria for release:	nel were surveyed and meet the	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)	
Hoppens 1+2	<b>L</b> .					
were someye	I by direct Frist					
they were Ache	by died Fried would no Elevated stainstric were					
levels of cov	stamation were			<del></del>		
Found. (alpl	m)					
•						
	•					
☐ Continuation Sheet Attached						
Notes, Calculations, Drawings, e	itc.					
					-	
					·	
•						
Continuacion Characteristics						
Continuation Sheet Attached				• .		
Survey performed by (print):	N. IVELVIC	Signature:	Mula	1	Date: 6-10.1	
Approval (print):	PARA DA PIA DA	Signature:	21 W		Date: 6/14 M	
	. ,	V	$\mathcal{I}_{\mathcal{I}}$			

**RSP-008** 

Page \_\_\_\_\_ of \_\_\_\_

Survey Number SMC-061199

Instrument/SN: Lud/um Calibration Due: **Building Number:** 146178/146748 3-18-00 D-111 KAFBASLOUSE Instrument/SN Calibration Due: Location of Equipment/Personnel to be Released: BUSGW 3-19-00 LAY down Anon MAF BASLOUSE SIAh Instrument/SN Calibration Due: Reason for Release Survey: 2/1 NA Rebose FOR UNrastricted USC Battery Check OK Source Check OK ☐HV Check OK ☐ Other (specify): Radionuclide (s): Release Criteria: Basis for Release Criteria: **TK-232** □ Background □ Procedure No. RSP-009 (indistinguishable) □ USNRC Regulatory Guide 1.86 = NUREG-1500 11-238 60 DOM / 100 CM 2 Dinut □ Calculation Attached -2 Other (specify): 3000 pam/1000m2 Fixed C. Berger Background Data: **Efficiency Data:** Scan Speed: Action Level (cpm, stationary): □ Calculation Attached ☐ Calculation Attached 18.62 7 comer 1-2*"|Sec* 558 CAM 3000 DPM X 90 CFF Results With the exception of items listed on the right, the following Initial Level of Item/Person Final Level of Action Taken materials, equipment and personnel were surveyed and meet the Contamination Contamination criteria for release: (include units) (include units) 4 hoppers surveyed inside + 2800 daylowne Decoursed 14000pm/1 Out. {3,4,5,63.
Direct Frisk indicated hopping 1700mlovenz Decomed 1 ZOODOM/DO were 99% Peleasable The other 1% were the witch Cloops ON45 □ Continuation Sheet Attached Notes, Calculations, Drawings, etc. hoppers were about 6'x 10' hoppens Are Nomber on side Decorred items were sneared and showed no dedectable ☐ Continuation Sheet Attached Survey performed by (print): Signature: 980 Approval (print): Signature:

Survey Number SMC-061199 6-11

Page 2 of 2

	<u> </u>					
Instrument/SN: Ludlom	Calibration Due:	Building Number:				
146178/146748	3-18-00	D-111 A	•			
Instrument/SN	Calibration Due:	Location of Equipment/Personnel to be Released:				
B-296W	3-19-00	CAYDOWN AREA !				
Instrument/SN	Calibration Due:	Reason for Release Surv	vey:			
WIA	~ A	Pelcase For	UNTESTAIL	led use	_	
Battery Check OK	Source Check OK	HV Check OK	☐ Other (specif	·y): .	•	
Radionuclide (s):	Release Criteria:	Basis for Release Criteri	a·			
Th: 232	□ Background	□ Procedure No. RSP-009				
U-238	(indistinguishable)  C Other (specify):	□ USNRC Regulatory Guid □ Calculation Attached	e 1.86	= NUREG-150 ——Other (spec		
-	600 penjiosine Direct			, Z = Other topes	, , .	
	3000 DPM/mont Fixed	C. Berg	ca			
Background Data:	Efficiency Data:	Scan Speed:		pm, stationary):		
7 coma	18.68%	Calculation Attached	= Calculation At		~ - O	
			3000 ppm 4	6 EFT -	55B	
		Results	·	T		
With the exception of items liste materials, equipment and person criteria for release:	ed on the right, the following nel were surveyed and meet the	ltem/Person	Initial Level of Contamination	Action Taken	Final Level of Contamination	
Surveyed Afro	x 150 pieces		(include units)	Set ASIOC T	(include units)	
of structural		7-8 Pieces of I. Br	~ Z700DPm/	mare Decon	1500 DPA/1800	
			•		(Highest Read the	
90% of steel:	Surveyed was	<del></del>			1:000	
Beleasabl. H	e other 10%					
was set asid	was set aside For Further					
Decon.						
			_			
☐ Continuation Sheet Attached						
Notes, Calculations, Drawings, e	tc.					
ALL pieces 4		<del></del>				
to the 3000 D						
were set reide						
they ALL APPRO						
Hallow Const.	maderial A as the					
gerrow creasing	unterist on them on deconnect	-				
Jmears Tarch	2 no detectable					
Hems snowed	x no migestable					
activity.						
)	•					
☐ Continuation Sheet Attached		$\wedge$				
Survey performed by (print):	Rouhl	Signature:	maho	, <u> </u>	Date: 6 - 1/-9	
RY Sylve (Social Approval (print):	R.A. Daff	Signature:	HON		Date: 6/18/99	

RSP-008

Page \_\_\_\_ of 2

Survey Number SMC-06/499

Instrument/SN: Lud Jum 146748 / 146718	Calibration Due:	Building Number:	III AAd	= BAghoose		
Instrument/SN	Calibration Due:	Location of Equipment/Personnel to be Released:				
B 296W	3-19-00	1). 1(1 AAF BAS house / Ay down Ansa				
Instrument/SN	Calibration Due:	Reason for Release Survey:				
WA	MA	UHNESTRIE	ed USE			
Battery Check OK	Source Check OK	HV Check OK	☐ Other (specif	y):		
Radionuclide (s): T ルーよるよ U - 238	Release Criteria:  Background (indistinguishable)  Other (specify):  GODDPM/WOCM2 Dirace  3000 pom/wocm2 Fixed	Basis for Release Criter Procedure No. RSP-009 USNRC Regulatory Guid Calculation Attached	de 1.86	= NUREG-1500 = Other (specify):		
Background Data:	Efficiency Data:	Scan Speed:	1	pm, stationary):		
8 cpm of	18.82 ×	☐ Calculation Attached	Calculation Att	tached	4cpm	
		Results	1300GVA A	2 217 2 30	4-77	
With the exception of items list materials, equipment and persor criteria for release:	ted on the right, the following nnel were surveyed and meet the	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)	
surveyed opp 100 pièces at	noxinately					
100 pièces at	- Sturtund			<u> </u>		
Steel, ALC PI	èces surveyed					
were release	while. And					
La La Dena C	v ettere					
Step 1 was 5000	not pieces for					
MED	a Most Hems					
were I-Bear	port pieces for e. Most items or angles.			· · · · · · · · · · · · · · · · · · ·		
. Continuation Sheet Attached	•					
Notes, Calculations, Drawings,						
<b>5</b> -,						
					·	
	•		·			
	!					
		·				
☐ Continuation Sheet Attached		·				
Survey performed by (print):	R. Meo. Kel	Signature:	ruh		Date:6-147	
HPSVP~:=C RSO Approval (print):	R.A. DUFF	Signature:			Date: 1/14/49	

RSP-008

Survey Numb	er SMC	-061	490	)

Page 2 of 2

	<del>,</del>								
Instrument/SN: Cud fum	Calibration Due:	Building Number:							
146748/146718	3-18-00	D-111 AAF Baghouse							
Instrument/SN Bicker	Calibration Due:	Location of Equipment/Personnel to be Released:							
B-296W	3-19-00	MAF BAGLOUSE SIAL							
Instrument/SN .	Calibration Due:	Reason for Release Sur	vey:						
MIA	NIA	Release OF	CARRICARD ?	rider For vaire	Sorla 1150				
Battery Check OK	D Source Check OK	# HV Check OK	☐ Other (specify	=					
	·				, .				
Radionuclide (s):	Release Criteria:	Basis for Release Criter	ia·						
Th 232	□ Background	□ Procedure No. RSP-009	ia.						
U 238		<ul> <li>□ USNRC Regulatory Guid</li> <li>□ Calculation Attached</li> </ul>	e 1.86	= NUREG-1	i				
	GOD DPM/100 cm2 direct			•	2011 97.				
	3000 DPM/100 CMZ FIXED	C. Berger C	ACCU Ation	<u>s</u>					
Background Data:	Efficiency Data:	Scan Speed:	Action Level (cr						
1 con 2	18.989	□ Calculation Attached	☐ Calculation Att		5/7 Am				
172			3000 x 3.	zrr =	567 <b>C</b> pm				
·		Results							
With the exception of items list materials, equipment and person	ed on the right, the following	Item/Person	Initial Level of	Action Taken	Final Level of				
criteria for release:	•		Contamination (include units)		Contamination (include units)				
Cornigated Sig	ling was surveyed								
prior to Demo	work on inside								
NO Contamation	n was found.								
once on grou	nd Sidin was								
Checked to be	Condition of								
Considering the	ecationary Measure								
Metal. As	RCALLIBOURY								
metal was D	Cowned Just designed	1							
PRESSURE WASHER	lightly in designer								
Aneg. wew or	no considered to FOR UNRESTRICKE USE				]				
De Releastion									
	•								
Continuation Sheet Attached									
Notes, Calculations, Drawings, e	tc.								
·									
-									
•									
				· · · · · · · · · · · · · · · · · · ·					
			·						
☐ Continuation Sheet Attached		^							
Suggest porformed by the text	N	Di Di	10						
Survey performed by (print):		Signature:	wrt/		Date: 6-14-97				
ASO Approval (print):	(PTQ)/R.A.DA	Signature:	Q JXX		Date:6-12-99				
<b>A</b> 3			1///						

Survey Number 5nc-	061699	RSP-008			. 2			
Survey Number			,	Page	of			
Instrument/SN: bidlum 146748/1467(8	Calibration Due:	Building Number:	9AF BASI	rouse				
Instrument/SN B - 2% - い	Calibration Due: 3-19-00	Location of Equipment/Personnel to be Released:  AAF BAShouse 5/Ab						
Instrument/SN	Calibration Due:	Reason for Release Sur						
Battery Check OK	Source Check OK	AV Check OK	☐ Other (specify	):				
Radionuclide (s): Tトーン32 Uー 338	Release Criteria:  Background Alpha only (indistinguishable)  Other (specify):  OD DEM/100 cm² Direct	Basis for Release Criter  Procedure No. RSP-009  USNRC Regulatory Guid  Calculation Attached		= NUREG-1500 - Other (specify)	:			
	3000 pen/100 cm2 Fixed	C. Berger	Alculation	-				
Background Data:	Efficiency Data:	Scan Speed:  Calculation Attached	Action Level (cp = Calculation Atta	ched	_			
	110004	I-Z"/Sec.	3000 x 70 c	# = 3	TICPA			
With the exception of items lis materials, equipment and person criteria for release:	nnel were surveyed and meet the	item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)			
surveyed E	lettical familiary relevants. No exceed to exceed 2 or 600 DPM/Marie							
60x 100%	is found to exceed			***				
BARN DEM /100 CM	12 OR 600 DEN/1000000							
alpha.								
**************************************	•							
☐ Continuation Sheet Attached								
Notes, Calculations, Drawings,	etc.							
Electrica	L Box was							
APPEX 8x8 x	<del>-</del>				<del>                                     </del>			
·								
	•							
·								
•			<u> </u>					
	•							
Continuation Sheet Attached	į.							
Survey performed by (print)	: Pou muhl	Signature:	mihr	0	Date: 6-16-			
RSO Approval (print):	R.A. DOFF	Signature:	63M	<u> </u>	Date: 8/16/			

Survey Number 5 61699

Survey Number Smc =	5H4/97	1101-000		Page	2_ of <u>4</u>					
Instrument/SN: Ludlum	Calibration Due:	Building Number:	· · · · · · · ·							
141,748/196718	3-18-00	\	)-11] MA	4F BASLOUSE	<u> </u>					
Instrument/SN Bicher B 296 W	Calibration Due:		Location of Equipment/Personnel to be Released:  AAF Bashove, Laydown							
Instrument/SN	Calibration Due:	Reason for Release Sur	vey:							
	n/B	Release For	2 UN Merta	udel USE						
Battery Check OK	☐ Source Check OK	HV Check OK	☐ Other (specify)	) <b>:</b>	•					
Radionuclide (s): Tトン3ン U 738	Release Criteria:  Background (indistinguishable)  Other (specify):  600_Dom/toocm2 Direct	Basis for Release Criteri Procedure No. RSP-009 USNRC Regulatory Guid Calculation Attached	e 1.86	= NUREG-1500						
	3000 OPM 100 ONT FIXED	C. Berse	a CAlcul	Ation						
Background Data:	Efficiency Data:	Scan Speed:	Action Level (cpr							
/cpmq	19.22 d	1-2"/sec 57								
		Results								
With the exception of items list materials, equipment and person criteria for release:	ed on the right, the following mel were surveyed and meet the	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)					
Surveyed 15	prices of				tineidoe dintar					
pipe (UARiors:										
100% Releasab	1e, No Contam.		·							
Found	,									
5.00 1.1A5 90	in From			<del>* * * * * * * * * * * * * * * * * * * </del>						
pipe with	TO Electrical									
panel on Be	a house									
printed the br	77,000	·								
. Continuation Sheet Attached	· ,									
Notes, Calculations, Drawings, e	to				_					
mores, outductions, Diamings, e										
	•									
			-	· · · · · · · · · · · · · · · · · · ·						
			ļ							
•			·		<u> </u>					
			·							
☐ Continuation Sheet Attached		_	<del></del>							
	0 4	<del></del>			+					
Survey performed by (print):	- riverius	Signature:	me		Date: 6 - 14-					
BSO Approval (print):	R. A. Dutt	Signature:	$\mathcal{U}_{\mathcal{M}}$		Date: BM L					

Page 30

Appendix F - Personnel Monitoring Records



## INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLE COUNT RECORD

Site/Location: 5MC New Field / In-	strument Office Project No.:	94005.20 4-94005.05
Emission Type (check): χα □ β □ β/γ	Instrument M	odel/Serial No.: Eber/.ne SAC-4 #868

Sample Number & Description	Date & Time of Sample Collection	Date and Time of Count	Instrument Efficiency (c/d)	Backgroun d Counts	Background Count Time (min)	Background Rate (cpm)	Sample Gross Counts	Sample Count Time (min)	Sample Gross Rate (cpm)	Net Sample Rate* (cpm)	Sample Volume (ml) <sup>b</sup>	Activity Conc. (μCi/ml)*	MDA <sup>4</sup>
#82+4 1 Taylor	5/17/49 155	3/249	31.0%	2111	50	2.2	3	1	3	1	332,235	4.4 E-12	4.28-11
# \$242. 2 Schnepw		( .					3		3	1	1 '	4.8 E-12	
#8241 3 Butler		·					3		3	')		4.5 E-12	
4 #4243 5 White	↓ ∨						2		Z	0	338985	0	4.1 E-11
5 Butter	Sheka 1515						3		3		, ,	1.2 E-12	
6 Schnorbus	1515						3		3	l	1 7	1.3E-12	
7 3.wh;+C	1515						į		1	0	1,222,320	l	1.1E-11
8 Taylor	155						3		3	)		1.2 E-12	
#8241 9 80+100 #8242	5/29/91					-	3		- 3	1	' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	1.1 E-12	
THE SOURCE OF	()						3		3	1	1 '	],3E-12.	
11 5. White							4		4	2	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	コノアモーコン	
12 Taylor	Y						3		3	1	1.	1.25-12	
#8241 13 Schnodos	5/1/99 1520		.	<u> </u>			ス		2	0	1,260,500		1.1 E-11
14 5, wh: te	1520						3		3	l	7	ルスモーに	
15 R. Hart	1445						2		2	0	856,020		1.6E-1)
MSA-1 16 E Jordan		V			1	1		1	2_	<i>ව</i>	989,010	ර	1.4 8-1)

<sup>\*</sup> Net Sample Count Rate = Sample Gross Count Rate - Background Count Rate

\* Net Sample Count Rate + 2.22 x 10\* x V x Efficiency

Health Physics Technician:

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From Attachment 3 of this RSP (Air Sampling Data Sheet)

## INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLE COUNT RECORD

sherectation: SMC New Field / Instrument Office Project No.: 94005,20 of 94005.05	
Emission Type (check): $βα$ $□β$ $□β/γ$ Instrument Model/Serial No.: Eherline SAC-4 #865	7

Sample Number & Description	Date & Time of Sample Collection	Date and Time of Count	Instrument Efficiency (c/d)	Backgroun d Counts	Background Count Time (min)	Background Rate (cpm)	Sample Gross Counts	Sample Count Time (min)	Sample Gross Rate (cpm)	Net Sample Rate* (cpm)	Sample Volume (ml) <sup>b</sup>	Activity Conc. (μCi/ml)*	MDA <sup>4</sup>
17 C. Boyd		3/26/49	31,0%	317	50	2.2	)		· (	0	972840	0	1.4 E-11
A G. Serrene	1 1445	1-11-5					2	1_1_	2	0	978,780		1.4 E-1)
19 subite			<del></del>							0	1,245,930		1.1E-1)
TO S WITH							2		2	0	1,112,265	0	1.3E-11
Z Schwerbys	5/26/99	F/14/99	29.86	137		7.7	3		3_	30	1077600	6	1.5E-11
7.7 5.01.He 7.7 5.01.He		15,5				1			2	6	1,165,920	0	1.3 E-1)
23 Bythe- 50243 74 5.069e	5/27/49	1500					3_		3	700	1,500,000	<u> </u>	1.38-11
74 5, Uhite 25 VacTorck		1500					3		3	400	1,215,840	0	[3E-1]
25 VacTruck #8241 26 VacTruck	V V	1500							2	0	1,173,120	0	1.3E-1)
26 VeTruck \$3242 27 8 White	3/28/99	_					4		4	/	1,032,360	1.5E-12	1.5 E-11
27 5 White 28 Butter	1400						4		4	· 1	931,566	1.68-12	1.7 E-1)
28 Gurler 28241 29 Graces							<u>3</u>		3	ව	1036 560	0	1.5E-11
30 5.07.4	-/1/49								3_	6	1,189,920	0	1.3E-11
30 5. Mir 38243 31 VacTine							<u> </u>	<del>                                     </del>	2-	0	1,072,320	0	1.5E-1)
SI VACINA	- V	<del></del>			<del>V- </del>	<del></del>	3	<del>- V</del> -	3	Ö	1,209,000	0	1.3E-11
Net Sample Cour	at Bata C												

$$MDA = \frac{2.71 + 4.65 \sqrt{B_R t}}{t \text{ eff } \frac{A}{100}}$$

Health Physics Technician:

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Net Sample Count Rate = Sample Gross Count Rate - Background Count Rate
 From Attachment 3 of this RSP (Air Sampling Data Sheet)
 Net Sample Count Rate + 2.22 x 10<sup>5</sup> x V x Efficiency

# INTEGRATED ENVIIRONMENTAL MANAGEMENT, INC. AIR SAMPLING DATA SHEET

	Д	. AIR SAMPL	ING EQUIPMENT				
Pump Type (check):	Breathing Zone	B Low Ve	olume General Air	□ High Volume General Air			
Serial #	8244		Calibration Due:	Daily			
Filter Type:	F+T (	CP47H	Filter Size:	17Hm 47mm			
Filter Lot:	h)[A		Air Sample Number:	XILT)			
	<b>,</b>	B. SAMPLING	PARAMETERS				
Sample Start Date:	5-17-99	Fime:_ ( \ C	DO Am	Flow Rate (L/min): 7.476			
Sample End Date:	5-17-99	Fime: 3:	15 PM	Flow Rate (L/min): 7, 44/6			
Total Sample Time (T):			5 m~	(Minutes)			
Average Flow Rate (F):		۷.		(Liters/Minute)			
Sample Volume (V) =	135 (min) x			= <u>332235</u> (ml)			
	C:	WORKER/WO	ORKPLACE DATA	A			
В	REATHING ZONE			- GENERAL AIR			
Name of Worker Monitored		TAULOR	General Area and Specific Location:				
Type of Work Performed:	BAY LOUSE	TAYLOR	Type of Work On-going:				
	D:sas	sambly					
$\epsilon$	Bay house Disas Bag remov.	x1		<b>\</b>			
Radiation Work Permit Nun	nber: IEM/SA	16-99-01	Radiation Work Permit Number				
General Area and Specific	1) 111	Aghooce	Type of Operation/Equ	uipment in Area:			
Respiratory Protection Use	d: Res	pirator ace APR)	Names of Workers:				
Sampling performed by (pri	Ron	Merho	Signature:	ent			

## INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

AIR SAMPLING DATA SHEET

	A.	AIR SAMPL	ING EQUIPMENT	<del>.</del>	
Pump Type (check):	D Breathing Zone	□ Low V	olume General Air	□ High Volume 0	General Air
Serial #	8242		Calibration Due:	Daily	
Filter Type:	F+J (	CP47H _	Filter Size:	17+1 b 4	1 mm
Filter Lot:	10 (A		Air Sample Number:	2	
	В	. SAMPLING	PARAMETERS		
Sample Start Date:	5-17-99 Tir	ne: \ '. 07	pm.	Flow Rate (L/min):	2.267
Sample End Date:	5-17-99 Tin		5 pm	Flow Rate (L/min):	7.251
Total Sample Time (T):	,	1.35	o.m		(Minutes)
Average Flow Rate (F):		4-3:	5 min 2.2	259	(Liters/Minute)
Sample Volume (V) =	135 (min) x F	2.259	(L/min) × 1000 (ml/L)		(ml)
	C:	WORKER/WO	ORKPLACE DATA	4	
	BREATHING ZONE			GENERAL AIR	
Name of Worker Monitor	Tohno Schno	on hus	General Area and Spec	cific Location:	
Type of Work Performed:	Johns Schae Bag reme	oval	Type of Work On-goin	g:	,
Radiation Work Permit Nu	umber: IEM/	SMC-99-01	Radiation Work Permit	Number:	
General Area and Specific	D-111 AAF BA	ghouse	Type of Operation/Equ	nipment in Arbat	
Respiratory Protection Us	CFULL Fac	eator LAPR)	Names of Workers:		
. Sampling performed by (p	orint): Ron M	Perhico	Signature:	hO	

A. AIR SAMPLING EQUIPMENT						
Pump Type (check): Breathing Zone □ Low	Volume General Air   High Volume General Air					
Serial #	Calibration Due:					
Filter Type:	Filter Size: CP47Hb 47mm					
Filter Lot:	Air Sample Number:					
B. SAMPLIN	IG PARAMETERS					
Sample Start Date: 5-17-99 Time: _ /	:00 pm Flow Rate (L/min): 7.757					
Sample End Date: 5-17-91 Time: 3	15 Flow Rate (L/min): 7.484					
Total Sample Time (T):	35 m (Minutes)					
Average Flow Rate (F):	2.37 <i>05</i> (Liters/Minute)					
Sample Volume (V) = $135$ (min) x F $2.370$	$(L/min) \times 1000 (ml/L) = 3 19,950 (ml)$					
C: WORKER/V	VORKPLACE DATA					
BREATHING ZONE	C GENERAL AIR					
Name of Worker Monitored: TAMES BUILDED	General Area and Specific Location:					
Type of Work Performed:  Bag house  by removal	Type of Work On-going:					
Radiation Work Permit Number: IEM/SMC-99-01	Radiation Work Permit Number:					
General Area and Specific Work Location:  () -        AAFBAGLOUSE	Type of Operation/Equipment in Area:					
Respiratory Protection Used: Respirator  (Full-face APR)	Names of Workers:					
Sampling performed by (print):	Signature:					

	A AID CARED			
		ING EQUIPMENT	· · · · · · · · · · · · · · · · · · ·	
Pump Type (check): g Breathing Zo	one □ Low V	olume General Air	□ High Volume	General Air
Serial # \$243		Calibration Due:	a:h W/G:1:b	rator
Filter Type: F4J CPH-47		Ciltar Cina.	7mm	
Filter Lot: P/A		Air Sample Number:	4	
·	B. SAMPLING	PARAMETERS		
Sample Start Date: 5/17/99	Time: 1300		Flow Rate (L/min):	2.517
Sample End Date: 5/17/49	Time: 1515		Flow Rate (L/min):	2.504
Total Sample Time (T): 135			•	(Minutes)
Average Flow Rate (F): 2.5	5)			(Liters/Minute)
Sample Volume (V) = 35 (min)		L/min) x 1000 (ml/L) :	= 338,98	5(mi)
	: WORKER/WO	ORKPLACE DATA	·	
BREATHING ZONE		GENERAL AIR		
Name of Worker Monitored: Scott Wk	<i>He</i>	General Area and Specific Location:		
Type of Work Performed:  Bay house bey	y removal	Type of Work On-going	:	
Radiation Work Permit Number:	SMC-99-01	Radiation Work Periot	Number:	
General Area and Specific Work Location:  OIII, AAF &		Type of Operation/Equi	privent in Area:	
Respiratory Protection Used: Full Face	APR	Names of Workers:		
Sampling performed by (print):  RAIA DUFF  Copyright ** Integrated Environmental Management, 199  RSP-022 (Rev. 001) - Attachment 3	8	Signature:		

Average Flow Rate (F):  Sample Volume (V) = URD (min) x F 2.505 (L/min) x 1000 (ml/L) = 1,202 (100 (ml))  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  Seneral Area and Specific Location:  Type of Work Performed:  BAGHOUSE  BAG REMOND  Radiation Work Permit Number:  Type of Work On-going:  Type of Operation/Equipment in Area:  AAF BAGHOUSE  Respiratory Protection Used:  Full Face Despiration  Names of Workers:  Signature:  Signature:  Signature:			A. AIR	SAMPLI	NG EQUIPMENT	· • •	
Filter Type:  Filter Type:  Filter Size:  PA Air Sample Number:  B. SAMPLING PARAMETERS  Sample Start Date:  Sample Start Date:  Sample Start Date:  Sample Start Date:  Sample Filter Size:  PA Sample Number:  B. SAMPLING PARAMETERS  Sample Start Date:  Sample Name of Worker Monitorad:  Sample Volume (V) = U3D (min) x F 2.505 (Umin) x 1000 (mil/L) = 1,202 10D (mil)  C: WORKER/WORKPLACE DATA  BREATHING ZONE  General Area and Specific Location:  Type of Work Perritt Number:  Sample Volume (V) = Sample Sam	Pump Type (check):	Breathing Zo	one	□ Low Vo	olume General Air	□ High Volume Gen	eral Air
Filter Lot:    B. SAMPLING PARAMETERS	Serial #	241			Calibration Due:	sails	
B. SAMPLING PARAMETERS  Sample Start Date: 5-13-97 Time: C):15 Flow Rate (L/min): 2.512  Sample End Date: 5-13-97 Time: L/:15 Flow Rate (L/min): 2.512  Sample End Date: 5-13-99 Time: L/:15 Flow Rate (L/min): 2.512  Notal Sample Time (T): L/3D M- (Minutes)  Average Flow Rate (F): 3-505 (L/min) x 1000 (m/L) = 1,262 160 (ml)  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  BREATHING ZONE GENERAL AIR  Sample Vorker Monitored: JAMES BALLER  Type of Work Performed: BACHOUSE SPIRA FOR Names of Workers:  Respiratory Protection Used: FULL FACE DESPIRA FOR Names of Workers:  Sampling performed by (print): Signabure: Lamber Signabure: Lamb	Filter Type:	FIT C	P47+		Filter Size:	H 47mm	
Sample Start Date: 5-12-99 Time: C): i5 Flow Rate (L/min): 2.512  Sample End Date: 5-12-99 Time: 15:15 Flow Rate (L/min): 2.512  Total Sample Time (T): 1   30   1000 (Minutes)  Average Flow Rate (F): 2-505 (L/min) x 1000 (ml/L) = 1,202 100 (ml/L)  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  General Area and Specific Location:  Tames Butle C  Type of Work Performed: Baghouse Bag Removal  Radiation Work Permit Number: 15 m/smc-99-01 Radiation Work Permit Number:  General Area and Specific Work Location: 10-111 AAF Baghouse Spirah for Names of Workers:  Sampling performed by (print): Signature: Signatu	Filter Lot:		,		Air Sample Number:	-	•
Total Sample Flow Rate (F):    C:   C   WORKER/WORKPLACE DATA			B. SAI	MPLING	PARAMETERS	·	
Total Sample Time (T):  Average Flow Rate (F):  Sample Volume (V) = URD (min) x F 2.505 (L/min) x 1000 (m/L) = 1 202 400 (mil)  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  Name of Worker Monitored:  Tames Butler  Type of Work Performed:  BAG ROUSE  BAG REWORK  Rediation Work Permit Number:  TEM/SMC-99-01 Radiation Work Permit Number:  Type of Operation/Entirment in Area:  Property Protection Used:  Full Face Despiration  Names of Workers:  Signature:  Signature:  Signature:	Sample Start Date:	5-13-99	Time:	_ ሪን:	i <i>S</i>	Flow Rate (L/min): 2	.512
Average Flow Rate (F):  Sample Volume (V) = URD (min) x F 2.505 (L/min) x 1000 (ml/L) = 1,202 100 (ml)  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  Name of Worker Monitored:  Type of Work Performed:  Backbouse  Backbouse  Backbouse  General Area and Specific Location:  Type of Operation/Equipment in Area:  Respiratory Protection Used:  Full Face Depread Names of Workers:  Sampling performed by (print):  Signature:  Signature:  Signature:  Signature:	Sample End Date:	5-18-99	Time:	15:	15	Flow Rate (L/min): 2	. 498
Sample Volume (V) = U3D (min) x F 2505 (L/min) x 1000 (ml/L) = 1,202 100 (ml)  C: WORKER/WORKPLACE DATA  BREATHING ZONE GENERAL AIR  Seneral Area and Specific Location:  Type of Work Performed: BAG NOUSE BAG REMPUAL  Radiation Work Permit Number: TEM/SMC - 99-01 Radiation Work Permit Number:  Type of Operation/Equipment in Area:  Respiratory Protection Used: FULL FACE DS PIRATUR  Signature:  Signature:  Signature:	Total Sample Time (T):		,	413	Da-	•	(Minutes)
C: WORKER/WORKPLACE DATA  BREATHING ZONE  General Area and Specific Location:  Type of Work Performed:  Type of Work Performed:  BAG REMAND  Radiation Work Permit Number:  Type of Operation/Equipment in Area:  D-11 AAF BAGNOUSE  Respiratory Protection Used:  FULL FACE DS PIRA FUN  Names of Workers:  Signature:  C.: WORKER/WORKPLACE DATA  GENERAL AIR  General Area and Specific Location:  Type of Work On-going:  Type of Operation/Equipment in Area:  Names of Workers:	Average Flow Rate (F):			2.505			(Liters/Minute)
BREATHING ZONE  Name of Worker Monitored:  Tames Butle a  General Area and Specific Location:  Type of Work Performed:  Bag Removal  Radiation Work Permit Number:  Tem/smc-99-01  Radiation Work Permit Number:  Type of Operation/Equipment in Area:  D-111  AAF Baghouse  Respiratory Protection Used:  Full Face Department of Workers:  Sampling performed by (print):  Signature:  Signature:	Sample Volume (V) =	URD (min)	xF_2.5	05 (	L/min) × 1000 (ml/L)	= 1,202,100	ml)
Name of Worker Monitored:  Tames Butter  Type of Work Performed:  Bag Removal  Radiation Work Permit Number:  Tem/smc - 99-01  Radiation Work Permit Number:  Type of Operation/Equipment in Area:  D-11  AAF Bashouse  Respiratory Protection Used:  Full Face Department  Signature:  Signature:			C: WOR	KER/WC	RKPLACE DATA		
Type of Work Performed: Bry Removal  Radiation Work Permit Number: IEM/SMC - 99-01  Radiation Work Permit Number: IEM/SMC - 99-01  Respiratory Protection Used: Full Frice Respiratory Protection Used: Full Frice Respiratory Protection Used: Full Frice Respiratory Protection Used: Spiral fun Names of Workers:  Sampling performed by (print):  Signature:  Ameliation Work On-going:  Type of Work On-going:  Type of Work On-going:  Type of Work On-going:  Type of Work On-going:  Names:  Names:  Signature:  Ameliation Work Permit Number:  Type of Operation/Equipment in Area:  Signature:  Ameliation Work Permit Number:  Type of Work On-going:  Signature:  Ameliation Work Permit Number:  Signature:  Ameliation Work Permit Number:  Type of Work On-going:  Signature:  Ameliation Work Permit Number:  Signature:	В	REATHING ZONE				GENERAL AIR	
Type of Work Performed:  Bag Removal  Radiation Work Permit Number: IEM/SMC-99-01  Radiation Work Permit Number:  Type of Work On-going:  Radiation Work Permit Number:  Type of Operation/Equipment in Area:  Names of Workers:  Sampling performed by (print):  Signature:	Name of Worker Monitored	James B	ofler		General Area and Spec	ific Location:	
Radiation Work Permit Number: IEM/SMC-99-01  General Area and Specific Work Location:  D-11  AAF BAGNOUSE  Respiratory Protection Used: Full FACE DSPIRATOR  Sampling performed by (print):  Signature:  Signature:	Type of Work Performed:	Brahmer	,		Type of Work On-going	<b>j:</b>	
General Area and Specific Work Location:  D-111 AAF BASHOUSE  Respiratory Protection Used: Full Face Despiratory  Names of Workers:  Sampling performed by (print):  Signature:	· .	BAG	Tenou	al .			
Respiratory Protection Used: Full Face Pospiraton Names of Workers:  Sampling performed by (print):  Signature:	Radiation Work Permit Nun	nber: IEM/SI	nc-99-	01	Radiation Work Permit	Number:	
Sampling performed by (print):  Signature:	General Area and Specific		Bagho	use	Type of Operation/Equi	pment in Area:	
Pan north Ranch	Respiratory Protection Use	#: Fullfac.	e Posp	ira ton	Names of Workers:		
Pan north Ranch	•						
opyright <sup>©</sup> Integrated Environmental Management, 1998		Rony	Noch	Q	Signature:	P	

A. AIR SAMI	PLING EQUIPMENT
Pump Type (check): Breathing Zone   Low	Volume General Air
Serial # 8242	Calibration Due:
Filter Type: F+J Ca17H	Filter Size:
Filter Lot:	Air Sample Number:
B. SAMPLIN	IG PARAMETERS
Sample Start Date: 5-18-99 Time: 0	7:15 Flow Rate (L/min): 2.255
Sample End Date: 5 - 13 - 99 Time: 19	:15 Flow Rate (L/min): 2.25
Total Sample Time (T):	CIRD M (Minutes)
·	. 253 (Liters/Minute)
Sample Volume (V) = $L(30)$ (min) x F $2.253$	(L/min) x 1000 (ml/L) = 1,031440 (ml)
C: WORKER/V	ORKPLACE DATA
BREATHING ZONE	GENERAL AIR
Name of Worker Monitored:  John Schnachus	General Area and Specific Location:
John Schnaahus Type of Work Performed: Baghouse Bag Renoval	Type of Work On-going:
Radiation Work Permit Number: IE M/SMC -99-01	Radiation Work Permit Number:
General Area and Specific Work Location:	Type of Operation/Equipment in Area:
D-111 AAF Baglouse	w A
Respiratory Protection Used: Full Face Rospinsh	Names of Workers:
Sampling performed by (print):	Signature:

## INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

#### AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT						
Pump Type (check): Breathing Zo	ne 🗆 Low Vo	lume General Air	□ High Volume General Air			
Serial # 8243	•	Calibration Due:	Daily			
Filter Type: F + 1 C	P47H	Filter Size:	2477 47mm			
Filter Lot:		Air Sample Number:	1			
	B. SAMPLING	PARAMETERS				
Sample Start Date: 5-13-99	Time: 071	5	Flow Rate (L/min): 7.5.29			
Sample End Date: 5-12-99		15	Flow Rate (L/min): 7.564			
Total Sample Time (T):	دا	180 m	(Minutes)			
Average Flow Rate (F):	~	• •	(Liters/Minute)			
Sample Volume (V) = LIBC (min)	xF 2.5465 (1	L/min) x 1000 (ml/L)	= 1,722,320 (ml)			
C	: WORKER/WO	RKPLACE DATA	1			
BREATHING ZONE	·		GENERAL AIR			
Name of Worker Monitored: 5Cold	Wh:te	General Area and Spec	ific Location:			
Name of Worker Monitored: 5Colt  Type of Work Performed: Bag house Bag 2e	, moral	Type of Work On-going	g:			
Radiation Work Permit Number: IEM/	smc-99-01	Radiation Work Permit	Number:			
General Area and Specific Work Location:  O-III  AAF I3A9	house	Type of Operation/Equi	ipment in Area:			
Respiratory Protection Used: Full FAC	e Respinstan	Names of Workers:				
Sampling performed by (print): ,	reshe	Signature:	afe :			

A. AIR SAMPLING EQUIPMENT					
Pump Type (check): Breathing Zo	ne 🗆 Low Vo	olume General Air	□ High Volume 0	Seneral Air	
Serial # 8242		Calibration Due:	ly		
Filter Type:		Filter Size:	mm		
Filter Lot:		Air Sample Number:		10	
	B. SAMPLING	PARAMETERS			
Sample Start Date: 5-18 - 99	Time:	700	Flow Rate (L/min):	2.2%	
Sample End Date: 5-10-99	Time: /5	30	Flow Rate (L/min):	7-767	
Total Sample Time (T):	570			(Minutes)	
Average Flow Rate (F):	2.2545			(Liters/Minute)	
Sample Volume (V) = 5/6 (min)	xF <u>2.7545</u> (	L/min) x 1000 (ml/L)	= 1149,795	(ml)	
C	: WORKER/WO	RKPLACE DATA			
BREATHING ZONE		GENERAL AIR			
Name of Worker Monitored:  Tohn Schw	or bus	General Area and Specific Location:			
		Type of Work On-going:			
Type of Work Performed: Bug house Clean up Sweep	nc Dost				
	, 112				
Radiation Work Permit Number: TEM/S.	uc 99-01	Radiation Work Permit	Number:		
General Area and Specific Work Location:		Type of Operation/Equi	ornent in Area	:	
D-111 AAF BAG	Louse	· /ˌpɔ ɔː oˈpɔːɔuɔ;;; <b>uqo</b> ;	Δ.		
2.9			MX	-	
	·				
Respiratory Protection Used:	espirator APR	Names of Workers:			
	,				
		-			
Sampling performed by (print):	lerkel	Signature:			

	A. AIR SAMPL	ING EQUIPMENT	
Pump Type (check):	eathing Zone	olume General Air	□ High Volume General Air
Serial # 8243	,	Calibration Due:	Aily
Filter Type:	J CPHU7	Filter Size: レ(フ・ル	J
Filter Lot:	-1   4	Air Sample Number:	11 +4-
	B. SAMPLING	PARAMETERS	
Sample Start Date: 5-16-	99 Time: (700)	_ FI	ow Rate (L/min): 2.548
Sample End Date: 5-30	99 Time: 1530	FI	ow Rate (L/min): 2.552
Total Sample Time (T):	570		(Minutes)
Average Flow Rate (F):	2.5465		(Liters/Minute)
Sample Volume (V) = 510	(min) xF 2.5456	(L/min) x 1000 (ml/L) = _	1298715 (ml)
	C: WORKER/WO	ORKPLACE DATA	
BREATHING	ZONE		GENERAL AIR
Name of Worker Monitored:	oth white	General Area and Specific	Location:
Type of Work Performed:  BAGLOUSE  Cleanup - Surep	oth White Bag Remoral ins Dust	Type of Work On-going:	
Radiation Work Permit Number:	M/smc 99-01	Radiation Work Permit Nur	nber:
General Area and Specific Work Local		Type of Operation/Equipme	ent in Area:
Respiratory Protection Used:	Ace Despirator	Names of Workers:	
Sampling performed by (print):  copyright * Integrated Environmental Manage (SP-022 (Rev. 001) - Attachment 3	Medial	Signature:	of l

		-		· · · · · · · · · · · · · · · · · · ·		
		A. AIR SAM	IPLING EQUIPMEN	IT		
Pump Type (check):	Pump Type (check): Breathing Zone Low Vo			□ High Volume General Air		
Serial #	8241	ſ	Calibration Due:	Daily		
Filter Type:	+J () 47+	<b>;</b>	Filter Size:	7 mm		
Filter Lot: し	[A		Air Sample Number:	12 15 in		
	,	B. SAMPLI	NG PARAMETERS			
Sample Start Date:	5- <b>26</b> -99	Time:	@960	Flow Rate (L/min): 2.443		
Sample End Date:	5-20-91	1	153 U	Flow Rate (L/min): 2. 423		
Total Sample Time (T):		5 10		(Minutes)		
Average Flow Rate (F):		2	. 4345	(Liters/Minute)		
Sample Volume (V) =	510 (min)	xF 2.434	(L/min) × 1000 (ml/L	(Liters/Minute) (Liters/Minute)		
	(	: WORKER/	WORKPLACE DAT	·A		
	BREATHING ZONE		·	GENERAL AIR		
Name of Worker Monitore	d: Robert T	Aulor2	General Area and Spe	ecific Location:		
Type of Work Performed:	Bayhouse up sweek	BAG Pernoval	Type of Work On-goi	Type of Work On-going:		
Clean	up sweep	ing Dust.				
Radiation Work Permit Nur		nc 99-01	Radiation Work Permi	it Wumber:		
General Area and Specific			Type of Operation/Eq	uipment in Area:		
D-	III Baylouse	AAF		WA		
Respiratory Protection Use $\hat{F}$	d: Full Face Respir	in top	Names of Workers:			
Sampling performed by (pri	int):	aU. ()	Signature:			



	A. AIR SAMPL	ING EQUIPMENT		
Pump Type (check): D Breathing Zo	one □ Low Ve	olume General Air	□ High Volume General Air	
Serial # 824)		Calibration Due:	)aily W/qilibrator	
Filter Type: FAJ CP47H		Filter Size:	H7 mm	
Filter Lot:		Air Sample Number:	13	
	B. SAMPLING	PARAMETERS		
Sample Start Date: 5/21/99	Time:	700 -	Flow Rate (L/min): 2.52	
Sample End Date: 5/21/99	Time: 152	20	Flow Rate (L/min): Fa: led (batt)	
Total Sample Time (T):	0		(Minutes)	
Average Flow Rate (F): 2.521			(Liters/Minute)	
Sample Volume (V) = $500$ (min)	xF 2521	(L/min) x 1000 (mi/L)	= 1,260,500 (ml)	
	: WORKER/WO	ORKPLACE DATA	<b>1</b>	
BREATHING ZONE		GENERAL AIR		
Name of Worker Monitored: John S	chnorbus	General Area and Specific Location:		
Type of Work Performed:  Clean Up dust iv  by house	MF	Type of Work On-going	g:	
Radiation Work Permit Number: IEM/SI	NC 99-01	Radiation Work Permit	Number:	
General Area and Specific Work Location:	ghouse.	Type of Operation/Equi	ipmerit in Area:	
Respiratory Protection Used:	ce APR	Names of Workers:		
Sampling performed by (print):  R - A C  Copyright ** Integrated Environmental Management, 199  RSP-022 (Rev. 001) - Attachment 3		Signature:	W	



·	A. AIR SAMPL	ING EQUIPMENT		
Pump Type (check): Breathing Zo	ne 🗆 Low Vo	olume General Air	□ High Volume General Air	
Serial # 8244		Calibration Due:	Daily W/Gilibrator	
Filter Type: Fd J CP47H			7 mm	
Filter Lot: N/A		Air Sample Number:	[ <del>V</del>	
	B. SAMPLING	PARAMETERS		
Sample Start Date: 5/21/99	Time: 07	DD	Flow Rate (L/min): 2,436	
Sample End Date: 5/21/19	Time: 152		Flow Rate (L/min): (Failed - Rattery Doul)	
Total Sample Time (T): 500	)		(Minutes)	
Average Flow Rate (F): 2.436			(Liters/Minute)	
Sample Volume (V) = (min)	xF <u>2.436</u> (	L/min) x 1000 (ml/L)	= 1,218,000 (ml)	
(	: WORKER/WO	ORKPLACE DATA		
BREATHING ZONE		GENERAL AIR		
Name of Worker Monitored: Scott	Wh:te	General Area and Specific Location:		
Type of Work Performed:  Clean up dust  Baghan or	in AAF	Type of Work On-going:		
Baghantot				
Radiation Work Permit Number: IEM/S	MC 99-01	Radiation Work Permit	Number:	
General Area and Specific Work Location:		Type of Operation/Equi	pment in Area:	
DIII, AAF Bosho	v <b>&amp;</b> ?	·	•	
			•	
Respiratory Protection Used: Full Face	APR	Names of Workers:		
, .			•	
			4	
			• • • • • • • • • • • • • • • • • • • •	
- Sampling performed by (print):		Signature:	$\bigcap \bigwedge$ /	
R.A. DIFF		P		

	A. AIR SAMPL	ING EQUIPMENT	•	
Pump Type (check):		olume General Air	□ High Volume (	Seneral Air
Serial # 8244	Calibration Due:	ily w/silil	brater	
Filter Type: F4J CPH-4	7	Filter Size:	7 mm	
Filter Lot: N/A		Air Sample Number:	)9	
	B. SAMPLING	PARAMETERS		
Sample Start Date: 5/24/99	Time: 0700	<b>-</b>	Flow Rate (L/min):	2.449
Sample End Date: 5/24/99	Time: 1530		Flow Rate (L/min):	2.437
Total Sample Time (T):	510		•	(Minutes)
Average Flow Rate (F): 2,443				(Liters/Minute)
Sample Volume (V) = $5/0$ (min	xF_2.443	(L/min) x 1000 (ml/L)	= 1,245,930	(ml)
	C: WORKER/WO	ORKPLACE DATA	<del></del>	
BREATHING ZONE			GENERAL AIR	
Name of Worker Monitored:	tt White	General Area and Spec	ific Location:	
Type of Work Performed:  DILL AAF Byhov	se disassembl	Type of Work On-going	<b>9:</b>	
Radiation Work Permit Number: TEM/	MC-99-01	Radiation Work Permit	Number:	
General Area and Specific Work Location:  Bly. DIII, AAF Bagho		Type of Operation/Equi	pment in Area:	
Respiratory Protection Used: Full Face APR		Names of Workers:		
Sampling performed by (print):  R. Alan DIFF Copyright © Integrated Environmental Management, 19	QR.	Signature:	M	



4	A. AIR SAMPL	ING EQUIPMENT		
Pump Type (check): K Breathing Z	one Low V	olume General Air	□ High Volume General Air	
Serial # 8242		Calibration Due:	ily W/o:1: brator	
Filter Type: F45 CPH-47			7 mm	
Filter Lot:		Air Sample Number:	20	
	B. SAMPLING	PARAMETERS		
Sample Start Date: 5/25/99	Time: 0700		Flow Rate (L/min): 2.260	
Sample End Date: 5/25/49	Time: 1515		Flow Rate (L/min): 2.233	
Total Sample Time (T):	495		(Minutes)	
Average Flow Rate (F): 2.24	7		(Liters/Minute)	
Sample Volume (V) = 495 (min)	xF 2.247	(L/min) x 1000 (ml/L)	= 1,112,265 (ml)	
	C: WORKER/WO	ORKPLACE DATA	A	
BREATHING ZONE			GENERAL AIR	
Name of Worker Monitored: Scott Wh:te		General Area and Specific Location:		
Type of Work Performed:  DIII AAF baghous	se disassembly	Type of Work On-going	g:	
Radiation Work Permit Number:	5MC 99-01	Radiation Work Permit	Number:	
General Area and Specific Work Location:  Bldg. DIII, AAF bag		Type of Operation/Equ	ipment/in/Area:	
Respiratory Protection Used: Full Face APR		Names of Workers:		
Sampling performed by (print):  R. Ala DJFF Copyright © Integrated Environmental Management, 19 RSP-022 (Rev. 001) - Attachment 3	98	Signature:		

Date: 5-26-99



				· ·
Pump Type:   Breathing Zone	□ Low Volume Genera	al Air □ High Volun	ne General Air	
Serial No: 8242		Calibration Due:	17.14	
Filter Type: FLT CP47H		Filter Size: 47 m	→ Filter L	ot No. N
-			-	<i>P</i> .
•				
	SAMPLING F	PARAMETERS	5	
Sample Start Date: 5-76-99	Time: 0700	>	Flow Rate (Ipm):	2245
Sample End Date: 5/26/99	Time: 1500		Flow Rate (Ipm)	2.245
Total Sample Time (T) in minutes:	480			
Average Flow Rate (F) in liters per minu	ite: る.マ45			
Sample Volume (V) = T <u>4名の</u> (min)	x F <u>2,245</u> (lpm) x	1000 = 1,077,606	_ milliliters	
3			· · · · · · · · · · · · · · · · · · ·	
	OBKEDWOE	KPLACE DA	TA	
BREATHING ZONE		L LAGE BA	GENERAL AIR	
Name of Worker Monitored: Tohan	<.1	General Area and Sp		
Type of Work Performed: D-111 AAF	Ashouse Hims, cleams	'		
			$\mathcal{N}$	·
Work Permit No.: IEm/smc	99-01	:	A	
General Area and Specific Work Location AAF		Type of Operation/E	quipment in Area:	
			•	
Respiratory Protection Used:  None Full Face Half F	ace □ Other •	Names of Workers i	n Area:	7
Monitoring Conducted by:	en Kel			
Signature:	MM			•

Date: 5-26-99



Al	R SAMPLING	G EQUIPMEN	IT	(23)
Pump Type:	Low Volume Genera	l Air □ High Volum	ne Genera	l Air
Serial No: 8244		Calibration Due:	Daily	
Filter Type: FLT CPYTH		Filter Size:	im	Filter Lot No. No.
- <b>S</b>	AMPLING P	ARAMETERS		
Sample Start Date: 5-26-99	Time: 0700	I	Flow Rate	e (lpm):
Sample End Date: 5-24-99	Time: /5 00		Flow Rate	
Total Sample Time (T) in minutes:	480			- La Calle
Average Flow Rate (F) in liters per minute	=: 2.429			
Sample Volume (V) = T 480 (min) x	F 2.429 (lpm) x	1000 = 1,165,920	milliliters	S .
3				
		•		
	RKER/WOR	KPLACE DAT	<u>'A</u>	· · · · · · · · · · · · · · · · · · ·
BREATHING ZONE			GENER	AL AIR .
Name of Worker Monitored: Scotte	White	General Area and Spe	ecific Loc	ation:
Type of Work Performed: p-111 B	aghouse	,		
VACCUUM, C	oxy, acelelone cutting			
				1
			\	)/
7	79-01		_/_	/_
General Area and Specific Work Location  D- 111 BA9 Lous	1	Type of Operation/Eq	uipmenti	h- <del>f</del> k{ea:
D 11 D11 (100)	2004			
			•	
			_	
Respiratory Protection Used:  □ None	e □ Other	Names of Workers in	Area:	
			• •	$\underline{\hspace{1cm}}$
/ \	1 ea fil			
Signature: Volume	H.			

21 Date: 5-28-99

AIR S	AMPLING I	EQUIPMEN	IT (23	5)
Pump Type: 🗹 Breathing Zone 🗆 Low 🕏	Volume General Air	□ High Volun	ne General Air	
Serial No: 8241	Cal	ibration Due:	741 14	
Filter Type: F+T CP47+1	Filt	er Size: ィフゃ	Filter Lot	No. N/
SAM	PLING PAR	AMETERS	·	/*
Sample Start Date: 5-28-40700 Time		0700	Flow Rate (Ipm):	2470
Sample End Date: 5-28-47 1560 Time	:	1500	Flow Rate (lpm)	2529
Total Sample Time (T) in minutes:	L	180		230.1
Average Flow Rate (F) in liters per minute: 2	1.506			
Sample Volume (V) = T 150 (min) x F 2		= 1,200,000	≥ milliliters	
BREATHING ZONE  Name of Worker Monitored:  Type of Work Performed: UAC. D-111 B	Butler Ger	eral Area and Sp	GENERAL AIR	
Work Permit No .: TEM/SMC 99-0	1	1		•
General Area and Specific Work Location:  D- NI AAF BATHOUS		e of Operation/Ed	nulpment-in Area:	
Respiratory Protection Used:  None Full Face Half Face	Other Nam	nes of Workers in	Area:	
Monitoring Conducted by: Row Mech	ρ			
Signature: Rund	L			

27 Date: <u>5-22-99</u>

Pump Type: Breathing Zone	al Air  □ High Volume General Air		
Serial No: 8243	Calibration Due:		
Filter Type: F+J CP47H	Filter Size: 47 mm Filter Lot No. W (A		
	PARAMETERS		
Sample Start Date: 5-28-99 Time: 070	Flow Rate (lpm): 2.500		
Sample End Date: 5-23 - 9 9 Time: 150	Flow Rate (Ipm) 2565		
Total Sample Time (T) in minutes:			
Average Flow Rate (F) in liters per minute: 2.533			
Sample Volume (V) = $T \underline{480}$ (min) x $F_{2.533}$ (lpm) x	1000 = 1,315,840 milliliters		
WORKER/WOR	KPLACE DATA		
BREATHING ZONE	GENERAL AIR		
Name of Worker Monitored: Scott White	General Area and Specific Location:		
Type of Work Performed: Decow D-111 Baghouse.	A)/		
Work Permit No.: IEM/SMC 99-61			
General Area and Specific Work Location: (>- III BA Loose	Type of Operation/Equipment in Area		
Respiratory Protection Used:  None Full Face  Half Face  Other	Names of Workers in Area:		
Monitoring Conducted by: Ron methy	L		
Signature: Remun			

### INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

AIR SAMPLING DATA SHEET

	<u> </u>	
_/	$\neg$	5
l	.بر	5/

	A. AIR SAMPLI	NG EQUIPMENT		
Pump Type (check): Breathing Zor	ne 🗆 Low Vo	olume General Air	□ High Volume General Air	
Serial #		Calibration Due:	Dail	
FILT 47CPN		Filter Size:	Dorly 47 mm	
Filter Lot:		Air Sample Number:	25	
	B. SAMPLING	PARAMETERS		
Sample Start Date: 5-73-99	Time:	700	Flow Rate (L/min): 2472	
Sample End Date: 5-23-99	Time: 15	00	Flow Rate (L/min): 2415	
Total Sample Time (T):	480		(Minutes)	
Average Flow Rate (F): 2,444			(Liters/Minute)	
Sample Volume (V) = <u>+80</u> (min)	xF 2.444 (	L/min) x 1000 (ml/L)	= 1,173,120 (ml)	
С	: WORKER/WC	RKPLACE DATA		
BREATHING ZONE			GENERAL AIR	
Name of Worker Monitored: PAC TRUC  Type of Work Performed: F	CK General Area	General Area and Specific Location:		
Type of Work Performed: Empty UAC	Twok	Type of Work On-going		
Radiation Work Permit Number:	snc 99-01	Radiation Work Permit	Number:	
General Area and Specific Work Location:		Type of Operation/Equi	pment in Area:	
Respiratory Protection Used:		Names of Workers:		
Sampling performed by (print):  Pow Model Copyright © Integrated Environmental Management, 1998 RSP-022 (Rev. 001) - Attachment 3		Signature.	he	

Date:	5-28-99
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Pump Type: Breathing Zone	Low Volume Genera	al Air □ High Volur	me General Air	
Serial No: 8241		Calibration Due:	DAILY	
Filter Type: F+J CP47H		Filter Size: 47 m	J	ot No. LA
-				
1				
	SAMPLING F	PARAMETERS	5	
Sample Start Date: 5-28-99	Time: 0700	)	Flow Rate (Ipm):	7.468
Sample End Date: 5 - 28 - 99	Time: 1400		Flow Rate (Ipm)	2.448
Total Sample Time (T) in minutes:	420,			
Average Flow Rate (F) in liters per minu	2.430			
Sample Volume (V) = $T + 20$ (min)	x F <u>2.45%</u> (lpm) x	1000 = 1,032,360	<u>o</u> milliliters	
3				
÷				
BREATHING ZONE	ORKER/WOR	KPLACE DAT		
· · · · · · · · · · · · · · · · · · ·		Consol Assessed Co	GENERAL AIR	
Type of Work Performed:	well general area	General Area and Sp	ecific Location:	
Name of Worker Monitored: NAC. TO Type of Work Performed: Emplying 1-Rom baghouse	aust collected	1/		
•				
Work Permit No.: 95-01				
General Area and Specific Work Location		Type of Operation/E	quipment in Area:	
D-111 AAF BAYLOU	se			
Respiratory Protection Used:  □ None □ Full Face □ Half Face	ce Other	Names of Workers in	n Area:	
	f mask			
Monitoring Conducted by:	rahl			
Signature:	hop			•

Date: <u>6-28-99</u>



Pump Type: Breathing Zone Lo	w Volume General	Air □ Hig	h Volume Gener	al Air
Serial No: 3242		Calibration E	Due: Dail	1
Filter Type: FIJ C147H		Filter Size:	47mm	Filter Lot No. NA
SA	MPLING P		repe	_
	me: <u>07</u> ბ			te (lpm): 2247
	me: 14 <i>0</i> 0		Flow Ra	20-17
Total Sample Time (T) in minutes:		) min		2101
Average Flow Rate (F) in liters per minute:	2.214			<u> </u>
Sample Volume (V) = T <u>↓20</u> (min) x F		000 = 93	1,560 millilite	rs
	KER/WOR	KPLACE	DATA	·
BREATHING ZONE	7		GENE	RAL AIR
Name of Worker Monitored: Scotty wil	nt	General Area	and Specific Lo	cation:
Name of Worker Monitored: Scotty will Type of Work Performed: Use vuring D 15T Floor BA	ust ow ghouse D-III			
Work Permit No.: 3mc/TEm 95-61			$\mathcal{N}$	•
General Area and Specific Work Location: ひーリー かん んのちゃ		Type of Oper	ation/Equipment	in Area:
Respiratory Protection Used:  None Full Face Half Face	□ Other	Names of Wo	orkers in Area:	//
Monitoring Conducted by: Lan Mer	hl			D
Signature:	~			

Date: 5-28-99



2			IAITIA I	
Pump Type: Breathing Zone	Volume General	Air □ Hig	h Volume Genera	al Air
Serial No: 3243		Calibration D	ue: Darly	
Filter Type: F+J CP47H	1	Filter Size:	47mm	Filter Lot NomA
				- (//
SAN	IPLING PA	RAMET	TERS	
Sample Start Date: 5-28-59 Time			Flow Rat	e (lpm): 2514
Sample End Date: 5-28-99 Time			Flow Rat	
Total Sample Time (T) in minutes:	420.	•		2417
Average Flow Rate (F) in liters per minute:	2.468	<del></del>		
Sample Volume (V) = $T + 20$ (min) x F $2$	2.468 (Ipm) x 10	000 = 1.03	6.546 milliliter	'S
		- 1		
WORK	KER/WORK	PLACE	DATA	
BREATHING ZONE			GENER	AL AIR
Name of Worker Monitored: 5, m Bot	Elen	Seneral Area	and Specific Loc	eation:
Type of Work Performed:  UACUUMIS DUST ON IST (315 Louse	Floor			
Work Permit No.: SMC/IEM 95-01			N	
General Area and Specific Work Location: ひール AAF BAGんのひと	Т	ype of Opera	ation/Equipment	in Area:
Respiratory Protection Used:  Discrepance	□ Other	lames of Wo	rkers in Area:	
Monitoring Conducted by: Ran Much				
Signature:				

		A. AIR SAMPL	ING EQUIPMENT	:		
Pump Type (check):	Breathing Zo	one 🗆 Low V	olume General Air	□ High Volume General Air		
Serial #	41	·	Calibration Due:	ily		
Filter Type:	CP471		Filter Size: 47 n	un		
Filter Lot:			Air Sample Number:	2,9		
		B. SAMPLING	PARAMETERS			
Sample Start Date:	6-1-99	Time:	270D	Flow Rate (L/min): 2.504		
Sample End Date:	6-1-99	Time:	500	Flow Rate (L/min): 2.454		
Total Sample Time (T):		480 mm	····	•	(Minutes)	
Average Flow Rate (F):	2	477		(L	iters/Minute)	
Sample Volume (V) = 45	(min)	xf <u>2.477</u>	(L/min) x 1000 (ml/L)	= <u>1,189,920</u> (ml)		
		C: WORKER/WO	ORKPLACE DATA			
BRE	ATHING ZONE		GENERAL AIR			
Name of Worker Monitored:	1/4 (crans	cab) General Aven BAGHOUSE	General Area and Specific Location:			
Type of Work Performed: D	PECON AA	= Baghouse	Type of Work On-going	<b>;</b>		
Radiation Work Permit Numbe	er: SMC/IEM	9	Radiation Work Permit	Number:		
General Area and Specific Wo D - いしみを	ork Location:	e.	Type of Operation/Equi	pment il Area:		
Respiratory Protection Used:	None <del>Pace Respi</del>	erlen.	Names of Workers:		A	
Sampling performed by (print)	on Men	iku	Signature:	h-C		

A. A	AIR SAMPLING EQUIPME	ENT
Pump Type (check):Breathing Zone	□ Low Volume General Air	□ High Volume General Air
Serial # 8242	Calibration Due:	14
Filter Type: F+T CP47H	Filter Size: 4	) mm
Filter Lot:	Air Sample Numb	
В.	SAMPLING PARAMETER	RS
Sample Start Date: (9 - 1-99 Time	: U100	Flow Rate (L/min): 2255
Sample End Date: /2 - / - 99 Time:	: 1500	Flow Rate (L/min): 2212
Total Sample Time (T):	480 m	. (Minutes)
Average Flow Rate (F): 2.2	34	(Liters/Minute)
Sample Volume (V) = $480$ (min) x F	<u> </u>	ni/L) = 1,072,326 (ml)
C: W	ORKER/WORKPLACE DA	ATA
BREATHING ZONE		GENERAL AIR
Name of Worker Monitored:	General Area and	Specific Location:
Type of Work Performed: Decon AAF BABOHOM Floor	g house Type of Work On-	going:
0.7.16.46		
Radiation Work Permit Number: IEm/Smc 95-01	Radiation Work Pe	ermit Number!
General Area and Specific Work Location:  D-111 AAF BAT LOV.		n/Equipment in Area:
Respiratory Protection Used: Full FAce Respi	Names of Workers	s:
Sampling performed by (print):	Signature:	

A. AIR SAMPL	NG EQUIPMENT									
Pump Type (check): Breathing Zone □ Low Vo	olume General Air □ High Volume General Air									
Serial # 8243	Calibration Due:									
Filter Type: ドレナ CP 47 H	Filter Size:									
Filter Lot: $\omega$ $\Box$	Air Sample Number: 3									
B. SAMPLING	PARAMETERS									
Sample Start Date: 6-1-99 Time: 0	700 Flow Rate (L/min): 2527 -									
Sample End Date: 6-1-99 Time: 10	Flow Rate (L/min): 2.472									
Total Sample Time (T): 430	Minutes)									
Average Flow Rate (F): 2.5	(Liters/Minute)									
Sample Volume (V) = $480$ (min) x F $2.5$ (	L/min) x 1000 (ml/L) = 1,200,000 (ml)									
C: WORKER/WO	DRKPLACE DATA									
BREATHING ZONE	GENERAL AIR									
Name of Worker Monitored: MA UAC TRUCK General area	General Area and Specific Location:									
Type of Work Performed: Engty UACTROCK	Type of Work On-going:									
Radiation Work Permit Number: Smc Fr Em 95-01	Radiation Work Permit Number:									
General Area and Specific Work Location:	Type of Operation/Equipment in Alea:									
Respiratory Protection Used: Dus+ mask	Names of Workers:									
Sampling performed by (print):	Signature									

# INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. PUMP FLOW RATE VERIFICATION

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	2h2,5	242.5	66-97-5	7488 12
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Kh	hlh:Z	L.25.7	66-L1-S	11008
alatiril	Flow Rate - End of Shift (cu. cm./minute)	Flow Rate - Start to Flow Rate (Start to Start)	DATE	Sampler Number

# INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. PUMP FLOW RATE VERIFICATION

Sampler Number	DATE	Flow Rate - Start of Shift (cu. cm./minute)	Flow Rate - End of Shift (cu. cm./minute)	Initials  (A)				
8241	6-1-99	2504	2454					
8242	6-1-29	2255	2212					
8243	6-1-99	2527	2472	(Qui)				
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# INTEGRATED ENVIRONMENTAL MANAGEMENT, PUMP FLOW RATE VERIFICATION NO.

											2428	4428	EH78	MSA - 3	M51-2	MSA-1	Sampler Number	
											5/25/99	5/24/99	5/21/99	5/21/99	5/2/69	5/21/99	DATE	
											2,240	P447.6	2645	2969	2955	3009	Flow Rate - Start of Shift (cu. cm./minute)	
										•	2.233	बे. ५, २. ५३७	2543	2963	2940	2986	Flow Rate - End of Shift (cu. cm./minute)	
				·		·					B	40			(or	N	Initials	

his report was prepared under the direction of Shieldalloy Metallurgical Corporation

by

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