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DAVID R. SMITH
ENVIRONMENTAL MANAGER
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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 dsmith@shieldalloy.com.

Sincerely,

David R. Smith

cc:

w/o encl:

Nigel C. Morrison

Ellen T. Harmon, Esq.

Carol Berger

Jay Silberg

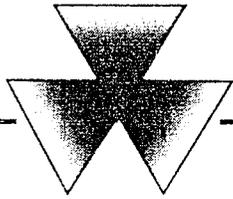
Shieldalloy Metallurgical Corp.

Metallurg, Inc.

Integrated Environmental Management

Shaw Pittman Potts & Trowbridge

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



IEM

Integrated Environmental Management, Inc.

048-07102

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

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by:

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Report No. 94005/G-20187

January 7, 2000

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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.¹

The radioactivity contained within the AAF Baghouse is of relatively low concentration (i.e., far less than 0.05% uranium and thorium by weight).² 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.

¹ Report No. 94005/G-6131, "Radiation Dose Estimates from Atmospheric Emissions from the Newfield Facility", March 11, 1997.

² 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.

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 ^{232}Th plus progeny in equilibrium and ^{238}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.³ 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.

³ 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 wore 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, re-surveyed, 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 cm²), cpm = the counts per minute measured by direct survey, BKG_{ave} = 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 (cm²).

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

$$A_{\text{removable}} = \frac{\text{cpm} - \text{BKG}_{\text{ave}}}{E}$$

where $A_{\text{removable}}$ = the removable surface activity (dpm/100 cm²).⁴ 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:

$$R_{\text{net}} = R_{\text{gross}} - \text{BKG}_{\text{ave}} \times \text{CF}$$

where R_{net} = the net measured exposure rate ($\mu\text{R/hr}$), R_{gross} = the gross measured exposure rate ($\mu\text{R/hr}$ or cpm), and CF = an optional conversion factor to convert count rate instrument readings into units of " $\mu\text{R/hr}$ " 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:

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

where A_f = the alpha activity on the air filter (μCi), V = the volume of air drawn through the filter (milliliters), 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:

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

where MDA = the activity level (dpm/100 cm²), BKG_{ave} = the background count rate for this measurement type (cpm), A = the detector area (cm²), and t = the measurement count time (min).

⁴ If the area smeared is less than 100 cm², 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_c = 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) 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.



TABLES



Table 1 - Site-specific Release Criteria

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

¹ Where surface contamination by both α and β -gamma-emitting radionuclides exists, the limits established for α and β -gamma-emitting radionuclides should apply independently.

² 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.

³ 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 G if: (1) from measurements of a representative number (n) of sections it is determined that $1/n \sum S_i \geq G$, where S_i is the dis/min-100 cm² determined from measurement of section i ; or (2) it is determined that the sum of the activity of all isolated spots or particles in any 100 cm² area exceeds 3G.

⁴ The amount of removable radioactive material per 100 cm² 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 cm² 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-228, 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.

⁵ Assumes removable activity is the limiting value.

⁶ 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	Ludlum 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	~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

1995 -- *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,*
1995 *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*
1987 *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 magnesium-thorium 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 μCi 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 of facility contaminated with ¹³⁷Cs, 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 - Senior Technical Consultant, IT Corporation/Nuclear Sciences, Washington, D.C.
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 - Senior Health Physicist, IT Radiological Sciences Laboratory, Knoxville, Tennessee
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, Tennessee.
1986 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, Tennessee.
1983 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.

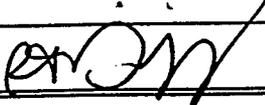
FIELD ACTIVITY DAILY LOG

Page 1 of 1

Facility: <u>SMC New Field</u>		
Date: <u>5/17/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., New Field, NJ.</u>		
Description of Work: <u>Setup for baghouse disassembly.</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0700	On site, Merkel & Duff, Met w/ Rob Bennett of Summit
0715	Signed in w/ guard @ guardhouse.
0730	Held initial tailgate meeting, discussed work plan & activities to be performed & precautions to be taken
0830	Completed training on project, making preparations to commence work, performing instrument setups.
0845	Retrieved Pentek VacPac System & unloaded, vacuum hose not shipped with system. Called Pentek's Chris Futrick, hose will be here by common carrier before noon today.
1045	Issued BZA samplers to workers.
10:55	Worker cutting & dropping bags into Summit Dump Truck, moving them to storage yard to unload & store.
1200-1230	Lunch, 1300 - recommenced work @ baghouse
1330	Commenced walkover & survey at eastern end of storage yard, area has had surface soil removed ~1'-3' depth. Hose (vacuum) arrived.
1530	Secured surveying in storage yard, secured work at baghouse.
1600	Performing paper work in inst. office (Duff & Merkel), preparing air samplers for use tomorrow.
1630	Left site, ~1/4 of bags complete.
<p>← No Further Entries →</p>	

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>Significantly more materials in bags than expected, silo ~1/3 Full.</u>	
Weather Conditions: <u>Partly cloudy, mild, wind calm</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, Bennett, White, Taylor, Schnorbus, Butler, D. Smith</u>	
Name (print): <u>R.A. Duff</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Facility: <u>SMC NewField</u>		
Date: <u>5/18/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd. NewField, NJ</u>		
Description of Work: <u>Setup for baghouse disassembly</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0700	On site preparing instruments for day's use
0730	At baghouse, issued BZA pumps to personnel, commenced baghouse bag removal into dump truck. Duff & storage yard performing walkover survey.
0815	Encountered a problem w/ BZA filter papers clogging up & stopping pumps.
1200-1245	Lunch
1300	Resumed storage yard survey & baghouse bag removal
1530	Secured work area. Bag removal ~ 75% complete storage yard survey ~ 1/3 complete. Duff & Merkel @ Lab, preparing instruments for use cleaning BZA pumps & filter holders, doing paperwork.
1600	Duff/Merkel left site.
<div style="position: relative; height: 100px;"> No Further Entries </div>	

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
None	
Weather Conditions: <u>Cloudy, light drizzle, wind from NE ~ 5 mph</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, Bennett, White, Taylor, Schwarbus, Butler.</u>	
Name (print): <u>R. Alan Duff</u>	Signature:

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC NewField</u>		
Date: <u>5/19/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., NewField, N.J.</u>		
Description of Work: <u>Baghouse bag removal, survey of storage yard</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0630 Merkel on site, preparing instruments for use.</u>
<u>0645 Duff on site, preparing instruments for use.</u>
<u>0700 Merkel at baghouse w/crew, commenced removing baghouse bags.</u>
<u>0715 Duff @ storage yard, commenced walkover & survey.</u>
<u>0900 Secured survey of storage yard (rain), Duff @ lab doing paperwork.</u>
<u>Spoke w/D. Smith. Since slag being found in stor. yard right up to perimeter fence, wants me to perform a walkover & survey outside of fence - no fence.</u>
<u>1100 Resumed storage yard survey.</u>
<u>1200-1230 Lunch</u>
<u>1300 Continued work on baghouse & storage yard survey.</u>
<u>1445 Secured work for the day, bag removal complete.</u>
<u>1530 Duff & Merkel left site.</u>
<u>No Further Entries</u>
<u>AO</u>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>None.</u>	
Weather Conditions: <u>Rain, warm, wind calm.</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, D. Smith, R. Bennett, White, Taylor, Schnorbus, Butler</u>	
Name (print): <u>R. Alan Duff</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC New Field</u>		
Date: <u>5/20/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield alloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., New Field, NJ</u>		
Description of Work: <u>Baghouse decontamination, storage yard survey</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0630</u>	<u>Merkel on site, preparing instruments for use.</u>
<u>0700</u>	<u>Duff on site, crew commenced sweeping upper levels of baghouse to remove gross amts. of residual dust.</u>
<u>0730</u>	<u>Duff @ storage yard, ^{continued} walkover & survey. Spot frisks of upper levels of baghouse show all areas should meet release criteria.</u>
<u>0900</u>	<u>Cutting vent duct between baghouse & Fans w/ oxy-acetylene torch. Pieces are removed have shown 1000-3000 dpm/100cm² or ^{fixed} total.</u>
<u>1200-1230</u>	<u>Lunch</u>
<u>1300</u>	<u>Recommenced work.</u>
<u>1400</u>	<u>Duff completed walkover & survey of excavated areas, commenced & walkover outside fence. Flags placed in areas of elevated measurement</u>
<u>1530</u> <u>1545</u>	<u>Completed work at the baghouse for the day.</u>
<u>1545</u>	<u>Completed walkover around fence perimeter. Some elevated locations were located & marked on survey maps & w/Flags.</u>
<u>1630</u>	<u>Duff/merkel left site for the day.</u>
<p style="font-size: 2em; opacity: 0.5;">No Further Entries</p>	

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>None</u>	
Weather Conditions: <u>Clear, mild, wind NS w/ mph From SE</u>	Important Telephone Calls and Interactions: <u>MA</u>
Personnel on Site: <u>Duff, Merkel, D. Smith, Schnorbus, White, Butler, Taylor</u>	
Name (print): <u>R. Alan Duff</u>	Signature:

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC Newfield</u>		
Date: <u>5/21/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., Newfield, N.J.</u>		
Description of Work: <u>Baghouse decontamination/disassembly.</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0630 Merkel on site, preparing instruments for today's use.
0700 Duff & crew on site, crew deconning upper levels of baghouse & cutting up vent ducting & parts of silo.
0830 Preparing BZA pumps for use for Dill Flex Kleen baghouse work.
0915 Issued BZA's to Bldg. Dill personnel performing Flex Kleen baghouse maintenance.
1030 Removed residual residual dust from silo adjacent to AAF baghouse.
1200-1230 Lunch
1300 Resumed work, Duff performing 2ND atr. TLD badge exchange.
1450 TLD exchange complete w/exception of Jim Valentini's House TLD.
1500 Secured work at baghouse.
1545 Duff/Merkel left site.
<div style="font-size: 2em; font-weight: bold; transform: rotate(-45deg); display: inline-block;"> No Further Entries AND </div>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
None	
Weather Conditions: <u>Sunny, warm, wind from SE @ 5 mph.</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, Bennett, White, Taylor, Scherbus, Butler</u>	
Name (print): <u>R. Alan Duff</u>	Signature:

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

Facility: <u>SMC Newfield</u>		
Date: <u>5/24/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., Newfield, NJ.</u>		
Description of Work: <u>AAF Baghouse decon/disassembly.</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0630 Merkel on site, prepared instruments & air samplers for day's use

0700 Duff on site. Crew at baghouse, decontaminating inside of AAF baghouse (sweeping residual dust from upper levels to lower levels w/brooms). Duff/Merkel deconning Pentek Vac-Pac system prior to return.

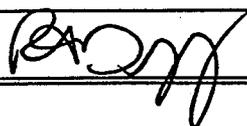
1200-1230 Lunch

1300 Resumed work. Spoke w/Dave Smith, he has concerns about metal pieces requiring more aggressive decontamination. I will speak to C. Berger on possible alternatives. (Release limit is 600 dpm/100cm² total, by direct Frisk. Need limit ↑ to allow use of 1000 (Th) + 5000 (U) dpm/100cm² fixed limits).

1530 Secured work for the day.

1600 Duff/Merkel left site

No Further Entries

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <p align="center"><u>None</u></p>	
Weather Conditions: <u>Rain, warm, wind from W ~ 10 mph</u>	Important Telephone Calls and Interactions: <p align="center"><u>None</u></p>
Personnel on Site: <u>Duff, Merkel, White, Schnorbus, Butler, Dave Smith</u>	
Name (print): <u>R. Alan Duff</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC Newfield</u>		
Date: <u>5/25/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., Newfield, NJ</u>		
Description of Work: <u>AAF baghouse decontamination.</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0600 Merkel on site, preparing instruments & air samplers for use.
0700 Duff on site, workers preparing to use vacuum truck to remove residual baghouse dust. Merkel preparing Pentek Vac-Pac system for return. Duff performing quarterly radiation/contamination surveys.
0730 Vacuuming mid levels of baghouse & hoppers w/ vac truck.
1200 Completed decon & survey of vac-pac system, making arrangements for unit's return to Pentek.
1200-1230 Lunch
1300 recommenced vacuuming of baghouse, performing test decon of metal.
1430 Merkel left site, vac-pac system turned over to SMC for shipment.
1515 Secured work at baghouse, test decon of metal from vent ducts showed a reduction of 50% (Reduced from ~3000 dpm/100 cm ² to ~1500 dpm/100 cm ²) with minor effort using wire brush & household cleaner & paper towels. Workers emptied 2 of 6 hoppers today w/ vacuum truck. 3 Truckloads of dust were moved today to the storage yard from the baghouse.
1630 Met w/ Dave Smith, discussed test decon results, storage yard survey results.
1700 Duff left site, completed surveys w/ exception of D111.
<div style="font-size: 2em; font-weight: bold;">NO</div> <div style="font-size: 1.5em; font-weight: bold;">Further</div> <div style="font-size: 1.5em; font-weight: bold;">Entries</div>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
None	
Weather Conditions: <u>Sunny, mild, wind from South ~5 mph</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, D. Smith, Bennett, Schmorbus, White, ^{SICK} Borker, Foylan</u>	
Name (print): <u>R. Alan Duff</u>	Signature:

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC NewField</u>		
Date: <u>5/26/99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield alloy Metallurgical Corp.</u>		
Address of Work Site: <u>West Blvd., NewField, NJ</u>		
Description of Work: <u>AAF Baghouse decontamination/disassembly.</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0600 Merkel on site, preparing instruments for today's use.</u>
<u>0700 Duff on site, crew continuing vacuuming of mid levels & hoppers of baghouse. Conducted surveys of vacuumed areas. Vacuum truck dumping removed materials on dust pile in storage yard.</u>
<u>1200-1245 Lunch</u>
<u>1300 crew continued vacuuming of baghouse removing bulk materials</u>
<u>16:1500 Completed work, crew left site. Duff/Merkel at lab office counting smears, completing survey forms.</u>
<u>1600 Left site, gave quick debrief to D. Smith on status of baghouse surveillance activities performed. Turned over lead of Project to Merkel, Duff returning to home office.</u>
<u>No</u>
<u>Further</u>
<u>Entries</u>
<u>(Signature)</u>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>None</u>	
Weather Conditions: <u>Clear, warm, wind calm</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Duff, Merkel, Bennett, Schnorbus, white.</u>	
Name (print): <u>R. Alan Duff</u>	Signature: <u>(Signature)</u>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Facility: <u>Shieldalloy Met Corp Newfield</u>		
Date: <u>5-28-99</u>	Time: <u>0600</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shieldalloy Metallurgical Corp</u>		
Address of Work Site: <u>West Blvd, Newfield NJ.</u>		
Description of Work: <u>AAF Baghouse Decom</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0600	Meal in Prep instruments, Air sample pumps.
0700	Continue cut out of Air Duct on Top D-111 Workers still using VAC TRUCK in East Side Rooms 1 ST level.
0900	2 ND FT section of Duct work from D-111 removed Surveyed inside out, No levels above limits detected Slightly levels of 100-125CPM
	* notified D. Smith via J. Valini to hose down Piles of dust.
1030	12-15 FT Piece of Duct on Ground Surveyed NO levels above limits Workers inside VAC. bottom Floor.
1130	3 RD Piece removed 8-10 Feet. Surveyed no contamination detected
1200	Lunch
1300	Working on 4 TH Piece (Elbow) r 2 workers in Bottom level VAC. Equip, Floor.
1400	Removed on ground 4 TH Piece Surveyed NO Contamination detected above levels.
1430	Meal in office on Paperwork. * spoke directly to D. Smith to hose down Piles of dust, he said "he WASN'T going to worry about it".

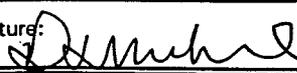
Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>CALL D. Smith Notify of Watering Piles of Dust From Baghouse</u>	
Weather Conditions: <u>Sunny, Clear, Cool like Breeze</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site: <u>Meal, Bennett, White,</u>	
Name (print): <u>Ron Meikel</u>	Signature: <u>Ron Meikel</u>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Facility: <u>Smc / Newfield</u>		
Date: <u>6-1-99</u>	Time: <u>0600</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Steidmally Metalurgical corp</u>		
Address of Work Site: <u>West Blvd, Newfield, NJ</u>		
Description of Work: <u>AAF Baghouse Decon</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0600</u>	<u>Merkel In source check inst, Cal. Air / Sample pumps.</u>
<u>0700</u>	<u>2 workers VAC. Dust From Last hopper. Scotty on roof prep to cut out final section of vent duct.</u>
<u>1000</u>	<u>Final piece of duct work removed 45 feet long. Surveyed inside + outside, Inside 60-80 cpm (1 min scale) outside top 85-144 cpm (1 min scale)</u>
<u>1130</u>	<u>Bennett, while making blanks for roof penetrations levels</u>
<u>1230</u>	<u>Bennett, while on roof putting blanks in place</u>
<u>1330</u>	<u>D. Smith stopped by to take some pictures; gave him an update.</u>
<u>1430</u>	<u>CRANE operations w/ magco complete; Surveyed crane inside, outside wheels etc.</u>
<u>1800</u>	<u>Crane offsite VAC TRUCK Emptying</u>
<u>1530</u>	<u>Bennett and crew offsite. No further entries</u>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <p style="text-align: center;"><u>None</u></p>	
Weather Conditions: <u>Sunny, Mild</u>	Important Telephone Calls and Interactions: <u>ALAN Doff, Carol Berger</u>
Personnel on Site: <u>Merkel, Bennett, MAGCO CRANE Co.</u>	
Name (print): <u>Ron Merkel</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

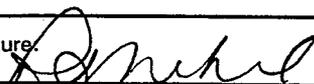
FIELD ACTIVITY DAILY LOG

Page 1 of 1

Facility: <u>SMC Newfield</u>		
Date: <u>6-03-99</u>	Time: <u>0600</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield Alloy Met</u>		
Address of Work Site: <u>West Blvd Newfield NJ</u>		
Description of Work: <u>Decon D-III AAF Baghouse</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0600</u>	<u>Merkel onsite Source Checking Instruments.</u>
<u>0700</u>	<u>Bennett + crew setting up water supply + pressure washer for decon of Bottom Floor AAF Baghouse.</u>
	<u>* 2 workers from Eisco onsite to remove bags from Vac Truck workers in fullface Resp. Tyvek, Gloves.</u>
<u>0930</u>	<u>Scotty, John removing fence around transformers. EISCO workers finish removing bags.</u>
<u>1000</u>	<u>Eisco to empty residual dust from bags, decon Baghouse (Truck) with lik water.</u>
<u>1130</u>	<u>Decon Complete Bennett + crew to lunch.</u>
<u>1200</u>	<u>Survey affected areas of truck; after decon Truck Baghouse was less BKG. BKG = 7</u>
<u>1300</u>	<u>Bennett + crew putting up fence around transformer yard.</u>
<u>1330</u>	<u>Begin cutting ductwork on ground; Merkel Surveying lower room of AAF Baghouse. AFTER decon.</u>
<u>1500</u>	<u>Bennett + crew cutting duct work. Merkel Surveying equipment in Bottom Floor of AAF Baghouse.</u>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <p style="text-align: center; font-size: 1.5em;">None</p>	
Weather Conditions: <u>72°</u> <u>Sunny, Breezy</u>	Important Telephone Calls and Interactions: <u>N/A</u>
Personnel on Site: <u>Merkel Bennett, D. Smith, White</u>	
Name (print): <u>Ron Merkel</u>	Signature: 

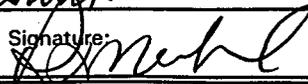
**INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
FIELD ACTIVITY DAILY LOG**

Page 1 of 1

Facility: <u>SMC</u>		
Date: <u>6-8-99</u>	Time: <u>0615</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield alloy metalurgical size</u>		
Address of Work Site: <u>W. west Blvd Newfield NT.</u>		
Description of Work: <u>Recon Wewo AAF Baghouse</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0615</u>	<u>Merhel onsite</u>
<u>0700</u>	<u>Scotty, John onsite; John cutting silo</u> <u>Scotty is on Dapple separating steel</u>
<u>0800</u>	<u>Bennett onsite preparing to level remainder</u> <u>of Baghouse.</u>
<u>1000</u>	<u>Called Allan concerning Release limits</u>
<u>1100</u>	<u>hoppers from 1st floor Baghouse are on ground.</u>
<u>1200</u>	<u>Lunch.</u>
<u>1300</u>	<u>Merhel surveying Hoppers</u>
<u>1400</u>	<u>D. Smith is onsite; Using Excavator</u>
<u>1500</u>	<u>Completion of Cutting of Silo</u>
<u>15.30</u>	<u>Scotty, John leave site</u>
<u>1600</u>	<u>Merhel sock checking instruments -</u>

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <p align="center"><u>None</u></p>	
Weather Conditions: <u>Sunny Hot 95°</u>	Important Telephone Calls and Interactions: <u>Allan & Release limits</u>
Personnel on Site: <u>White, John, Merhel, Bennett, Smith</u>	
Name (print): <u>Don Merhel</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC</u>		
Date: <u>6-10-99</u>	Time: <u>0600</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield alloy metalurgical site</u>		
Address of Work Site: <u>N. West Blue Newfield NJ.</u>		
Description of Work: <u>Decor, Aero AAF Baghouse</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0600</u> Merkel in source check instruments.
<u>0700</u> Scotty + John onsite cutting overhead pipe from D-111 → AAF Baghouse
<u>0800</u> R. Bennett onsite moving pallets for D. Smith
<u>0830</u> 3 way call to Allan + Carol; Evacuation Drill
<u>0900</u> Bennett moving scrap from back to D-111 for disposal with rest of scrap from D-111
<u> </u> surveyed scrap. (drainage tile, misc metal)
<u>1000</u> Talked to Bennett about staging area for clean pieces of steel awaiting cutting; W. side of G-warehouse in beamed area.
<u>1100</u> Scotty + John loading cut metal in 1 st roll off.
<u>1200</u> Lunch
<u>1300</u> Clearing AAF Baghouse slab for Laydon/Decor area.
<u>1400</u> Surveying structural steel; Scotty spreading structural pile
<u>1500</u> Scotty + John clearing up. Merkel still surveying
<u>1600</u> Merkel to office to source check instruments.
<u>1630</u> leaving site no further entries

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <u>CREATE A STAGING AREA FOR SCRAP AWAITING CUTTING.</u> <u>Beside G Warehouse</u>	
Weather Conditions: <u>Overcast, Breezy 70-75°</u>	Important Telephone Calls and Interactions: <u>Allan, Carol 3 way (Laydon Area)</u>
Personnel on Site: <u>Merkel, Scotty, John, Bennett, Smith</u>	
Name (print): <u>Ron Merkel</u>	Signature: <u>R Merkel</u>

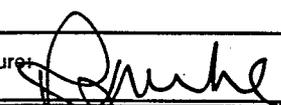
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC</u>		
Date: <u>6-11-99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield Alloy Metalurgical</u>		
Address of Work Site: <u>N. West Blvd</u>		
Description of Work: <u>Surveying Scrap, Decou</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

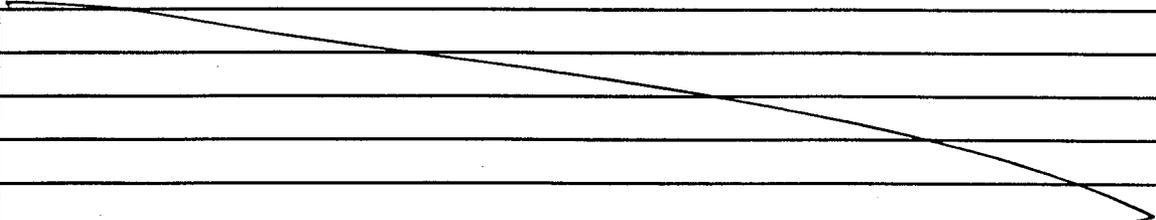
<u>0600</u>	<u>S. White, Marshal, John onsite</u>
<u>0800</u>	<u>Surveying Structural Steel Pile</u>
	<u>scotty Spreading Pile 1 Scoop/Time.</u>
<u>0900</u>	<u>Survey 4 happens AFTER Decou.</u>
<u>1100</u>	<u>Continue Survey of structure pile</u>
	<u>moved duct work to laydown area. Ductwork was</u>
	<u>surveyed while in place; John Power Waxed the tops</u>
	<u>+ sides of each one prior to Staging</u>
<u>1200</u>	<u>Lunch</u>
<u>1300</u>	<u>Continue Survey of structure steel</u>
	<u>John Cutting up Tank.</u>
<u>1400.</u>	
<u>1500</u>	<u>Meter stopped functioning replaced Mylar, Source checked</u>
<u>1600</u>	<u>source check instruments</u>
<u>NO Further Entries</u>	

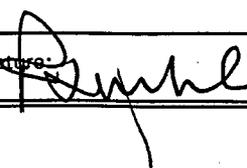
Changes from Plans and Specifications, and Other Special Orders and Important Decisions:	
<u>None</u>	
Weather Conditions: <u>Clear cool 70° Breezy</u>	Important Telephone Calls and Interactions: <u>N/A</u>
Personnel on Site: <u>White, John, Marshal</u>	
Name (print): <u>Don Marshal</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. FIELD ACTIVITY DAILY LOG

Facility: <u>SMC</u>		
Date: <u>6-14-99</u>	Time: <u>0630</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield Alloy Metallurgical Inc</u>		
Address of Work Site: <u>W West Blvd Newfield NJ</u>		
Description of Work: <u>Demo, Decon D-III AAF Baghouse</u>		

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

<u>0630</u>	<u>Merkel in charge Mylar on Inst.; Source check meters.</u>
<u>0700</u>	<u>Scotty, John onsite; Cutting structural steel meshel Fixing signs on storage yard. Posts.</u>
<u>0900</u>	<u>Merkel to FedEx to send timestats.</u>
<u>1100</u>	<u>D. Smith stopped by to see progress; Scotty, John still cutting structural steel.</u>
<u>1200</u>	<u>Lunch.</u>
<u>1300</u>	<u>Merkel writing surveys.</u>
<u>1500</u>	<u>John, Scotty cutting structural steel</u>
	<u>NO further activities</u>
	

Changes from Plans and Specifications, and Other Special Orders and Important Decisions: <p style="text-align: center;"><u>None</u></p>	
Weather Conditions: <u>RAINY, 80°, Humid.</u>	Important Telephone Calls and Interactions: <u>None</u>
Personnel on Site:	
Name (print): <u>Ron Merkel</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

FIELD ACTIVITY DAILY LOG

Facility: <u>SMC</u>		
Date: <u>6-15-99</u>	Time: <u>0700</u>	Job/Task Number: <u>94005.20</u>
Client Name: <u>Shield Alloy Metallurgical Inc.</u>		
Address of Work Site: <u>N. West Blvd Newfield NJ.</u>		
Description of Work: <u>Decor, Demo, Cutting, Scrap.</u>		

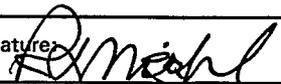
DESCRIPTION OF DAILY ACTIVITIES AND EVENTS

0700	Merkel, Scotty, John onsite. Scotty + John cutting supports in prep. to remove final piece of ductwork that went to D-111 roof; and fans.
0800	R. Bennett onsite removing fans + duct work
0900	John + Scotty disconnecting structural steel that was found to be close to limits.
1000	Surveyed structural steel after Decor, all pieces below limits; Bennett offsite to get pressure washer.
1100	close Rotor Roll off containers full of structural steel BKG was 10-12 mph and contained readings were BKG or less.
1200	Lunch
1300	D. Smith notified me to call Carol + Allen about Allan wouldn't be coming in on Wed 15 th
1400	Surveying 2 fan units; Scotty + John cutting steel
1500	Complete survey of fan units;
	NO Further activities

Changes from Plans and Specifications, and Other Special Orders and Important Decisions:
None

Weather Conditions: <u>Overcast, 75°, Breezy</u>	Important Telephone Calls and Interactions: <u>Allen, Carol.</u>
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Personnel on Site:
Bennett, Scotty, John, Merkel

Name (print): <u>R. Merkel</u>	Signature: 
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Appendix C - Instrument Records



INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
CONTAMINATION SURVEY INSTRUMENT DATA SHEET

Project No: 94005.20			Detector			Meter		
Site Location/Background Location: SMC Newfield, D202 Inst. Office			Type: Ludlum 43-87	Serial No. 146748	Probe Area (cm ²) 100	Type: Ludlum 2224	Serial No. 146718	Operating Voltage: N/A
Check Source No: 3785			Check Source No: ✓			Check Source No: ✓		
Radionuclide: Th-230	Activity: 6500 dpm	Date: 9/18/91	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:

Date	Start of Shift Background (cpm for a 1 minute count)				End of Shift Background (cpm for a 1 minute count)				Daily Source Check (α)		Daily Source Check (β)		MDA** - Scaler Mode (dpm)		Bat. OK	HV OK	Initials		
	Alpha		Beta		Alpha		Beta		Source (cpm)	Eff.	Source (cpm)	Eff.	α	β					
	1	2	3	Av.	1	2	3	Av.											
5/17/91	4	3	4	4	← N/A →	4	3	3	3	← N/A →	1238	19.0%	N/A	N/A	63.2	N/A	✓	N/A	RTM
5/18	3	3	4	4	—	4	4	3	4	—	1188	18.3%	N/A	N/A	66.0	N/A	✓	N/A	RTM
5/19	5	4	5	5	— N/A —	4	4	4	4	— N/A —	1167	17.8%	N/A	N/A	73.6	N/A	✓	N/A	RTM
5/20	5	5	6	6	— N/A —	5	4	4	4	— N/A —	1255	19.2%	N/A	N/A	73.4	N/A	✓	N/A	RTM
5/21	4	5	5	5	— N/A —	5	5	5	5	— N/A —	1166	17.9%	N/A	N/A	73.2	N/A	✓	N/A	RTM
5/24	3	3	4	3	— N/A —	5	6	5	5	— N/A —	1148	17.6%	N/A	N/A	61.2	N/A	✓	N/A	RTM
5/25	7	6	3	7	— N/A —	6	7	7	7	— N/A —	1156	17.7%	N/A	N/A	84.8	N/A	✓	N/A	RTM
5/26																			
JUNE 6-9	7	8	8	8	— N/A —	8	7	7	7	— N/A —	1336	20.4%	N/A	N/A	77.8	N/A	✓	N/A	RTM
6-10	6	7	7	7	— N/A —	6	7	6	6	— N/A —	1203	18.4%	N/A	N/A	81.6	N/A	✓	N/A	RTM
6-11	7	7	6	7	— N/A —	7	6	6	6	— N/A —	1216	18.6%	N/A	N/A	80.7	N/A	✓	N/A	RTM
6-14	8	7	8	8	— N/A —	7	7	7	7	— N/A —	1228	18.8%	N/A	N/A	84.4	N/A	✓	N/A	RTM
6-15	7	6	7	7	— N/A —	7	6	7	7	— N/A —	1239	18.9%	N/A	N/A	79.4	N/A	✓	N/A	RTM

6-14 7 2.71 + 4.85 √BKG_{avg} × t
 ** MDA = $\frac{t \times E \times A}{100}$

where MDA = the activity level (dpm/100 cm²), BKG_{avg} = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = instrument efficiency, and A = probe area (cm²).

6-17-91 7777 ← N/A → 6777 ← N/A → 1226 18.7% N/A N/A 83 N/A ✓ N/A RTM

SHIELDALLOY METALLURGICAL CORPORATION CONTAMINATION SURVEY INSTRUMENT DATA SHEET

RSP-018

Project Description: <u>AAF Baghouse / 2nd Qtr. 99 Surveillance</u>				Detector			Meter <u>Cal due 1/13/00</u>		
Background Location: <u>SMC NewField, Lab instrument office</u>				Type: <u>←</u>	Serial No. <u>N/A</u>	Probe Area (cm ²) <u>→</u>	Type: <u>Eberline SAC-4</u>	Serial No: <u>868</u>	Operating Voltage: <u>750</u>
Check Source No: <u>3785</u>				Check Source No:			Check Source No:		
Radionuclide: <u>Tl-230</u>	Activity: <u>6500dpm</u>	Date: <u>9/18/99</u>	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:	

Date	Start of Shift Background (cpm for a <u>50</u> minute count)								End of Shift Background (cpm for a <u>N/A</u> minute count) *								Daily Source Check (α)		Daily Source Check (β)		MDA** - Scaler Mode (dpm)		Initials		
	Alpha				Beta				Alpha				Beta				Source (cpm)	Eff.	Source (cpm)	Eff.	α	β			
	1	2	3	Av	1	2	3	Av	1	2	3	Av	1	2	3	Av									
<u>5/25/99</u>	<u>2.4</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>2028</u>	<u>31.2%</u>	<u>N/A</u>	<u>N/A</u>	<u>31.8</u>	<u>N/A</u>	<u>BAJ</u>		
<u>5/26/99</u>	<u>2.2</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>2014</u>	<u>31.0%</u>	<u>N/A</u>	<u>N/A</u>	<u>31.0</u>	<u>N/A</u>	<u>MO</u>		
<u>6/15/99</u>	<u>2.7</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>1936</u>	<u>29.8%</u>	<u>N/A</u>	<u>N/A</u>	<u>34.7</u>	<u>N/A</u>	<u>PO FR RM</u>		
<u>6/17/99</u>	<u>2.5</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>←</u>	<u>N/A</u>	<u>→</u>	<u>2021</u>	<u>31.1%</u>	<u>N/A</u>	<u>N/A</u>	<u>32.4</u>	<u>N/A</u>	<u>PO SICRA</u>		

** $MDA = \frac{2.71 + 4.65 \sqrt{BKG_{av} \times t}}{1 \times E \times \frac{A}{100}}$

where MDA = the activity level (dpm/100 cm²), BKG_{av} = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = instrument efficiency, and A = probe area (cm²).

* Background checked periodically during shift to determine if significant bkgd. changes have occur

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

Project No. 94005.20	Detector		Meter		
Site Location/Background Location: SMC Newfield 0202 Inst. Office	Type: N/A	Serial No. N/A	Type: Bicron Microrem	Serial No: B296 W	Operating Voltage: OK

Check Source Number 3788	Radionuclide: Cs-137	Calibration Activity and Date: 1.24 uCi / 9/12/91
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Date	Units	Start of Shift Background				End of Shift Background				Daily Response (µR/hr)	Initials
		1	2	3	Avg.	1	2	3	Ave.		
5/17/99	µR/hr	7	6	7	7	7	7	6	7	750	RU
5/18/99	µR/hr	6	7	6	6	6	6	7	6	750	RU
5/19/99	µR/hr	5	6	6	6	7	6	6	6	750	RU
5/20/99	µR/hr	6	6	5	6	7	7	6	7	800	RU
5-21-99	µR/hr	7	6	7	7	6	7	7	7	800	RU
5-24-99	µR/hr	5	7	7	7	7	7	6	7	800	RU
5-25-99	µR/hr	7	7	6	7	6	7	6	6	750	RU
5-26-99	µR/hr	6	6	7	6	7	6	7	7	800	RU
5-27-99	µR/hr	7	7	7	7	8	7	7	7	800	RU
5-28-99	µR/hr	6	7	7	7	7	6	8	7	800	RU
6-1-99	µR/hr	6	6	7	6	6	7	8	7	800	RU
6-2-99	µR/hr	6	6	7	6	7	8	7	7	800	RU
6-3-99	µR/hr	7	7	6	7	7	6	6	6	800	RU
6-4-99	µR/hr	7	6	6	6	7	7	7	7	800	RU
6-7-99	µR/hr	7	7	6	7	8	7	6	7	800	RU
6-8-99	µR/hr	6	7	7	7	7	6	7	7	800	RU
6-9-99	µR/hr	7	7	7	7	8	6	7	7	850	RU
6-10-99	µR/hr	7	6	6	7	6	6	7	6	800	RU
6-11-99	µR/hr	6	7	6	6	7	7	7	7	800	RU
6-14-99	µR/hr	7	7	6	7	6	6	7	6	800	RU
6-15-99	µR/hr	6	7	7	7	6	6	6	6	750	RU
6-16-99	µR/hr	7	6	7	7	6	7	7	7	750	RU
6-17-99	µR/hr	7	6	6	6	6	6	6	6	750	RU

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

Project No: 94005.20 + 94005.05				Detector				Meter			
Site Location/Background Location: SMC Newfield D202 Inst. Office				Type: Ludlum	Serial No: 132118 19791	Probe Area (cm ²): 100		Type: 2224	Serial No: 119791	Operating Voltage: N/A	
Check Source No:				Check Source No: ✓				Check Source No: ✓			
Radionuclide: Th-230	Activity: 6500 dpm	Date: 9-18-91		Radionuclide:	Activity:	Date:		Radionuclide:	Activity:	Date:	

Date	Start of Shift Background (cpm for a _____ minute count)								End of Shift Background (cpm for a _____ minute count)								Daily Source Check (α)		Daily Source Check (β)		MDA** - Scaler Mode (dpm)		Bet. OK	HV OK	Initials
	Alpha				Beta				Alpha				Beta				Source (cpm)	Eff.	Source (cpm)	Eff.	α	β			
	1	2	3	Av.	1	2	3	Av.	1	2	3	Av.	1	2	3	Av.									
5-17-91	2	3	4	3	N/A	N/A	N/A	N/A	3	4	3	3	N/A	N/A	N/A	N/A	1169	17.9%	N/A	N/A	60.1	N/A	✓	N/A	RM
5-18-91	3	4	3	3	N/A	N/A	N/A	N/A	4	3	4	4	N/A	N/A	N/A	N/A	1149	17.6%	N/A	N/A	61.2	N/A	✓	N/A	RM
5-19-91	3	4	4	4	N/A	N/A	N/A	N/A	3	4	4	4	N/A	N/A	N/A	N/A	1142	17.5%	N/A	N/A	68.6	N/A	✓	N/A	RM
5-20-91	6	6	7	6	N/A	N/A	N/A	N/A	5	5	4	5	N/A	N/A	N/A	N/A	1248	19.2%	N/A	N/A	73.4	N/A	✓	N/A	RM
5-24-91	7	8	6	7	N/A	N/A	N/A	N/A	6	5	6	6	N/A	N/A	N/A	N/A	1132	17.3%	N/A	N/A	86.8	N/A	✓	N/A	RM
5-25-91	7	6	8	7	N/A	N/A	N/A	N/A	7	7	8	7	N/A	N/A	N/A	N/A	1114	17.0%	N/A	N/A	88.3	N/A	✓	N/A	RM
5-26-91	6	6	7	6	N/A	N/A	N/A	N/A	6	7	7	7	N/A	N/A	N/A	N/A	1206	18.4%	N/A	N/A	76.6	N/A	✓	N/A	RM
5-27-91	7	8	8	7	N/A	N/A	N/A	N/A	7	5	7	7	N/A	N/A	N/A	N/A	1166	17.8%	N/A	N/A	84.3	N/A	✓	N/A	RM
5-28-91	6	6	7	6	N/A	N/A	N/A	N/A	6	7	7	7	N/A	N/A	N/A	N/A	1236	18.9%	N/A	N/A	74.6	N/A	✓	N/A	RM
6-1-91	8	7	7	7	N/A	N/A	N/A	N/A	7	6	6	6	N/A	N/A	N/A	N/A	1188	18.2%	N/A	N/A	82.5	N/A	✓	N/A	RM
6-2	7	8	7	7	N/A	N/A	N/A	N/A	8	8	7	8	N/A	N/A	N/A	N/A	1210	18.6%	N/A	N/A	81.6	N/A	✓	N/A	RM
6-3	7	7	7	7	N/A	N/A	N/A	N/A	6	8	7	7	N/A	N/A	N/A	N/A	1189	18.1%	N/A	N/A	82.9	N/A	✓	N/A	RM
6-4	8	7	8	8	N/A	N/A	N/A	N/A	6	7	8	7	N/A	N/A	N/A	N/A	1177	18.0%	N/A	N/A	88.1	N/A	✓	N/A	RM

$$** MDA = \frac{2.71 + 4.85 \sqrt{BKG_{avg} \times t}}{t \times E \times \frac{A}{100}}$$

where MDA = the activity level (dpm/100 cm²), BKG_{avg} = 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: 94005.20			Detector			Meter		
Background Location: SMC Newfield D202-Inst. office			Type: Ludlum 43-89	Serial No.: 132118	Probe Area (cm ²): 100	Type: 2224 Ludlum	Serial No.: 119791	Operating Voltage: N/A
Check Source No: 3785			Check Source No:			Check Source No:		
Radionuclide: Th-230	Activity: 6500 dpm	Date: 9-18-91	Radionuclide:	Activity:	Date:	Radionuclide:	Activity:	Date:

Date	Start of Shift Background (cpm for a 1 minute count)				End of Shift Background (cpm for a 1 minute count)				Daily Source Check (α)		Daily Source Check (β)		MDA** - Scaler Mode (dpm)		Initials							
	Alpha		Beta		Alpha		Beta		Source (cpm)	Eff.	Source (cpm)	Eff.	α	β								
	1	2	3	Av	1	2	3	Av								1	2	3	Av			
6-7	11	7	6	8	—	N/A	—	8	7	7	7	—	N/A	—	1220	18.6%	N/A	N/A	85.3	N/A	(D)	
6-8	7	8	8	8	—	N/A	—	7	7	6	7	—	N/A	—	1262	19.3%	N/A	N/A	82.2	N/A	(D)	
6-9	7	7	7	7	—	N/A	—	6	5	5	5	—	N/A	—	1194	18.2%	N/A	N/A	82.5	N/A	(B)	
6-14	5	6	4	6	—	N/A	—	6	5	6	6	—	N/A	—	1224	18.7	N/A	N/A	75.4	N/A	(D)	

** $MDA = \frac{2.71 + 4.85 \sqrt{BKG_{avg} \times t}}{t \times E \times \frac{A}{100}}$

where MDA = the activity level (dpm/100 cm²), BKG_{avg} = the background count rate for this measurement type (cpm), t = the measurement duration (min), E = instrument efficiency, and A = probe area (cm²).



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. 915-235-4677
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER SHIELDALLOY METALLURGICAL ORDER NO. 227320/238032

Mfg. Eberline Model SAC-4 Serial No. 868

Mfg. _____ Model _____ Serial No. _____

Cal. Date 13-Jan-99 Cal Due Date 13-Jan-00 Cal. Interval 1 Year Meterface SAC-4

Check mark applies to applicable instr. and/or detector IAW mfg. spec. T. 73 °F RH 20 % Alt 699.8 mm Hg

- New Instrument Instrument Received Within Toler. +10% 10-20% Out of Tol. Requiring Repair Other-See comments
- Mechanical ck. Meter Zeroed Background Subtract Input Sens. Linearity
- F/S Resp. ck Reset ck. Window Operation Geotropism
- Audio ck. Alarm Setting ck. Batt. ck. (Min. Volt) _____ VDC
- Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. Calibrated in accordance with LMI SOP 14.9 rev 12/19/89.

Instrument Volt Set 900 V Input Sens. 10 mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ =

HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*

*Uncertainty within ± 10% C.F. within ± 20% ALL Ranges(s) Calibrated Electronic

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING
Digital Readout	400 K cpm	40011 (2)	40011 (2)			
	40 K cpm	4007	4007			
	4 K cpm	401	401			
	400 cpm	40	40			
	40 cpm	4	4			

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration technique. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1997. State of Texas Calibration License No. LO-15

Reference Instruments and/or Sources:
Cs-137 Gamma S/N 1162 G112 M565 S105 T1008 T879 E552 E551 Neutron Am-241 Be S/N T
 Alpha S/N Pu239#8743 Beta S/N _____ Other _____
 m 500 S/N 70648 Oscilloscope S/N _____ Multimeter S/N 61730074

Calibrated By: Louie Martinez Date 13-Jan-99

Reviewed By: V. Lee Alvarado Date 17 Jan 99



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. 915-235-4672
SWEETWATER, TEXAS 79556, U.S.A.

CUSTOMER INTEGRATED ENVIRONMENTAL MGMT ORDER NO. 229961/239307

Mfg. Ludlum Measurements, Inc. Model 2224 Serial No. 146718

Mfg. Ludlum Measurements, Inc. Model 43-89 Serial No. PR 146748

Cal. Date 18-Mar-99 Cal Due Date 18-Mar-00 Cal. Interval 1 Year Meterface 202-783

Check mark applies to applicable instr. and/or detector IAW mfg. spec. T. 72 °F RH 41 % Alt 703.8 mm Hg

New Instrument Instrument Received Within Toler. +10% 10-20% Out of Tol. Requiring Repair Other-See comments

Mechanical ck. Meter Zeroed Background Subtract Input Sens. Linearity

F/S Resp. ck. Reset ck. Window Operallon Geotropism

Audio ck. Alarm Setting ck. Batt. ck. (Min. Volt) 2.2 VDC

Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. Calibrated in accordance with LMI SOP 14.9 rev 12/19/89.

Instrument Volt Set 625 V Input Sens. Comments mV Def. Oper. 625 V at Comments mV Threshold Dial Ratio = m

HV Readout (2 points) Ref./Inst. 500 / 1 500 V Ref./Inst. 200 / 1 2000 V

COMMENTS:

Alpha Threshold: 120mV

Beta Threshold: 3.5mV

Beta Window: 30mV

Overload check but not set

HV set with detector not connected

Firmware 390063

Instrument calibrated with 39 inch cable

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
X 1000	400Kcpm	400	400
X 1000	100Kcpm	100	100
X 100	40Kcpm	400	400
X 100	10Kcpm	100	100
X 10	4Kcpm	400	400
X 10	1Kcpm	100	100
X 1	400cpm	400	400
X 1	100cpm	100	100

*Uncertainty within ± 10% C.F. within ± 20%

ALL Range(s) Calibrated Electronically

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
Digital Readout	400 K cpm	399889	Log Scale		
	40 K cpm	39988			
	4 K cpm	3999			
	400 cpm	400			
	40 cpm	40			

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1997. State of Texas Calibration License No. LO-196

Reference Instruments and/or Sources:

Cs-137 Gamma S/N 1162 G112 M565 5105 T1008 T879 E552 E551 Neutron Am-241 Be S/N T-3

Alpha S/N Pu-239 12800cpm Beta S/N K-991420cpm, Sr-90/190 25928cpm Other _____

m 500 S/N 134709 Oscilloscope S/N _____ Multimeter S/N 57390613

Calibrated By: Conrad Salido Date 18 Mar 99

Reviewed By: Rhonda Hamin Date 21 Mar 99



Designer and Manufacturer
of
Scientific and Industrial
Instruments

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 43-89 Serial No. PR 146748
 Customer INTEGRATED ENVIRONMENTAL MGNT
 Counter 2224 Serial No. 146718
 Count Time 1 Minute
 Other _____

Order #. 229961/239307
 Alpha Input Sensitivity 120 mV
 Beta Input Sensitivity 3.5 mV
 Beta Window 30 mV
 Distance Source to Detector Surface

High Voltage	Background		Isotope <u>Po-210</u> Size <u>12800cpm</u>		Isotope <u>Sr-90/Y-90</u> Size <u>25978cpm</u>		Isotope <u>Tc-99</u> Size <u>14800cpm</u>	
	Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta
<u>600</u>	<u>0</u>	<u>196</u>	<u>4966</u>	<u>407</u>	<u>2</u>	<u>10500</u>	<u>8</u>	<u>2641</u>
<u>625</u>	<u>0</u>	<u>263</u>	<u>5199</u>	<u>491</u>	<u>1</u>	<u>12727</u>	<u>7</u>	<u>3728</u>
<u>650</u>	<u>0</u>	<u>270</u>	<u>5227</u>	<u>811</u>	<u>2</u>	<u>13418</u>	<u>9</u>	<u>4902</u>
<u>675</u>	<u>1</u>	<u>344</u>	<u>5241</u>	<u>1717</u>	<u>0</u>	<u>14422</u>	<u>6</u>	<u>6257</u>

- Gas Proportional detector count rate decreased $\leq 10\%$ after 15 hour static test using 39" cable.
- Gas proportional detector count rate decreased $\leq 10\%$ after 5 hour static test using 39" cable and alpha/beta counter.

Signature Conrad Salinas Date 18 Mar 99



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.

CUSTOMER INTEGRATED ENVIRONMENTAL MGNT ORDER NO. 229961/ 239307

Mfg. Bicron Model MICRO REM Serial No. B296W
Mfg. _____ Model _____ Serial No. _____

Cal. Date 19-Mar-99 Cal Due Date 19-Mar-00 Cal. Interval 1 Year Meterface 0-200 uR/h

check mark applies to applicable Instr. and/or detector IAW mfg. spec. T. 72 °F RH 25 % Alt 710.8 mm Hg

New Instrument Instrument Received Within Toler. +10% 10-20% Out of Tol. Requiring Repair Other-See comments

Mechanical ck. Meter Zeroed Background Subtract Input Sens. Linearity
 F/S Resp. ck. Reset ck. Window Operation Geotropism
 Audio ck. Alarm Setting ck. Batt. ck. (Min. Volt) _____ VDC

Calibrated in accordance with LMI SOP 14.8 rev 12/05/89. Calibrated in accordance with LMI SOP 14.9 rev 12/19/89.

Instrument Volt Set _____ V Input Sens. _____ mV Det. Oper. _____ V at _____ mV Threshold Dial Ratio _____ = _____ mV

HV Readout (2 points) Ref./Inst. _____ / _____ V Ref./Inst. _____ / _____ V

COMMENTS:

Gamma Calibration: GM detectors positioned perpendicular to source except for M 44-9 in which the front of probe faces source.

RANGE/MULTIPLIER	REFERENCE CAL. POINT	INSTRUMENT REC'D "AS FOUND READING"	INSTRUMENT METER READING*
x1000	150 mR/hr	137	150
x1000	50 mR/hr	45	50
x100	15 mR/hr	140	150
x100	5 mR/hr	47	50
x10	1500 uR/hr	150	150
x10	500 uR/hr	50	50
x1	150 uR/hr	145	150
x1	100 uR/hr	100	100
x0.1	15 uR/hr	15	15
x0.1			

*Uncertainty within ± 10% C.F. within ± 20%

Range(s) Calibrated Electronically

REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*	Log Scale	REFERENCE CAL. POINT	INSTRUMENT RECEIVED	INSTRUMENT METER READING*
Digital Readout						

Ludlum Measurements, Inc. certifies that the above instrument has been calibrated by standards traceable to the National Institute of Standards and Technology, or to the calibration facilities of other International Standards Organization members, or have been derived from accepted values of natural physical constants or have been derived by the ratio type of calibration techniques. The calibration system conforms to the requirements of ANSI/NCSL Z540-1-1994 and ANSI N323-1997 State of Texas Calibration License No. LO-1963

Reference Instruments and/or Sources:

Cs-137 Gamma S/N 1162 G112 M565 5105 T1008 T879 E552 E551 Neutron Am-241 Be S/N T-304

Alpha S/N _____ Beta S/N _____ Other _____

m 500 S/N _____ Oscilloscope S/N _____ Multimeter S/N _____

Calibrated By: Conrad Salido Date 19 Mar 99

Reviewed By: Rhonda Hami Date 21 Mar 99

Appendix D - Radiation Work Permit



INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIATION WORK PERMIT

Permit No: IEM/SMC-99-01	Type: <input checked="" type="checkbox"/> Job Specific <input type="checkbox"/> Extended <input type="checkbox"/> Routine
Expiration Date: 6/17/99	IEM Project No.: 94005.20

Description and Location of Work: **Decontamination & disassembly of AAF Baghouse** See Work Plan

SURVEY INFORMATION

General Area Dose Rates ($\mu\text{Rem/hr}$): 15 $\mu\text{Rem/hr}$	<input checked="" type="checkbox"/> See Map
Maximum Accessible Dose Rates ($\mu\text{Rem/hr}$): 40 $\mu\text{Rem/hr}$	<input checked="" type="checkbox"/> See Map
Removable Contamination (dpm/100 cm^2): < 100 dpm/100 cm^2	<input type="checkbox"/> See Map

ALARA REVIEW

Estimated Total Dose (Maximum Individual): <input type="checkbox"/> TBD Attached	Actual Total Dose (Maximum Individual):
Pre-job Briefing by: R. Alan DUFF	Post-job Briefing by:
Dose Reduction Techniques to be Employed: Minimize time spent in baghouse, respiratory protection, HEPA vacuum system	

DOSIMETRY REQUIREMENTS

<input type="checkbox"/> TLD/Film Badge	<input type="checkbox"/> Finger Ring	<input type="checkbox"/> SRPD	<input checked="" type="checkbox"/> BZA	<input type="checkbox"/> Alarming Dosimeter
<input type="checkbox"/> Stay-Time Estimate: N/A	<input type="checkbox"/> Other (Specify): N/A			

PROTECTIVE EQUIPMENT

<input checked="" type="checkbox"/> Coveralls	<input type="checkbox"/> Lab Coat	<input type="checkbox"/> Hood	<input checked="" type="checkbox"/> Rubber Gloves	<input checked="" type="checkbox"/> Booties
<input type="checkbox"/> Rubbers	<input checked="" type="checkbox"/> Respirator	<input type="checkbox"/> Taped Seams	<input checked="" type="checkbox"/> HP Coverage	<input type="checkbox"/> Stationary Air Sampler
<input type="checkbox"/> Pre-job Bioassay	<input type="checkbox"/> Post-job Bioassay	<input type="checkbox"/> Special Briefing in:		
Other Precautions and Special Instructions: Frisk upon exit from work areas				

Authorized by (signature of RSO): [Signature]	Date: 5/17/99
Authorized by (signature of CHP): [Signature] PER TELECOM FOR A.J. Boerner	Date: 5/17/99
Terminated by (signature of RSO): [Signature]	Date: 6/17/99

Appendix E - Survey Results



INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number _____

Page 1 of 1

Instrument/SN: <u>12791/132118</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>5-21</u>	Time: <u>0800</u>
Instrument/SN: <u>B296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>D-111 Baghouse</u>		
Instrument/SN: <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>Post Decon Survey upper level Rooms (6)</u>		
Survey Performed By (Print): <u>Ron Merkel</u>		Survey Performed By (Signature): <u>Ron Merkel</u>		
<input checked="" type="checkbox"/> Battery OK	<input checked="" type="checkbox"/> HV OK	<input checked="" type="checkbox"/> Source Check OK	Grid Dimensions: <u>N/A</u> x <u>N/A</u> <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
1	Upper level Baghouse . 6 ROOMS.																										
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24	* Direct Frisk of ALL accessible AREAS NO Elevated Levels Detected, horizontal AREAS Averaged 15-30 cpm.																										
25																											

Notes:
 // // // = Gratings
 * ALL FLOORS ARE GRATINGS

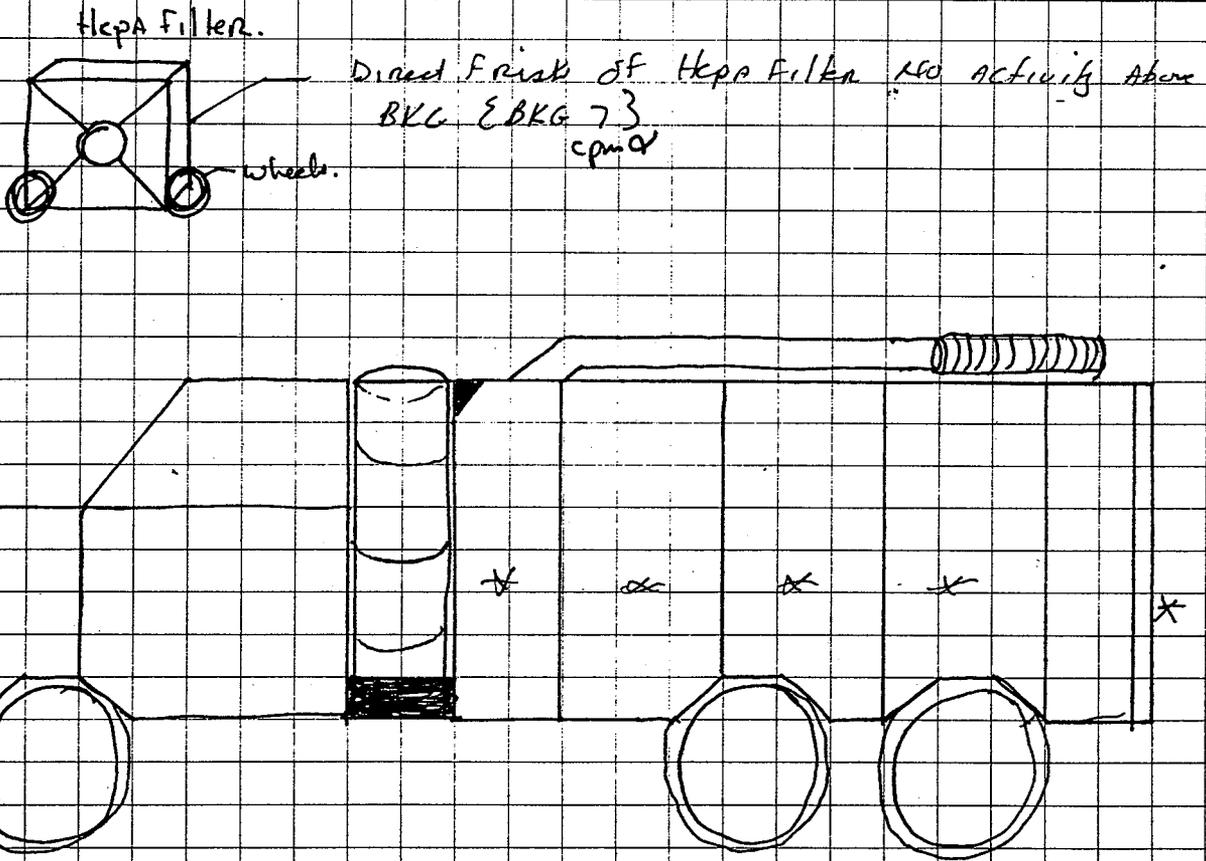
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number SMC-052599A

Page 2 of 2

Instrument/SN: <u>2224/4389</u> <u>119791/132118</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>5-25</u>	Time: <u>0700</u>
Instrument/SN <u>BICRON B296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>Newfield NJ</u>		
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>PreJob Survey of Eisco Vactech</u>		
Survey Performed By (Print): <u>Ronn Meekel</u>		Survey Performed By (Signature): <u>[Signature]</u>		
<input checked="" type="checkbox"/> Battery OK <input checked="" type="checkbox"/> HV OK <input checked="" type="checkbox"/> Source Check OK		Grid Dimensions: <u>N/A</u> x _____ <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
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Notes: Contact readings w/ UR meter 8-13 uCi/hr.
 opened left gate surveyed reachable parts with Frisker, no activity detected above Bkg.
 * = Contact Readings

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number SMC0525990

Page 2 of 2

Instrument/SN: <u>Ludlum 2224/4389</u> <u>119791/1132113</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>5/25</u> Time: <u>1100</u>
Instrument/SN: <u>Bicron 3296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>D-111 BASHOUSE</u>	
Instrument/SN: <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>Release Survey of UAC-PAC FOR SHIPMENT TO VENDOR</u>	
Survey Performed By (Print): <u>Ronn Merkel</u>		Survey Performed By (Signature): <u>R Merkel</u>	
<input checked="" type="checkbox"/> Battery OK	<input checked="" type="checkbox"/> HV OK	<input checked="" type="checkbox"/> Source Check OK	Grid Dimensions: <u>N/A</u> x <u>N/A</u> <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
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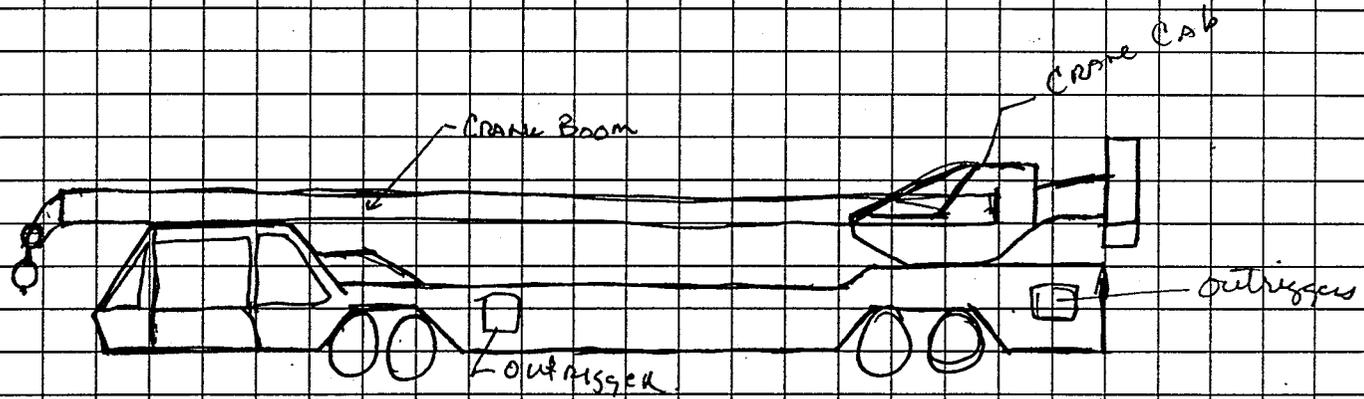
INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number SMC-060199A

Page 2 of 2

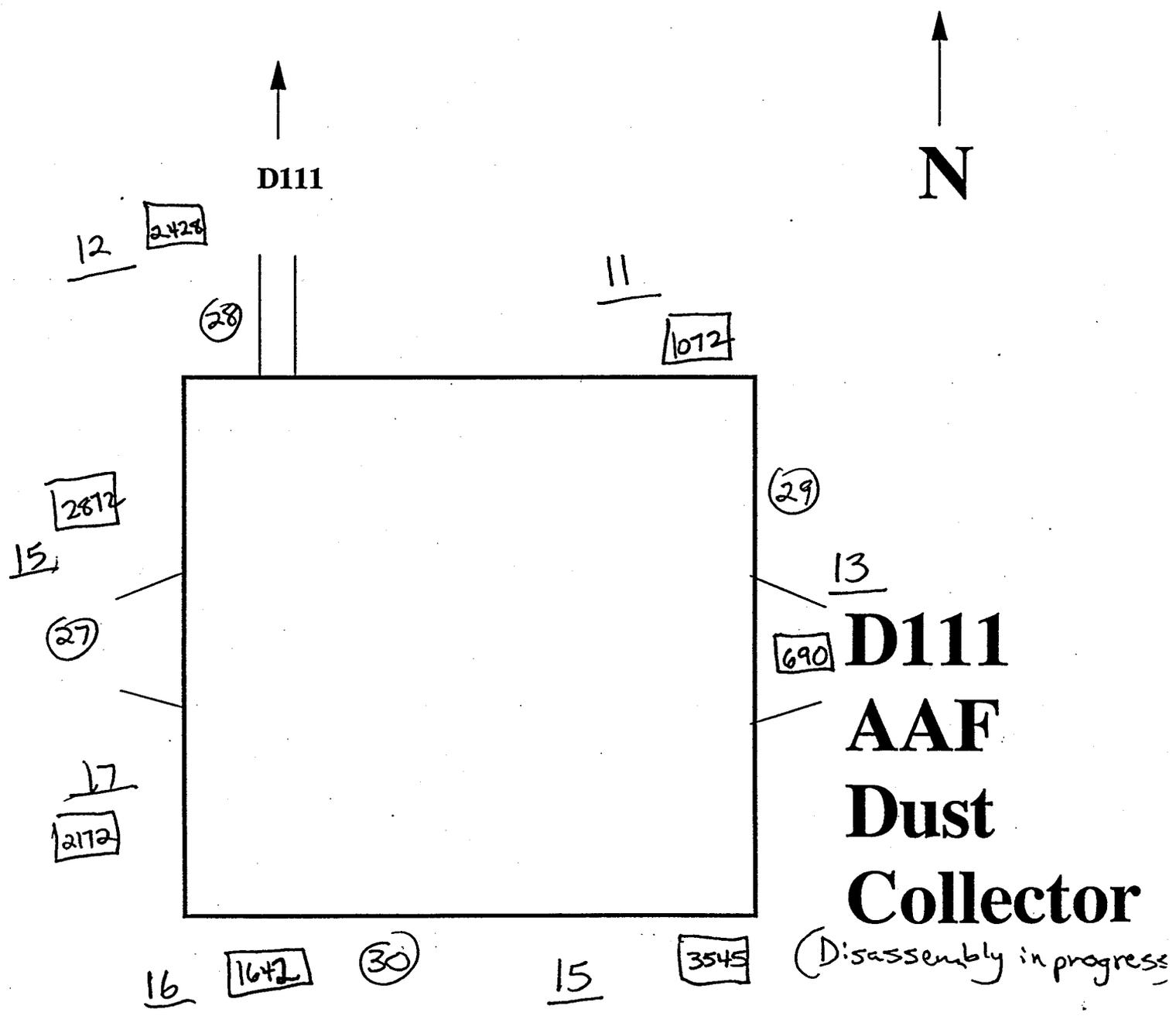
Instrument/SN: <u>0204/14389</u> <u>119791/132118</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>6/14/00</u> Time: <u>1430</u>
Instrument/SN <u>BICRON B296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>Newfield NJ.</u>	
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>Release CRANE</u>	
Survey Performed By (Print): <u>Ronn Merkel</u>		Survey Performed By (Signature): <u>[Signature]</u>	
<input checked="" type="checkbox"/> Battery OK	<input checked="" type="checkbox"/> HV OK	<input checked="" type="checkbox"/> Source Check OK	Grid Dimensions: <u>N/A</u> x <u>N/A</u> <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
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Notes: Surveyed Inside Cab, wheels, Tires, inside CRANE CAB, Headache BALK, outriggers
No Counts Above BKG. alpha.

Date 5/25/99



(#) - denotes smear location
[#] - denotes total alpha contamination in dpm/100cm²
- denotes exposure rate in microR/hr
uLen
2082

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number SMC-060199B

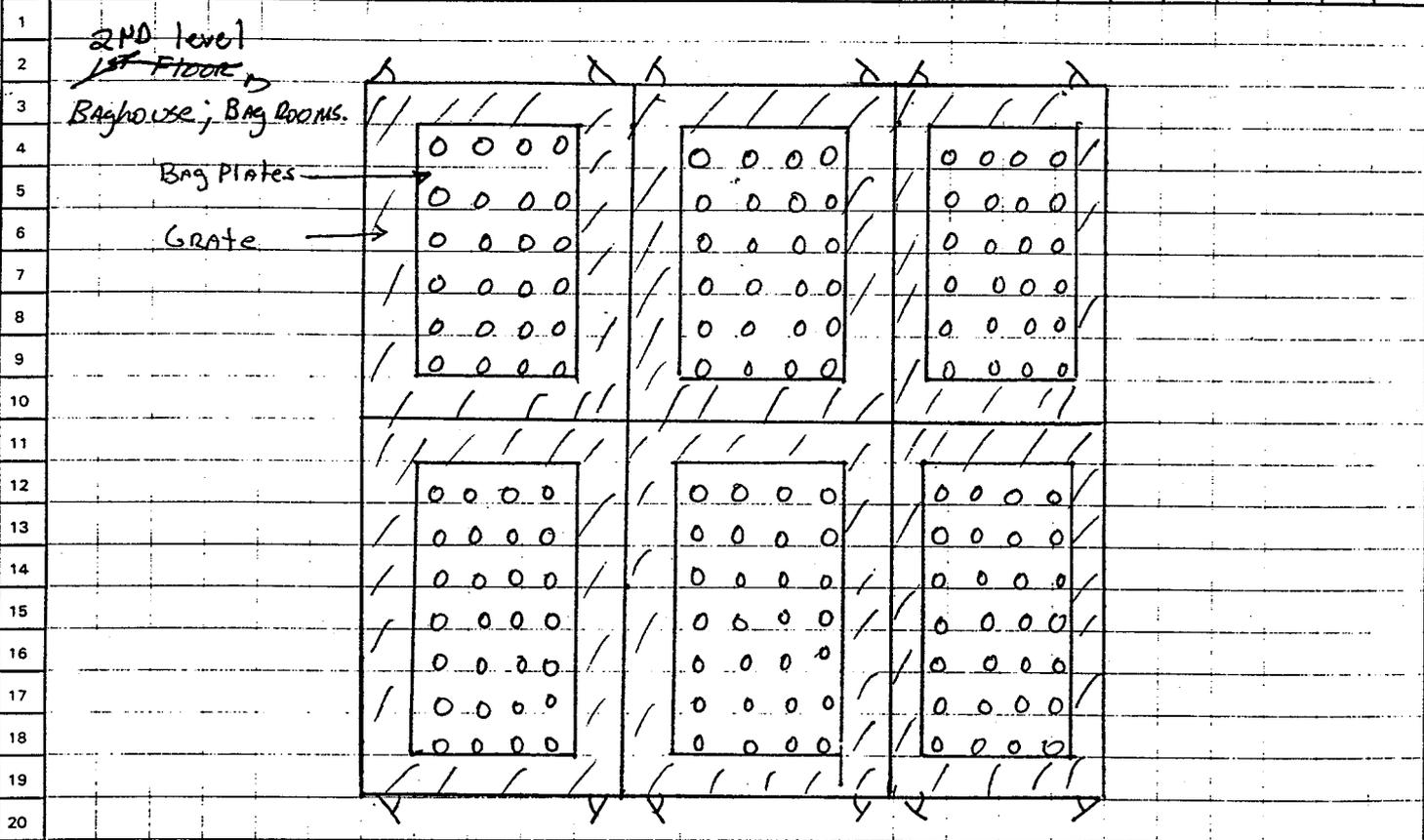
Page 1 of 1

Instrument/SN: <u>2224/4385</u> <u>119791/132118</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>6-11</u> Time:
Instrument/SN <u>BK00N B296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>Newfield NJ</u>	
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>Release Survey Prior to Demo.</u>	
Survey Performed By (Print): <u>Rown Merkel</u>		Survey Performed By (Signature): <u>[Signature]</u>	

Battery OK HV OK Source Check OK

Grid Dimensions: N/A x _____
 meters inches
 feet centimeters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---



/// = GRATING
 OOO = BAG PLATES OVER HOPPERS.

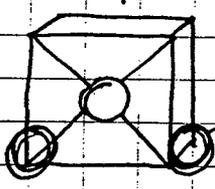
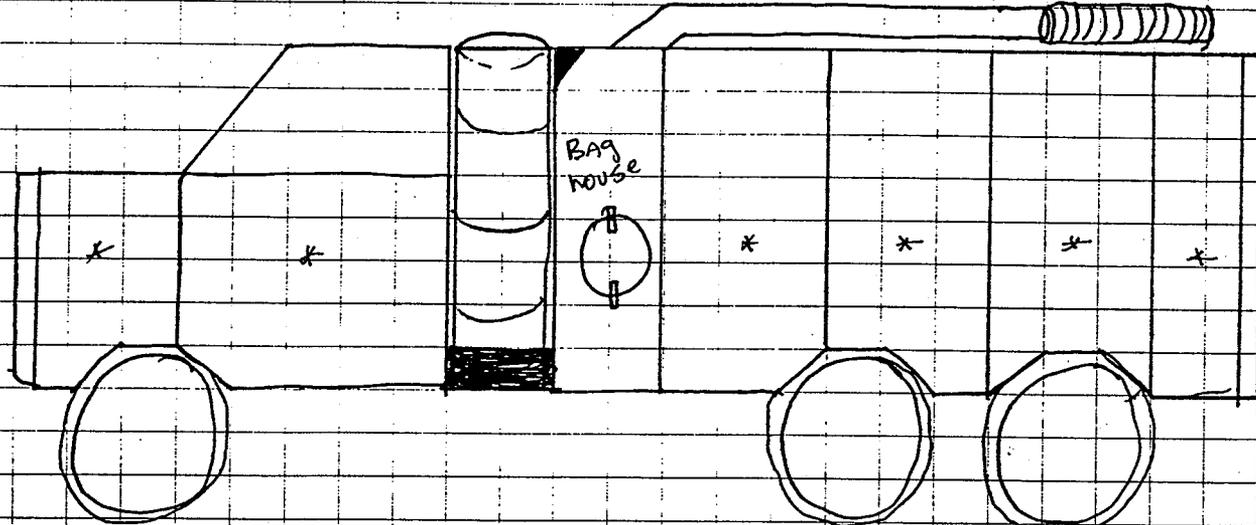
Notes: FLOOR OF ROOMS IS GRATE, WITH THE BAG PLATES IN CENTER OVER HOPPERS.
 WALLS ARE STRUCTURAL STEEL COVERED WITH CORRUGATED TIN. DOORS STEEL
 ALL ACCESSIBLE AREAS SURVEYED BY DIRECT FRISK, LEVELS OBSERVED WERE.
 80-140 CPM OR HIGHER LEVELS THAN WAS NO CHANGE AFTER WIPING WITH
 SINGLE CLOTH, PAPER TOWELS.

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
RADIOLOGICAL SURVEY FORM

Survey Number _____

Page 2 of 2

Instrument/SN: <u>2224/4389</u> <u>119791/132118</u>	Calibration Due: <u>3-18-00</u>	Site Name: <u>SMC</u>	Date: <u>6-27</u> Time: _____
Instrument/SN <u>BICRON B296W</u>	Calibration Due: <u>3-19-00</u>	Location: <u>Newfield NT</u>	
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Purpose: <u>Release of activity via truck</u>	
Survey Performed By (Print): <u>RONN MECKEL</u>		Survey Performed By (Signature): <u>[Signature]</u>	
<input checked="" type="checkbox"/> Battery OK	<input checked="" type="checkbox"/> HV OK	<input checked="" type="checkbox"/> Source Check OK	
		Grid Dimensions: _____ x _____ <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters	

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1					<u>hepa filter.</u>																					
2					<u>Surveyed hepa filter no activity</u>																					
3					<u>wheels.</u>																					
4																										
5																										
6																										
7																										
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25																										

Notes: TRUCK WAS DECONNED OUTSIDE, INSIDE HOLDING TANK UPON SURVEY. TRUCK WAS CLEAN, NO ACTIVITY & ABOVE BKG EXCEPT BAG HOUSE PORTION WHICH WAS 140-180 CPM d. BAGS WILL BE REMOVED AND DISPOSED OF PER D. SMITH, CAROL BERGER.

* Direct Frisk

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

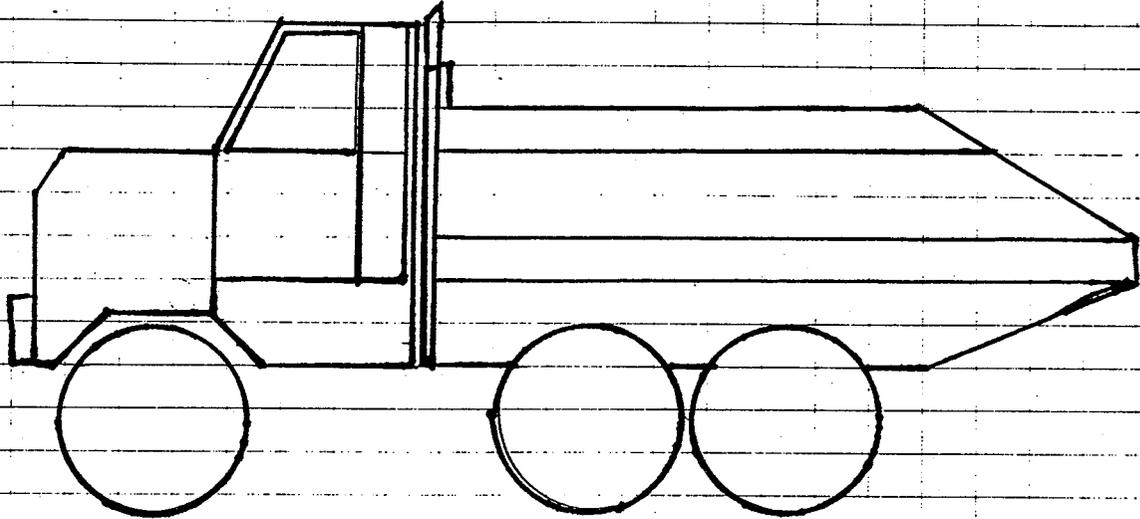
RADIOLOGICAL SURVEY FORM

Survey Number _____

Page _____ of _____

Instrument/SN:	Calibration Due:	Site Name:	Date:	Time:
Instrument/SN	Calibration Due:	Location:		
Instrument/SN	Calibration Due:	Purpose:		
Survey Performed By (Print):		Survey Performed By (Signature):		
<input type="checkbox"/> Battery OK <input type="checkbox"/> HV OK <input type="checkbox"/> Source Check OK		Grid Dimensions: _____ x _____ <input type="checkbox"/> meters <input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> centimeters		

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Surveyed ALL ACCESSIBLE AREAS OF TRUCK; NO CONTAMINATION
 DETECTED. ALL LEVELS WERE \leq BKG. BKG 7 cpm γ .
 TRUCK WAS DECONNED BY PRESSURE WASHER.

Notes:



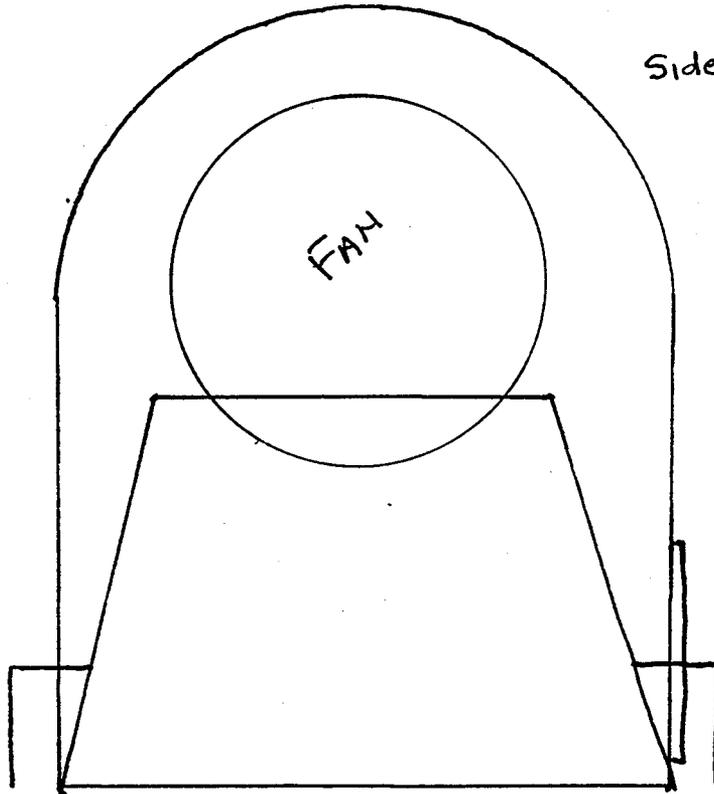
IEM

Integrated Environmental Management, Inc.

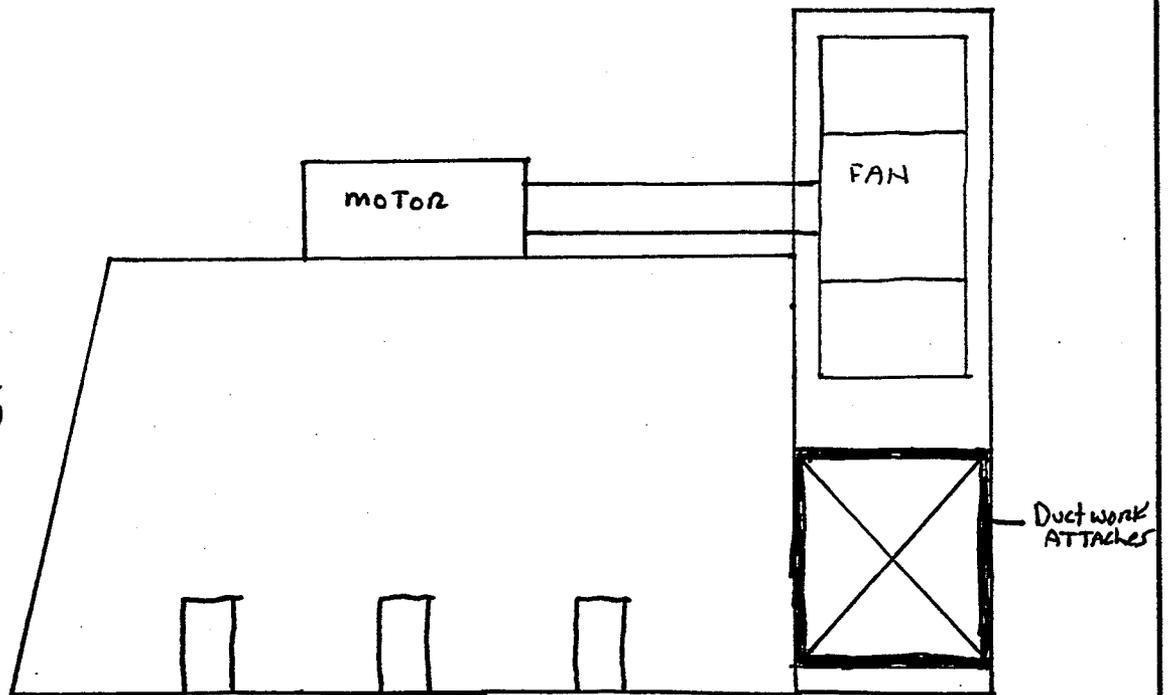
Project No:	Page ____ of ____
Subject:	
Performed by:	Date:
Checked by:	Date:

1

Side view



FRONT VIEW





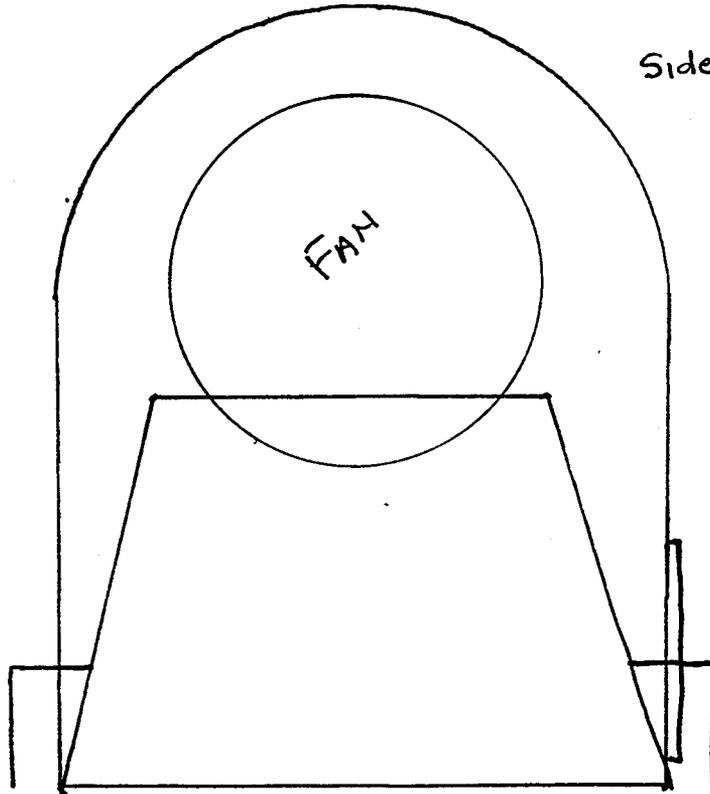
IEM

Integrated Environmental Management, Inc.

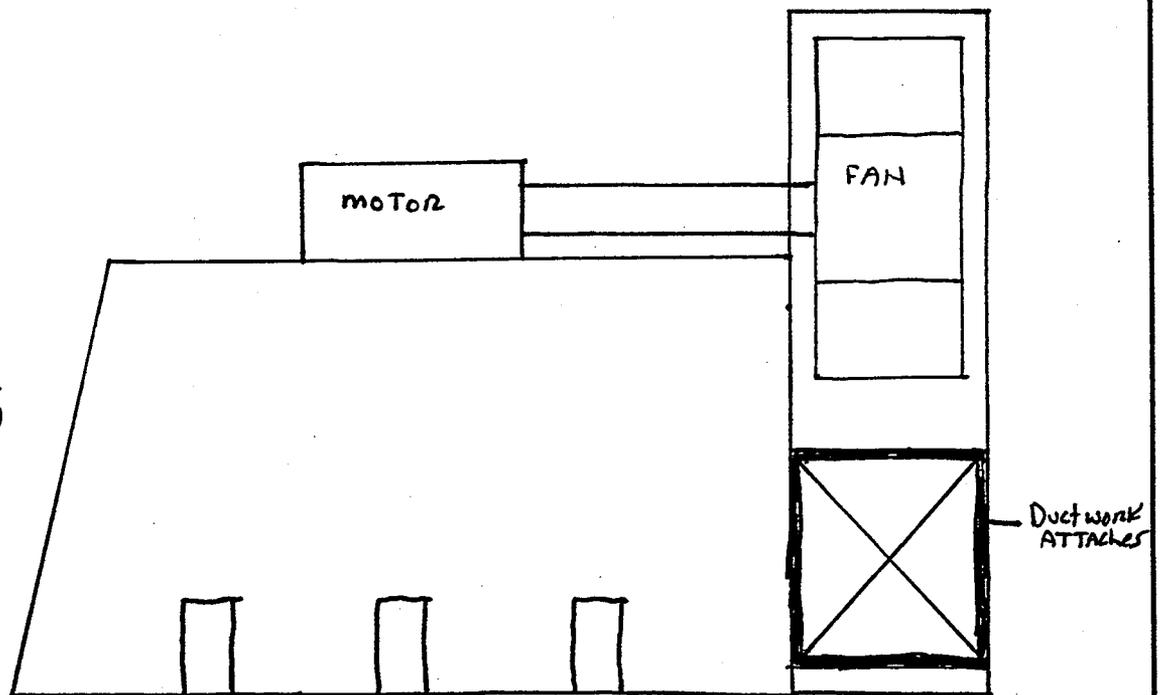
Project No:	Page ____ of ____
Subject:	
Performed by:	Date:
Checked by:	Date:

2

Side view



FRONT VIEW

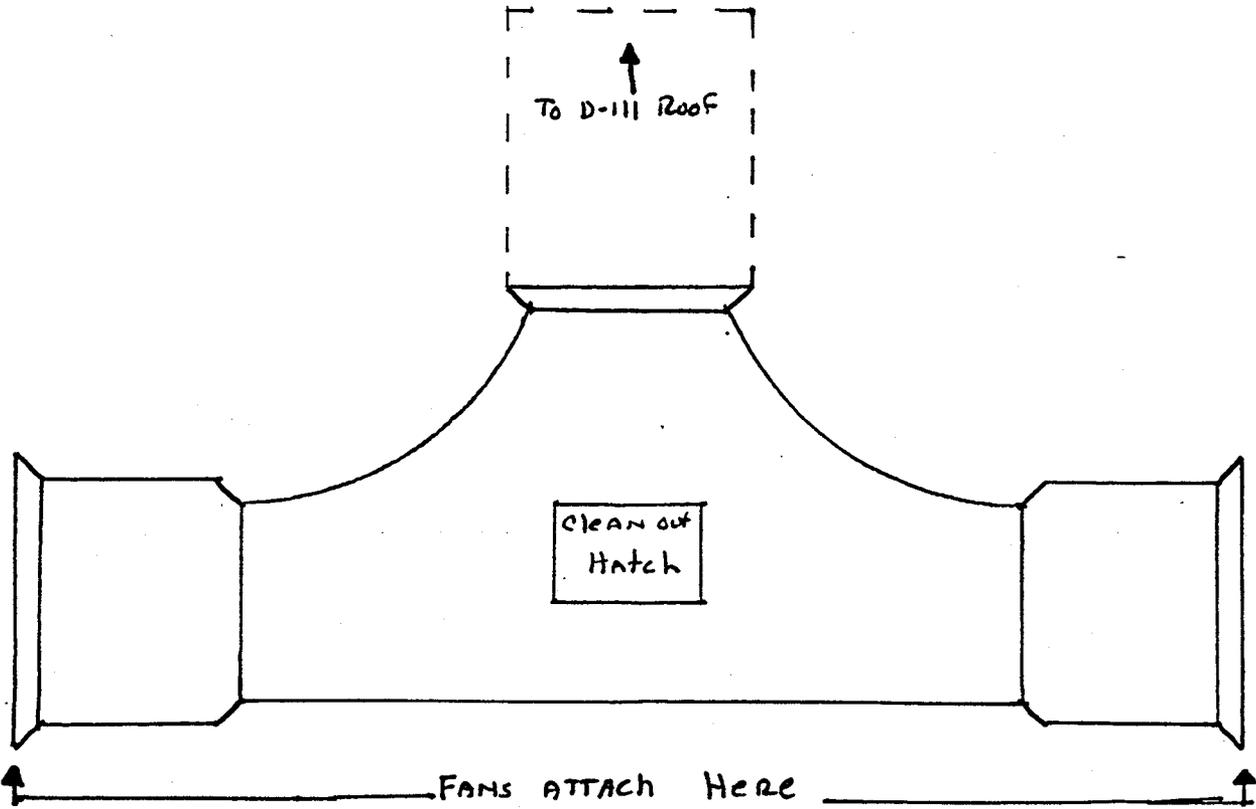




IEM

Integrated Environmental Management, Inc.

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

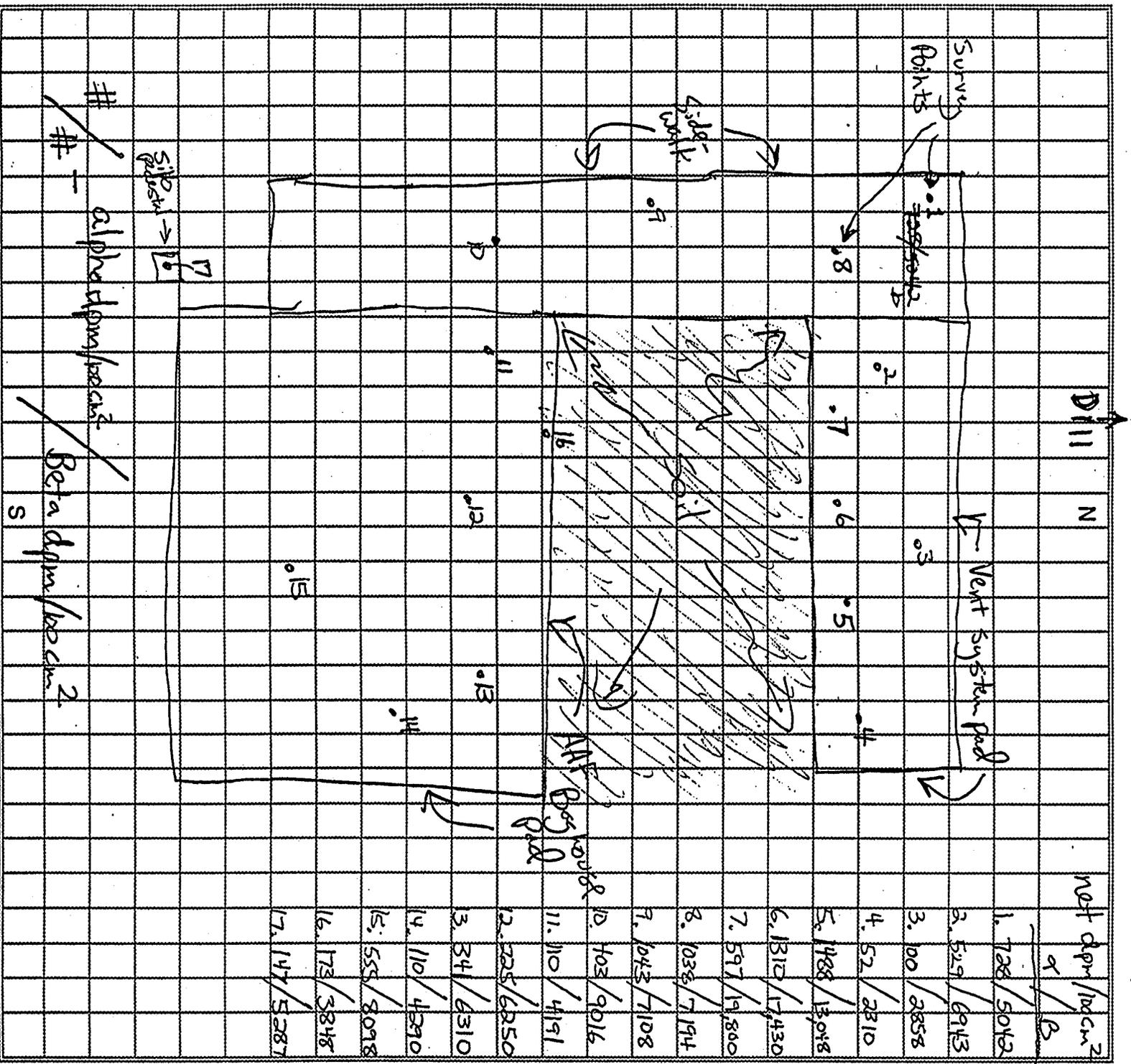


SHIELDALLOY METALLURGICAL CORPORATION
 RADIOLOGICAL SURVEY MAP

RSP-008

A&F Boushauer

Survey Number SMC-090999 Building/Area Concrete Pad Date of Survey 9/9/99



SHIELDALLOY METALLURGICAL CORPORATION

RELEASE SURVEY DOCUMENTATION

RSP-008

AAF
SMC-

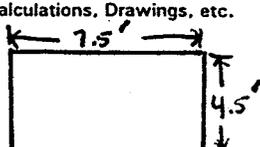
Survey Number

060999

Page

of

1

Instrument/SN: <u>Lucium 2224/4309</u> <u>119791/132118</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 Baghouse ; D-111 Roof</u>			
Instrument/SN: <u>Bicron M. Croft</u> <u>B296U</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>Laydown Area D-111^{BAF} Baghouse</u>			
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Reason for Release Survey: <u>Release Ductwork AS Clean Scrap</u>			
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK	<input type="checkbox"/> Other (specify):		
Radionuclide (s): <u>Th 232</u> <u>U 238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <input checked="" type="checkbox"/> Other (specify): <u>600 dpm/100cm² direct</u> <u>3000 dpm/100cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input type="checkbox"/> Calculation Attached <u>C. Berger Calculation</u> <input type="checkbox"/> NUREG-1500 <input checked="" type="checkbox"/> Other (specify):			
Background Data: <u>60 cpm</u>	Efficiency Data: <u>17.8 %</u>	Scan Speed: <input type="checkbox"/> Calculation Attached <u>1-2" / Sec</u>	Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <u>3000 dpm x % EFF</u> <u>534 cpm</u>		
Results					
<p>With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:</p> <p><u>DUCTWORK</u></p> <ul style="list-style-type: none"> <u>1 45 FT piece</u> <u>1 18 FT piece</u> <u>1 Elbow approx 12 FT</u> <u>1 14 FT piece</u> <u>4 Flat pieces</u> <p>* <u>ALL ductwork surveyed NO Contamination Above or Close to 3000 dpm Fixed. Pieces were sprayed off on outside as precaution</u></p> <p><input type="checkbox"/> Continuation Sheet Attached</p>	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)	
				<u>ALL Pieces were</u>	
				<u>sprayed off</u>	
				<u>(exterior) and</u>	
				<u>surveyed.</u>	
Notes, Calculations, Drawings, etc.	 <p><u>Ductwork measurements above but were various lengths</u></p> <p><u>Ductwork was installed between Bldg. D111 roof & the AAF baghouse.</u></p> <p><input type="checkbox"/> Continuation Sheet Attached</p>				
Survey performed by (print): <u>Rommehel</u>	Signature: <u>Rommehel</u>	Date: <u>6-9-99</u>			
Supervisor Approval (print): <u>R.A. Duff</u>	Signature: <u>R.A. Duff</u>	Date: <u>6/18/99</u>			

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

SMC-
Survey Number 061099 6-10-99

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Instrument/SN: <u>Ludlum</u> <u>146177/146248</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 AAF Baghouse</u>
Instrument/SN <u>Bicron</u> <u>B296W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>AAF Baghouse Laydown Area</u>
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Reason for Release Survey: <u>Release structural steel</u>
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK
<input type="checkbox"/> Other (specify):		

Radionuclide (s): <u>Th-232</u> <u>U-238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <input type="checkbox"/> Other (specify): <u>600 dpm/100 cm² Direct & 3000 dpm/100 cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input type="checkbox"/> Calculation Attached <u>C Berger Calculation.</u>
Background Data: <u>7 cpm</u>	Efficiency Data: <u>18.4%</u>	Scan Speed: <input checked="" type="checkbox"/> Calculation Attached <u>1-2" / sec</u>
Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <u>3000 dpm/100 cm² EFF</u>		

Results

<p>With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:</p> <p><u>Surveyed approximately 70-80 pieces of structural steel 95% of steel surveyed was releasable, The other 5% surveyed was close to limits so it was set aside for decon. They are listed to right</u></p>	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)
	<u>I-Beam</u>	<u>1800 dpm/100 cm²</u>	<u>Set aside for Decon</u>	<u>800 dpm/100 cm²</u>
	<u>I-Beam</u>	<u>2400 dpm/100 cm²</u>	<u>" "</u>	<u>1300 dpm/100 cm²</u>
	<u>Door</u>	<u>1600 dpm/100 cm²</u>	<u>" "</u>	<u>1300 dpm/100 cm²</u>
	<u>Angle Iron</u>	<u>2900 dpm/100 cm²</u>	<u>" "</u>	<u>2000 dpm/100 cm²</u>
<input type="checkbox"/> Continuation Sheet Attached				
<p>Notes, Calculations, Drawings, etc.</p> <p><u>Steel was various lengths + sizes</u> <u>Deconned items were smeared and showed no detectable activity.</u></p>				
<input type="checkbox"/> Continuation Sheet Attached				

Survey performed by (print): <u>Ron Muhl</u>	Signature: <u>[Signature]</u>	Date: <u>6-10-99</u>
Supervisor Approval (print): <u>R.A. Diff</u>	Signature: <u>[Signature]</u>	Date: <u>6/10/99</u>

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

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Survey Number SMC 061099

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Instrument/SN: <u>146178/146248</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 AAF Basehouse</u>	
Instrument/SN <u>Bicon</u> <u>B-296W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>Laydown Area</u>	
Instrument/SN <u>w/A</u>	Calibration Due: <u>w/A</u>	Reason for Release Survey: <u>Release From Unrestricted Use</u>	
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK	<input type="checkbox"/> Other (specify):

Radionuclide (s): <u>Th 232</u> <u>U-238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <input type="checkbox"/> Other (specify): <u>600 DPM/100cm² Direct</u> <u>3000 DPM/100cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input type="checkbox"/> Calculation Attached <u>L. Berger Calculation</u>	
		<input type="checkbox"/> NUREG-1500	<input type="checkbox"/> Other (specify):

Background Data: <u>7 cpm α</u>	Efficiency Data: <u>18.4% α</u>	Scan Speed: <input type="checkbox"/> Calculation Attached <u>1-2"/sec</u>	Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <u>3000 DPM x % eff</u>
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Results				
With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)
<p><u>Hoppers 1+2</u> <u>were surveyed by direct Fast</u> <u>they were released NO elevated</u> <u>levels of contamination were</u> <u>found. (alpha)</u></p>				

Survey performed by (print): <u>R. M. ...</u>	Signature: <u>[Signature]</u>	Date: <u>6-10-95</u>
RSP Approval (print): <u>R. M. ...</u>	Signature: <u>[Signature]</u>	Date: <u>6/18/95</u>

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

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Survey Number SMC-06/499

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Instrument/SN: <u>Ludlum 146748 / 146718</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 AAF Baghouse</u>	
Instrument/SN: <u>B296W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>D-111 AAF Baghouse Laydown Area</u>	
Instrument/SN: <u>N/A</u>	Calibration Due: <u>N/A</u>	Reason for Release Survey: <u>UNRESTRICTED USE</u>	
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK	<input type="checkbox"/> Other (specify):

Radionuclide (s): <u>Th-232 U-238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <input checked="" type="checkbox"/> Other (specify): <u>Alpha only 6000 dpm/100cm² Direct 3000 dpm/100cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input type="checkbox"/> Calculation Attached <input type="checkbox"/> NUREG-1500 <input checked="" type="checkbox"/> Other (specify): <u>C. Berger Calculation</u>
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Background Data: <u>0 cpm</u>	Efficiency Data: <u>18.8%</u>	Scan Speed: <input type="checkbox"/> Calculation Attached <u>1-2"/sec</u>	Action Level (cpm, stationary): <input checked="" type="checkbox"/> Calculation Attached <u>3000cpm x % eff = 564cpm</u>
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Results				
With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)
<p>Surveyed approximately 100 pieces of structural steel, ALL pieces surveyed were releasable. And staged for cutting steel was support pieces for AAF Baghouse. Most items were I-Beams or angles.</p>				

Survey performed by (print): <u>R. Meekal</u>	Signature: <u>[Signature]</u>	Date: <u>6-14-99</u>
NSO Approval (print): <u>R.A. Duff</u>	Signature: <u>[Signature]</u>	Date: <u>6/18/99</u>

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

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Survey Number SMC-061499

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Instrument/SN: <u>Codium</u> <u>1416748/146718</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 MAF Baghouse</u>
Instrument/SN <u>Bicron</u> <u>B-296W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>MAF Baghouse Slab</u>
Instrument/SN <u>N/A</u>	Calibration Due: <u>N/A</u>	Reason for Release Survey: <u>Release of Corrugated siding For unrestricted use</u>
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK <input type="checkbox"/> Other (specify):

Radionuclide (s): <u>Th 232</u> <u>U 238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <u>Alp only</u> <input checked="" type="checkbox"/> Other (specify): <u>600 DPM/100 cm² direct</u> <u>3000 DPM/100 cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input type="checkbox"/> Calculation Attached <u>C. Berger Calculation</u>
		<input type="checkbox"/> NUREG-1500 <input checked="" type="checkbox"/> Other (specify):

Background Data: <u>7 cpm d</u>	Efficiency Data: <u>18.9% g</u>	Scan Speed: <input type="checkbox"/> Calculation Attached <u>1-2"/sec</u>	Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <u>3000 x % EFF = 567 cpm</u>
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Results

<p>With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:</p> <p><u>Corrugated siding was surveyed prior to Demo work on inside NO Contamination was found. once on ground. Siding was checked to best of my Ability considering the condition of metal. AS Precautionary measure metal was Decanned using Pressure washer lightly. in designated Area. metal was considered to be releasable for unrestricted use</u></p> <p><input type="checkbox"/> Continuation Sheet Attached</p>	Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)

Survey performed by (print): <u>Romy Muehl</u>	Signature: <u>[Signature]</u>	Date: <u>6-14-99</u>
RSD Approval (print): <u>[Signature] R.A.D.F.</u>	Signature: <u>[Signature]</u>	Date: <u>6-18-99</u>

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

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Survey Number SMC-061699

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Instrument/SN: <u>146748/146718</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-11 AAF Baghouse</u>
Instrument/SN: <u>B-296-W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>AAF Baghouse Slab</u>
Instrument/SN	Calibration Due:	Reason for Release Survey: <u>UNrestricted USE</u>
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK <input type="checkbox"/> Other (specify):

Radionuclide (s): <u>Th-232</u> <u>U-238</u>	Release Criteria: <input type="checkbox"/> Background (indistinguishable) <input checked="" type="checkbox"/> Other (specify): <u>Alpha only</u> <u>600 DPM/100 cm² Direct</u> <u>3000 DPM/100 cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input checked="" type="checkbox"/> Calculation Attached <u>C. Berger Calculator</u> <input type="checkbox"/> NUREG-1500 <input type="checkbox"/> Other (specify):
--	--	--

Background Data: <u>7 cpm</u>	Efficiency Data: <u>19.2%</u>	Scan Speed: <u>1-2"/sec.</u> <input type="checkbox"/> Calculation Attached	Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <u>3000 x 20 EFF = 576 cpm</u>
-------------------------------	-------------------------------	---	--

Results			
With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:	Item/Person	Initial Level of Contamination (include units)	Final Level of Contamination (include units)
<p>surveyed electrical Panel Box 100% releasable. no activity was found to exceed 3000 DPM/100 cm² OR 600 DPM/100 cm² alpha.</p>			
<input type="checkbox"/> Continuation Sheet Attached			
Notes, Calculations, Drawings, etc.			
<u>Electrical Box WAS APPROX 8x8x8.</u>			
<input type="checkbox"/> Continuation Sheet Attached			

Survey performed by (print): <u>Ron Muehl</u>	Signature: <u>Ron Muehl</u>	Date: <u>6-16-</u>
NSO Approval (print): <u>R.A. Duff</u>	Signature: <u>R.A. Duff</u>	Date: <u>6/16/</u>

**SHIELDALLOY METALLURGICAL CORPORATION
RELEASE SURVEY DOCUMENTATION**

RSP-008

Survey Number Smc 061699
~~061699~~

Page 2 of 3

Instrument/SN: <u>Cudlum</u> <u>146748/146718</u>	Calibration Due: <u>3-18-00</u>	Building Number: <u>D-111 AAF Baghouse</u>	
Instrument/SN <u>Bicron</u> <u>B296W</u>	Calibration Due: <u>3-19-00</u>	Location of Equipment/Personnel to be Released: <u>AAF Baghouse Laydown</u>	
Instrument/SN <u>n/a</u>	Calibration Due: <u>n/a</u>	Reason for Release Survey: <u>Release For Unrestricted Use</u>	
<input checked="" type="checkbox"/> Battery Check OK	<input checked="" type="checkbox"/> Source Check OK	<input checked="" type="checkbox"/> HV Check OK	<input type="checkbox"/> Other (specify):

Radionuclide (s): <u>Th 232</u> <u>U 238</u>	Release Criteria: <input type="checkbox"/> Background <input checked="" type="checkbox"/> Other (specify): <u>Alpha Only</u> <u>600 DPM/100cm² Direct</u> <u>3000 DPM/100cm² Fixed</u>	Basis for Release Criteria: <input type="checkbox"/> Procedure No. RSP-009 <input type="checkbox"/> USNRC Regulatory Guide 1.86 <input checked="" type="checkbox"/> Calculation Attached <u>C. Berger Calculation</u> <input type="checkbox"/> NUREG-1500 <input checked="" type="checkbox"/> Other (specify):	
--	---	--	--

Background Data: <u>7cpm</u>	Efficiency Data: <u>19.2% d</u>	Scan Speed: <input type="checkbox"/> Calculation Attached <input checked="" type="checkbox"/> Calculation Attached <u>1-2"/sec</u>	Action Level (cpm, stationary): <input type="checkbox"/> Calculation Attached <input checked="" type="checkbox"/> Calculation Attached <u>576cpm</u>
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Results				
Item/Person	Initial Level of Contamination (include units)	Action Taken	Final Level of Contamination (include units)	
<p>With the exception of items listed on the right, the following materials, equipment and personnel were surveyed and meet the criteria for release:</p> <p><u>Surveyed 15 pieces of pipe (various sizes)</u> <u>100% Releasable, No Contam. Found</u></p> <p><u>pipe was going from D-111 inside TO ELECTRICAL panel on Baghouse</u></p>				

Survey performed by (print): <u>R. Menzel</u>	Signature: <u>R. Menzel</u>	Date: <u>6-16-99</u>
SPS Approval (print): <u>B. A. Duff</u>	Signature: <u>B. A. Duff</u>	Date: <u>6/16/99</u>

Appendix F - Personnel Monitoring Records



INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLE COUNT RECORD

Site/Location: <u>SMC NewField / Instrument Office</u>	Project No.: <u>94005.20 + 94005.05</u>
Emission Type (check): <input checked="" type="checkbox"/> α <input type="checkbox"/> β <input type="checkbox"/> B/V	Instrument Model/Serial No.: <u>Eberline SAC-4 #868</u>

Sample Number & Description	Date & Time of Sample Collection	Date and Time of Count	Instrument Efficiency (c/d)	Background 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) [†]	Activity Conc. (μ Ci/ml) [*]	MDA [*]
1 #8244 Taylor	5/17/99 1515	5/21/99	31.0%	2111	50	2.2	3	1	3	1	332,235	4.4E-12	4.2E-11
2 #8242 Schnobler	↓	↓	↓	↓	↓	↓	3	↓	3	1	304,965	4.8E-12	4.6E-11
3 #8241 Butler	↓	↓	↓	↓	↓	↓	3	↓	3	1	319,950	4.5E-12	4.4E-11
4 #8243 S. White	↓	↓	↓	↓	↓	↓	2	↓	2	0	338,985	0	4.1E-11
5 #8241 Butler	5/18/99 1515	↓	↓	↓	↓	↓	3	↓	3	1	1,202,400	1.2E-12	1.2E-11
6 #8242 Schnobler	↓	↓	↓	↓	↓	↓	3	↓	3	1	1,081,440	1.3E-12	1.3E-11
7 #8243 S. White	↓	↓	↓	↓	↓	↓	1	↓	1	0	1,222,320	0	1.1E-11
8 #8244 Taylor	↓	↓	↓	↓	↓	↓	3	↓	3	1	1,195,920	1.2E-12	1.2E-11
9 #8241 Butler	5/20/99 1530	↓	↓	↓	↓	↓	3	↓	3	1	1,277,550	1.1E-12	1.1E-11
10 #8242 Schnobler	↓	↓	↓	↓	↓	↓	3	↓	3	1	1,149,795	1.3E-12	1.2E-11
11 #8243 S. White	↓	↓	↓	↓	↓	↓	4	↓	4	2	1,298,715	2.2E-12	1.1E-11
12 #8244 Taylor	↓	↓	↓	↓	↓	↓	3	↓	3	1	1,241,595	1.2E-12	1.1E-11
13 #8241 Schnobler	5/21/99 1520	↓	↓	↓	↓	↓	2	↓	2	0	1,260,500	0	1.1E-11
14 #8244 S. White	↓	↓	↓	↓	↓	↓	3	↓	3	1	1,218,000	1.2E-12	1.1E-11
15 #8243 R. Hart	↓	↓	↓	↓	↓	↓	2	↓	2	0	856,020	0	1.6E-11
16 #8243 MSA-1	↓	↓	↓	↓	↓	↓	2	↓	2	0	989,010	0	1.4E-11

- * 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 + $2.22 \times 10^4 \times V \times \text{Efficiency}$

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

Health Physics Technician: _____

Ronald Alan Duff

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLE COUNT RECORD

Site/Location: <u>SMC New Field / Instrument Office</u>	Project No.: <u>94005.20 & 94005.05</u>
Emission Type (check): <input checked="" type="checkbox"/> α <input type="checkbox"/> β <input type="checkbox"/> BV	Instrument Model/Serial No.: <u>Eberline SAC-4 #868</u>

Sample Number & Description	Date & Time of Sample Collection	Date and Time of Count	Instrument Efficiency (c/d)	Background 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) ^b	Activity Conc. (μ Ci/ml) ^c	MDA ^d
MSA-2 17 C. Boyd	5/21/99 1445	5/26/99 1445	31.0%	111	50	2.2	1	1	1	0	972,840	0	1.4E-11
MSA-3 18 G. Sorrens	5/21/99 1445	5/26/99 1445	↓	↓	↓	↓	2	1	2	0	978,780	0	1.4E-11
#8244 19 S. White	5/24/99 1532	5/24/99 1530	↓	↓	↓	↓	1	1	1	0	1,245,930	0	1.1E-11
#8242 20 S. White	5/25/99 1515	5/25/99 1515	↓	↓	↓	↓	2	1	2	0	1,112,765	0	1.3E-11
#8242 21 Schnabel	5/26/99 1500	6/5/99 1500	29.8%	137	↓	2.7	3	3	3	0	1,077,600	0	1.5E-11
#8244 22 S. White	5/26/99 1500	5/26/99 1500	↓	↓	↓	↓	2	2	2	0	1,165,920	0	1.3E-11
#8241 23 Butler	5/27/99 1500	5/27/99 1500	↓	↓	↓	↓	3	3	3	0	1,200,000	0	1.3E-11
#8243 24 S. White	5/27/99 1500	5/27/99 1500	↓	↓	↓	↓	3	3	3	0	1,215,840	0	1.3E-11
#8244 25 Vac Truck	5/27/99 1500	5/27/99 1500	↓	↓	↓	↓	2	2	2	0	1,173,120	0	1.3E-11
#8241 26 Vac Truck	5/28/99 1400	5/28/99 1400	↓	↓	↓	↓	4	4	4	1	1,032,360	1.5E-12	1.5E-11
#8242 27 S. White	5/28/99 1400	5/28/99 1400	↓	↓	↓	↓	4	4	4	1	931,560	1.6E-12	1.7E-11
#8243 28 Butler	5/28/99 1400	5/28/99 1400	↓	↓	↓	↓	3	3	3	0	1,036,560	0	1.5E-11
#8241 29 Green Cab	6/1/99 1500	6/1/99 1500	↓	↓	↓	↓	3	3	3	0	1,189,920	0	1.3E-11
#8242 30 S. White	6/1/99 1500	6/1/99 1500	↓	↓	↓	↓	2	2	2	0	1,072,320	0	1.5E-11
#8242 31 Vac Truck	6/1/99 1500	6/1/99 1500	↓	↓	↓	↓	3	3	3	0	1,209,000	0	1.3E-11

- * 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 + $2.22 \times 10^6 \times V \times \text{Efficiency}$

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

Health Physics Technician: _____

Ronald Alan Duff

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT			
Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air			
Serial #	8244	Calibration Due: Daily	
Filter Type:	F+J CP47H	Filter Size: CP47H 47 mm	
Filter Lot:	WIA	Air Sample Number: 41 ①	
B. SAMPLING PARAMETERS			
Sample Start Date:	5-17-99	Time: 1:00 PM	Flow Rate (L/min): 2.476
Sample End Date:	5-17-99	Time: 3:15 PM	Flow Rate (L/min): 2.446
Total Sample Time (T):	135 min		(Minutes)
Average Flow Rate (F):	2.461		(Liters/Minute)
Sample Volume (V) =	135 (min) x F 2.461 (L/min) x 1000 (ml/L) = 332235 (ml)		
C: WORKER/WORKPLACE DATA			
BREATHING ZONE		GENERAL AIR	
Name of Worker Monitored: Robert Taylor		General Area and Specific Location:	
Type of Work Performed: Bag house Disassembly Bag removal		Type of Work On-going:	
Radiation Work Permit Number: IEM/SMG-99-01		Radiation Work Permit Number: N/A	
General Area and Specific Work Location: D-111 AAF Baghouse		Type of Operation/Equipment in Area: A	
Respiratory Protection Used: Respirator (Full Face APR)		Names of Workers:	
Sampling performed by (print): Ron Merko		Signature: 	

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		
<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8242	Calibration Due: Daily
Filter Type:	F+J CP47H	Filter Size: CP47H 47mm
Filter Lot:	10/A	Air Sample Number: 2

B. SAMPLING PARAMETERS

Sample Start Date:	5-17-99	Time:	1:00 pm.	Flow Rate (L/min):	2.267
Sample End Date:	5-17-99	Time:	3:15 pm	Flow Rate (L/min):	2.251
Total Sample Time (T):	1.35 hr				(Minutes)
Average Flow Rate (F):	1.35 hr @ 2.259				(Liters/Minute)
Sample Volume (V) =	135	(min) x F	2.259	(L/min) x 1000 (ml/L) =	304,965 (ml)

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored:	General Area and Specific Location:
John Schorbus	
Type of Work Performed:	Type of Work On-going:
Bag removal	↖
Radiation Work Permit Number:	Radiation Work Permit Number:
IEM/SWC-99-01 N/A	
General Area and Specific Work Location:	Type of Operation/Equipment in Area:
D-III AAF Baghouse	N/A
Respiratory Protection Used:	Names of Workers:
Respirator (Full Face APR)	↘
Sampling performed by (print):	Signature:
Ron Merkle	[Signature]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air	
Serial #: <u>2241</u>	Calibration Due: <u>Daily</u>
Filter Type: <u>F&J CP47H</u>	Filter Size: <u>CP47H 47 mm</u>
Filter Lot: <u>W/A</u>	Air Sample Number: <u>No 3</u>

B. SAMPLING PARAMETERS

Sample Start Date: <u>5-17-99</u>	Time: <u>1:00 pm</u>	Flow Rate (L/min): <u>2.257</u>
Sample End Date: <u>5-17-99</u>	Time: <u>3:15 pm</u>	Flow Rate (L/min): <u>2.484</u>
Total Sample Time (T): <u>135 min</u>		(Minutes)
Average Flow Rate (F): <u>2.3705</u>		(Liters/Minute)
Sample Volume (V) = <u>135</u> (min) x F <u>2.370</u> (L/min) x 1000 (ml/L) = <u>319,950</u> (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>James Butler</u>	General Area and Specific Location: <u>W/A</u>
Type of Work Performed: <u>Baghouse bag removal</u>	Type of Work On-going: <u>W/A</u>
Radiation Work Permit Number: <u>IEM/SMC-99-01</u> <u>W/A</u>	Radiation Work Permit Number: <u>W/A</u>
General Area and Specific Work Location: <u>D-111</u> <u>AAF Baghouse</u>	Type of Operation/Equipment in Area: <u>W/A</u>
Respiratory Protection Used: <u>Respirator</u> <u>(Full-face APR)</u>	Names of Workers: <u>W/A</u>
Sampling performed by (print): <u>Ron Mehl</u>	Signature: <u>R Mehl</u>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial # 8243	Calibration Due: Daily w/G:liberator	
Filter Type: F&J CPN-47	Filter Size: 47mm	
Filter Lot: N/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: 5/17/99	Time: 1515	Flow Rate (L/min): 2.504
Total Sample Time (T): 135 (Minutes)		
Average Flow Rate (F): 2.511 (Liters/Minute)		
Sample Volume (V) = 135 (min) x F 2.511 (L/min) x 1000 (ml/L) = 338,985 (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: Scott White	General Area and Specific Location:
Type of Work Performed: Baghouse bag removal	Type of Work On-going:
Radiation Work Permit Number: IEM/SMC-99-01	Radiation Work Permit Number: N/A
General Area and Specific Work Location: D111, AAF Baghouse	Type of Operation/Equipment in Area: A
Respiratory Protection Used: Full Face APR	Names of Workers:
Sampling performed by (print): R. Alan Duff	Signature: [Signature]

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT	
Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air	
Serial # 82411	Calibration Due: Daily
Filter Type: F&T CP47H	Filter Size: CP47H 47MM
Filter Lot: N/A	Air Sample Number: 5

B. SAMPLING PARAMETERS		
Sample Start Date: 5-18-99	Time: 07:15	Flow Rate (L/min): 2.512
Sample End Date: 5-18-99	Time: 15:15	Flow Rate (L/min): 2.498
Total Sample Time (T): 480m		(Minutes)
Average Flow Rate (F): 2.505		(Liters/Minute)
Sample Volume (V) = 480 (min) x F 2.505 (L/min) x 1000 (ml/L) = 1,202,400 (ml)		

C: WORKER/WORKPLACE DATA	
BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: James Butler	General Area and Specific Location:
Type of Work Performed: Baghouse Bag Removal	Type of Work On-going:
Radiation Work Permit Number: IEM/smc-99-01	Radiation Work Permit Number:
General Area and Specific Work Location: D-111 AAF Baghouse	Type of Operation/Equipment in Area: W A
Respiratory Protection Used: Full Face Respirator	Names of Workers:
Sampling performed by (print): Don Markel	Signature: <i>Don Markel</i>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8242	Calibration Due:	Daily	
Filter Type:	F+J CATH	Filter Size:	47mm	
Filter Lot:	N/A	Air Sample Number:	6	

B. SAMPLING PARAMETERS

Sample Start Date:	5-18-99	Time:	07:15	Flow Rate (L/min):	2.255
Sample End Date:	5-18-99	Time:	15:15	Flow Rate (L/min):	2.251
Total Sample Time (T):	480 min				(Minutes)
Average Flow Rate (F):	2.253				(Liters/Minute)
Sample Volume (V) =	480	(min) x F	2.253	(L/min) x 1000 (ml/L) =	1,081,440
					(ml)

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR	
Name of Worker Monitored:	General Area and Specific Location:	
John Schmeibus	/	
Type of Work Performed:		Type of Work On-going:
Baghouse Bag Renewal		
Radiation Work Permit Number:		Radiation Work Permit Number:
IEM/SMC-99-01		
General Area and Specific Work Location:		Type of Operation/Equipment in Area:
D-111 AAF Baghouse		N/A
Respiratory Protection Used:	Names of Workers:	
Full Face Respirator		
Sampling performed by (print):	Signature:	
Ron Muehl	[Signature]	

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT		
Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial #	8243	Calibration Due: DAILY
Filter Type:	F&J CP47H	Filter Size: CP47H 47mm
Filter Lot:	W/A	Air Sample Number: 7
B. SAMPLING PARAMETERS		
Sample Start Date:	5-18-99	Time: 0715
		Flow Rate (L/min): 2.529
Sample End Date:	5-18-99	Time: 1515
		Flow Rate (L/min): 2.564
Total Sample Time (T):	480 min (Minutes)	
Average Flow Rate (F):	2.5465 (Liters/Minute)	
Sample Volume (V) =	480 (min) x F 2.5465 (L/min) x 1000 (ml/L) = 1,222,320 (ml)	
C: WORKER/WORKPLACE DATA		
BREATHING ZONE	GENERAL AIR	
Name of Worker Monitored:	Scott White	
Type of Work Performed:	Baghouse; Bag Removal	
Radiation Work Permit Number:	IEM/SMC-99-01	
General Area and Specific Work Location:	D-111 AAF Baghouse	
Respiratory Protection Used:	Full Face Respirator	
Sampling performed by (print):	Ron Muehle	
	Signature: <i>Ron Muehle</i>	

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

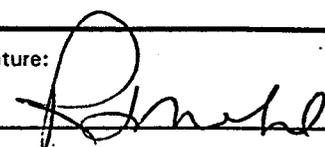
A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air	
Serial # 8243	Calibration Due: Daily
Filter Type: FLJ CPH47	Filter Size: 47-mm
Filter Lot: N/A	Air Sample Number: 11 + 4

B. SAMPLING PARAMETERS

Sample Start Date: 5-20-99	Time: 0700	Flow Rate (L/min): 2.546
Sample End Date: 5-20-99	Time: 1530	Flow Rate (L/min): 2.552
Total Sample Time (T): 510		(Minutes)
Average Flow Rate (F): 2.5465		(Liters/Minute)
Sample Volume (V) = 510 (min) x F 2.5456 (L/min) x 1000 (ml/L) = 1298715 (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: Scotty White	General Area and Specific Location:
Type of Work Performed: Baghouse Bag Removal Cleanup - Sweeping Dust	Type of Work On-going:
Radiation Work Permit Number: IEM/SMC 99-01	Radiation Work Permit Number:
General Area and Specific Work Location: D-111 Baghouse HAF	Type of Operation/Equipment in Area: N/A
Respiratory Protection Used: Full Face Respirator	Names of Workers:
Sampling performed by (print): Ron Merkel	Signature: 

INTEGRATED ENVIIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air	
Serial # <p align="center">8244</p>	Calibration Due: <p align="center">Daily</p>
Filter Type: <p align="center">F+J CP47H</p>	Filter Size: <p align="center">47mm</p>
Filter Lot: <p align="center">N/A</p>	Air Sample Number: <p align="center">12 15 m</p>

B. SAMPLING PARAMETERS

Sample Start Date: 5-20-99	Time: 0700	Flow Rate (L/min): 2.448
Sample End Date: 5-20-99	Time: 1530	Flow Rate (L/min): 2.423
Total Sample Time (T): 510		(Minutes)
Average Flow Rate (F): 2.4345		(Liters/Minute)
Sample Volume (V) = 510 (min) x F 2.4345 (L/min) x 1000 (ml/L) = 1241595 (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <p align="center">Robert Taylor</p>	General Area and Specific Location:
Type of Work Performed: <p align="center">Bayhouse Bag Removal Clean up, sweeping Dust.</p>	Type of Work On-going:
Radiation Work Permit Number: <p align="center">IEM/SMC 99-01</p>	Radiation Work Permit Number:
General Area and Specific Work Location: <p align="center">D-111 Bayhouse AAF</p>	Type of Operation/Equipment in Area: <p align="center">N/A</p>
Respiratory Protection Used: <p align="center">Full Face Respirator</p>	Names of Workers:
Sampling performed by (print): <p align="center">Ronn M... ..</p>	Signature: <p align="center"><i>[Signature]</i></p>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

⑬

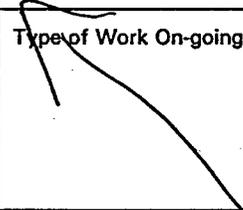
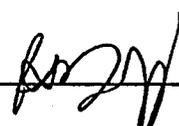
A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air	
Serial # <u>824</u>	Calibration Due: <u>Daily w/gilibrator</u>
Filter Type: <u>F4J CP47H</u>	Filter Size: <u>47 mm</u>
Filter Lot: <u>N/A</u>	Air Sample Number: <u>13</u>

B. SAMPLING PARAMETERS

Sample Start Date: <u>5/21/99</u>	Time: <u>0700</u>	Flow Rate (L/min): <u>2.521</u>
Sample End Date: <u>5/21/99</u>	Time: <u>1520</u>	Flow Rate (L/min): <u>Failed (batt dead)</u>
Total Sample Time (T): <u>500</u>		(Minutes)
Average Flow Rate (F): <u>2.521</u>		(Liters/Minute)
Sample Volume (V) = <u>500</u> (min) x F <u>2.521</u> (L/min) x 1000 (ml/L) = <u>1,260,500</u> (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>John Schnorbus</u>	General Area and Specific Location:
Type of Work Performed: <u>Clean up dust in AAF baghouse</u>	Type of Work On-going: 
Radiation Work Permit Number: <u>IEM/SMC 99-01</u>	Radiation Work Permit Number:
General Area and Specific Work Location: <u>DIII, AAF Baghouse</u>	Type of Operation/Equipment in Area: <u>N/A</u>
Respiratory Protection Used: <u>Full Face APR</u>	Names of Workers: 
Sampling performed by (print): <u>R.A. O'Flaherty</u>	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

14

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8244	Calibration Due:	Daily w/ Calibrator	
Filter Type:	F4J CP47H	Filter Size:	47 mm	
Filter Lot:	N/A	Air Sample Number:	14	

B. SAMPLING PARAMETERS

Sample Start Date:	5/21/99	Time:	0700	Flow Rate (L/min):	2.436
Sample End Date:	5/21/99	Time:	1520	Flow Rate (L/min):	(Failed Battery Dead)
Total Sample Time (T):	500				(Minutes)
Average Flow Rate (F):	2.436				(Liters/Minute)
Sample Volume (V) = <u>500</u> (min) x F <u>2.436</u> (L/min) x 1000 (ml/L) = <u>1,218,000</u> (ml)					

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored:	General Area and Specific Location:
Scott White	
Type of Work Performed:	Type of Work On-going:
Clean up dust in AAF Baghouse	
Radiation Work Permit Number:	Radiation Work Permit Number:
IEM/SMC 99-01	
General Area and Specific Work Location:	Type of Operation/Equipment in Area:
DIII, AAF Baghouse	
Respiratory Protection Used:	Names of Workers:
Full Face APR	
Sampling performed by (print):	Signature:
R.A. Diff	

INTEGRATED ENVIORNMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

19

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		
<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8244	Calibration Due: Daily w/ Giliibrator
Filter Type:	F4J CPH-47	Filter Size: 47 mm
Filter Lot:	N/A	Air Sample Number: 19

B. SAMPLING PARAMETERS

Sample Start Date: 5/24/99	Time: 0700	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) = 510 (min) x F 2.443 (L/min) x 1000 (ml/L) = 1,245,930 (ml)		

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: Scott White	General Area and Specific Location: ↖
Type of Work Performed: DIII AAF Baghouse disassembly	Type of Work On-going:
Radiation Work Permit Number: IEM/SMC-99-01	Radiation Work Permit Number:
General Area and Specific Work Location: Bldg. DIII, AAF Baghouse	Type of Operation/Equipment in Area: N/A
Respiratory Protection Used: Full Face APR	Names of Workers:
Sampling performed by (print): R. Alan Diff	Signature: R. Alan Diff

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

20

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8242	Calibration Due:	Daily w/oilibrator	
Filter Type:	F4J CPH-47	Filter Size:	47mm	
Filter Lot:	N/A	Air Sample Number:	20	

B. SAMPLING PARAMETERS

Sample Start Date:	5/25/99	Time:	0700	Flow Rate (L/min):	2.260
Sample End Date:	5/25/99	Time:	1515	Flow Rate (L/min):	2.233
Total Sample Time (T):	495				(Minutes)
Average Flow Rate (F):	2.247				(Liters/Minute)
Sample Volume (V) =	495	(min) x F	2.247	(L/min) x 1000 (ml/L) =	1,112,265 (ml)

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: Scott White	General Area and Specific Location:
Type of Work Performed: DIII AAF baghouse disassembly	Type of Work On-going:
Radiation Work Permit Number: IEM/smc 99-01	Radiation Work Permit Number:
General Area and Specific Work Location: Bldg. DIII, AAF baghouse	Type of Operation/Equipment in Area: N/A
Respiratory Protection Used: Full Face APR	Names of Workers:
Sampling performed by (print): R. Alan Diff	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLING DATA SHEET

Date: 5-26-99

(21)

AIR SAMPLING EQUIPMENT

Pump Type: <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial No: <u>8242</u>	Calibration Due: <u>Daily</u>	
Filter Type: <u>F+J CP47H</u>	Filter Size: <u>47mm</u>	Filter Lot No. <u>N/A</u>

SAMPLING PARAMETERS

Sample Start Date: <u>5-26-99</u>	Time: <u>0700</u>	Flow Rate (lpm): <u>2.245</u>
Sample End Date: <u>5/26/99</u>	Time: <u>1500</u>	Flow Rate (lpm): <u>2.245</u>
Total Sample Time (T) in minutes: <u>480</u>		
Average Flow Rate (F) in liters per minute: <u>2.245</u>		
Sample Volume (V) = T <u>480</u> (min) x F <u>2.245</u> (lpm) x 1000 = <u>1,077,600</u> milliliters		

WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>John Schmalzer</u>	<div style="font-size: 2em; font-weight: bold;">N/A</div>
Type of Work Performed: <u>D-111 ^{AAF} Baghouse</u> <u>VACUUM, CUTTING, CLEANING</u>	
Work Permit No.: <u>IEM/SMC 99-01</u>	
General Area and Specific Work Location: <u>D-111 ^{AAF} Baghouse Level 1</u>	
Respiratory Protection Used: <input type="checkbox"/> None <input checked="" type="checkbox"/> Full Face <input type="checkbox"/> Half Face <input type="checkbox"/> Other	<div style="font-size: 2em; font-weight: bold;">N/A</div>
Monitoring Conducted by: <u>Don Merkel</u>	<div style="font-size: 2em; font-weight: bold;">N/A</div>
Signature: <u>Don Merkel</u>	<div style="font-size: 2em; font-weight: bold;">N/A</div>

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLING DATA SHEET

Date: 5-26-99

AIR SAMPLING EQUIPMENT

(22)

Pump Type: <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial No: <u>8244</u>	Calibration Due: <u>Daily</u>	
Filter Type: <u>F+J CP47H</u>	Filter Size: <u>47 mm</u>	Filter Lot No. <u>N/A</u>

SAMPLING PARAMETERS

Sample Start Date: <u>5-26-99</u> <u>0700</u>	Time: <u>0700</u>	Flow Rate (lpm): <u>2.428</u>
Sample End Date: <u>5-26-99</u>	Time: <u>1500</u>	Flow Rate (lpm) <u>2.429</u>
Total Sample Time (T) in minutes: <u>480</u>		
Average Flow Rate (F) in liters per minute: <u>2.429</u>		
Sample Volume (V) = T <u>480</u> (min) x F <u>2.429</u> (lpm) x 1000 = <u>1,165,920</u> milliliters		

WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>Scotty White</u>	<div style="font-size: 2em; font-weight: bold;">N/A</div>
Type of Work Performed: <u>A-111 Baghouse</u> <u>VACUUM, oxy. acetelene</u> <u>cutting</u>	
Work Permit No.: <u>IEM/smc 99-01</u>	
General Area and Specific Work Location: <u>D-111 Baghouse Level-1</u>	
Respiratory Protection Used: <input type="checkbox"/> None <input checked="" type="checkbox"/> Full Face <input type="checkbox"/> Half Face <input type="checkbox"/> Other	Type of Operation/Equipment in Area:
Names of Workers in Area:	

Monitoring Conducted by: Ron Merkel

Signature: Ron Merkel

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLING DATA SHEET

Date: 5-28-99²⁷

AIR SAMPLING EQUIPMENT

(23)

Pump Type: <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial No: <u>8241</u>	Calibration Due: <u>Daily</u>	
Filter Type: <u>F+J CP47+1</u>	Filter Size: <u>47mm</u>	Filter Lot No. <u>N/A</u>

SAMPLING PARAMETERS

Sample Start Date: <u>5-28-99 0700</u> ²⁷	Time: <u>0700</u>	Flow Rate (lpm): <u>2470</u>
Sample End Date: <u>5-28-99 1500</u> ²⁷	Time: <u>1500</u>	Flow Rate (lpm): <u>2529</u>
Total Sample Time (T) in minutes: <u>480</u>		
Average Flow Rate (F) in liters per minute: <u>2.500</u>		
Sample Volume (V) = T <u>480</u> (min) x F <u>2.5</u> (lpm) x 1000 = <u>1,200,000</u> milliliters		

WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>Butler Butler</u>	General Area and Specific Location: <u>N/A</u>
Type of Work Performed: <u>UAC. D-111 Baghouse</u>	
Work Permit No.: <u>IEM/SMC 99-01</u>	Type of Operation/Equipment in Area: <u>N/A</u>
General Area and Specific Work Location: <u>D-111 AAF Baghouse</u>	
Respiratory Protection Used: <input type="checkbox"/> None <input checked="" type="checkbox"/> Full Face <input type="checkbox"/> Half Face <input type="checkbox"/> Other	Names of Workers in Area: <u>N/A</u>
Monitoring Conducted by: <u>Ron Markel</u>	
Signature: <u>Ron Markel</u>	

**INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET**

Date: 5-28-99²⁷

AIR SAMPLING EQUIPMENT

(24)

Pump Type: <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial No: <u>8243</u>	Calibration Due: <u>Daily</u>	
Filter Type: <u>F45 CP47H</u>	Filter Size: <u>47mm</u>	Filter Lot No. <u>N/A</u>

SAMPLING PARAMETERS

Sample Start Date: <u>5-28-99</u> ²⁷	Time: <u>0700</u>	Flow Rate (lpm): <u>2500</u>
Sample End Date: <u>5-28-99</u> ²⁷	Time: <u>1500</u>	Flow Rate (lpm) <u>2565</u>
Total Sample Time (T) in minutes: <u>480</u>		
Average Flow Rate (F) in liters per minute: <u>2.533</u>		
Sample Volume (V) = T <u>480</u> (min) x F <u>2.533</u> (lpm) x 1000 = <u>1,215,840</u> milliliters		

WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>Scott White</u>	General Area and Specific Location: <u>N/A</u>
Type of Work Performed: <u>Decow D-111 Baghouse.</u>	
Work Permit No.: <u>IEM/SMC 99-01</u>	Type of Operation/Equipment in Area: <u>N/A</u>
General Area and Specific Work Location: <u>D-111 Baghouse</u>	
Respiratory Protection Used: <input type="checkbox"/> None <input checked="" type="checkbox"/> Full Face <input type="checkbox"/> Half Face <input type="checkbox"/> Other	Names of Workers in Area: <u>N/A</u>
Monitoring Conducted by: <u>Ron Muehl</u>	
Signature: <u>Ron Muehl</u>	

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

(25)

A. AIR SAMPLING EQUIPMENT

Pump Type (check):		
<input checked="" type="checkbox"/> Breathing Zone	<input type="checkbox"/> Low Volume General Air	<input type="checkbox"/> High Volume General Air
Serial #	8244	Calibration Due:
Filter Type:	F2J 47cm	Filter Size:
Filter Lot:	n/a	Air Sample Number:
		25

B. SAMPLING PARAMETERS

Sample Start Date:	5-27-99	Time:	0700	Flow Rate (L/min):	2472
Sample End Date:	5-27-99	Time:	1500	Flow Rate (L/min):	2415
Total Sample Time (T):	480				(Minutes)
Average Flow Rate (F):	2.444				(Liters/Minute)
Sample Volume (V) =	480	(min) x F	2.444	(L/min) x 1000 (ml/L) =	1,173,120 (ml)

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored:	General Area and Specific Location:
N/A UAC TRUCK General Area	
Type of Work Performed:	Type of Work On-going:
Empty UAC Truck	
Radiation Work Permit Number:	Radiation Work Permit Number:
IEM/SAC 99-01	
General Area and Specific Work Location:	Type of Operation/Equipment in Area:
D-111 Bayhorse	N/A
Respiratory Protection Used:	Names of Workers:
N/A	
Sampling performed by (print):	Signature:
Ron M... ..	Ron M... ..

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC. AIR SAMPLING DATA SHEET

Date: 5-28-99

(28)

AIR SAMPLING EQUIPMENT

Pump Type: <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial No: <u>8243</u>	Calibration Due: <u>Daily</u>	
Filter Type: <u>F&J CP474</u>	Filter Size: <u>47mm</u>	Filter Lot No: <u>1A</u>

SAMPLING PARAMETERS

Sample Start Date: <u>5-28-99</u>	Time: <u>0700</u>	Flow Rate (lpm): <u>2516</u>
Sample End Date: <u>5-28-99</u>	Time: <u>1400</u>	Flow Rate (lpm): <u>2419</u>
Total Sample Time (T) in minutes: <u>420 min</u>		
Average Flow Rate (F) in liters per minute: <u>2.468</u>		
Sample Volume (V) = T <u>420</u> (min) x F <u>2.468</u> (lpm) x 1000 = <u>1,036,560</u> milliliters		

WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: <u>Jim Bollen</u>	General Area and Specific Location: <div style="text-align: center; font-size: 2em;">N/A</div>
Type of Work Performed: <u>VACUUMING DUST ON 1ST FLOOR</u> <u>BOYHOUSE</u>	
Work Permit No.: <u>SMC/LEM 95-01</u>	
General Area and Specific Work Location: <u>D-111 AAF BAGHOUSE</u>	Type of Operation/Equipment in Area: <div style="text-align: center; font-size: 2em;">N/A</div>
Respiratory Protection Used: <input type="checkbox"/> None <input checked="" type="checkbox"/> Full Face <input type="checkbox"/> Half Face <input type="checkbox"/> Other	Names of Workers in Area: <div style="text-align: center; font-size: 2em;">N/A</div>
Monitoring Conducted by: <u>Ron Muehl</u>	
Signature: <u>[Signature]</u>	

INTEGRATED ENVIORNMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

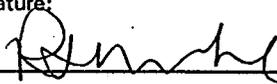
A. AIR SAMPLING EQUIPMENT

Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air		
Serial #	8242	Calibration Due: Daily
Filter Type:	F+J CP47H	Filter Size: 47 mm
Filter Lot:	WA	Air Sample Number: 30

B. SAMPLING PARAMETERS

Sample Start Date:	6-1-99	Time:	0700	Flow Rate (L/min):	2255
Sample End Date:	6-1-99	Time:	1500	Flow Rate (L/min):	2212
Total Sample Time (T):	480 min				(Minutes)
Average Flow Rate (F):	2.234				(Liters/Minute)
Sample Volume (V) =	480	(min) x F	2.234	(L/min) x 1000 (ml/L) =	1,072,320 (ml)

C: WORKER/WORKPLACE DATA

BREATHING ZONE	GENERAL AIR
Name of Worker Monitored: Scotty white	General Area and Specific Location:
Type of Work Performed: DECON AAF Baghouse Bottom Floor	Type of Work On-going:
Radiation Work Permit Number: IEM/Smc 95-01	Radiation Work Permit Number:
General Area and Specific Work Location: D-111 AAF Baghouse	Type of Operation/Equipment in Area: A
Respiratory Protection Used: Full Face Respirator	Names of Workers:
Sampling performed by (print): R. Merkel	Signature: 

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.
AIR SAMPLING DATA SHEET

A. AIR SAMPLING EQUIPMENT			
Pump Type (check): <input checked="" type="checkbox"/> Breathing Zone <input type="checkbox"/> Low Volume General Air <input type="checkbox"/> High Volume General Air			
Serial #	8243	Calibration Due: Daily	
Filter Type:	R+J CP474	Filter Size: 47 mm	
Filter Lot:	W/A	Air Sample Number: 31	
B. SAMPLING PARAMETERS			
Sample Start Date:	6-1-99	Time: 0700	Flow Rate (L/min): 2527
Sample End Date:	6-1-99	Time: 1500	Flow Rate (L/min): 2472
Total Sample Time (T):	480 min		(Minutes)
Average Flow Rate (F):	2.5		(Liters/Minute)
Sample Volume (V) = <u>480</u> (min) x F <u>2.5</u> (L/min) x 1000 (ml/L) = <u>1,200,000</u> (ml)			
C: WORKER/WORKPLACE DATA			
BREATHING ZONE		GENERAL AIR	
Name of Worker Monitored: M/A UAC TRUCK general area		General Area and Specific Location:	
Type of Work Performed: Empty UAC TRUCK		Type of Work On-going:	
Radiation Work Permit Number: SAC FEM 95-01		Radiation Work Permit Number:	
General Area and Specific Work Location: D-111 Baghouse area		Type of Operation/Equipment in Area: M/A	
Respiratory Protection Used: Dust mask		Names of Workers:	
Sampling performed by (print): R. Muehl		Signature: R. Muehl	

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
8241	5-17-99	2.257	2.484	RM
8242	5-17-99	2.267	2.251	RM
8243	5-17-99	2.476	2.416	RM
8244	5-18/99	2.255	2.251	RM
8245	5-18/99	2.529	2.561	RM
8246	5-18/99	2.512	2.498	RM
8247	5-18/99	2.555	2.428	RM
8248	5-19/99	2.480	2.478	RM
8249	5-19/99	2.230	2.478	RM
8250	5-19/99	2.523	2.478	RM
8251	5-19/99	2.423	2.478	RM
8252	5-19/99	2.496	2.514	RM
8253	5-20/99	2.242	2.267	RM
8254	5-20/99	2.546	2.552	RM
8255	5-20/99	2.447	2.423	RM
8256	5-21/99	2.247	2.423	RM
8257	5-21/99	2.523	2.423	RM
8258	5-21/99	2.436	2.423	RM
8259	5-26-99	2.245	2.245	RM
8260	5-26-99	2.428	2.429	RM
8261	5-27-99	2.470	2.470	RM
8262	5-27-99	2.252	2.252	RM
8263	5-27-99	2.500	2.565	RM
8264	5-27-99	2.472	2.415	RM
8265	5-28	2.468	2.448	RM
8266	5-28	2.472	2.484	RM

↑
 Pumps Failed due to weather

↑
 Pumps Failed due to weather

used on
 8243 Flexline
 5-21-99

RM
 8243/5/2/99
 2.517/2.504

Initials

his report was prepared under the direction of
Shieldalloy Metallurgical Corporation

by

R. Alan Duff, R.R.P.T.
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