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MOIVCOLD

January 7, 2002

Us Nuclear Regulatory Commission Mr. Tom McLaughlin, Project Mgr. Decommissioning Branch Washington, D.C. 20555-0001

Subject: Molycorp, Washington SMB-1393 Building 39 and 42 final survey results

Dear Mr. McLaughlin,

Please find enclosed the final survey results for buildings 39 and 42 at Molycorp's Washington, PA facility. Molycorp plans to begin demolition work on these in late March.

If you have any questions concerning this report please call me at the above number.

Sincerely, eon we George W. Dawes

Facility Superintendent

Xc: file

D. Fauver, RSI (w/o attach) R. Cherniske (w/o attach) Bob Maiers, PA DEP (w/o attach) Craig Gordon, NRC Region 1(w/attach)

Radiological Final Status Survey Report Building 39 and 42 (north end)

RSI[™]

Molycorp, Inc. Washington, PA

Performed By: Radiological Services Inc. For Molycorp, Inc. Final Status Survey Report

1.0 BACKGROUND INFORMATION

1.1 Introduction

This Final Status Survey Report is submitted to provide a complete record of the radiological status of specific survey areas at the Molycorp, Inc. Washington, PA facility, relative to established guidelines for the license termination. Sufficient data and information is provided to enable an independent re-creation and evaluation at some future date of both the survey activities and the derived results. This Final Status Survey Report has been written in accordance with the guidance provided in NUREG/CR 5849, "Manual for Conducting Radiological Surveys in Support of License Termination".

In November and December 2001, Radiological Services, Inc. (RSI) performed a Final Status survey on a portion of the Molycorp Washington site. Specifically, surveys were performed on the interior and exterior surfaces of Building 39 and Building 42 (northerd).

1.2 Management Approach

The final status survey was conducted in accordance with NUREG/CR 5849, "Manual for Conducting Radiological Surveys in Support of License Termination", Decommissioning Plan for the Washington, PA Facility Part 1 Revision, June 1999. All personnel were trained in the use of RSI radiation protection and final status survey procedures used to support the project. In addition, personnel were trained in the use of specialized equipment such as survey instrumentation. etc. The Decommissioning Plan for the Washington, PA Facility, section 2.2, details the decommissioning organization and responsibilities.

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2.0 SITE DESCRIPTION

Molycorp's Washington County facility is located in Southwestern Pennsylvania in Washington County, approximately 35 miles southwest of Pittsburgh. The plant site is located entirely in Canton Township on the outskirts of the City of Washington. The address of the facility is 300 Caldwell Avenue, Washington, Pennsylvania 15301. The Washington County facility covers an area totaling 55 acres. This property includes a 20-acre active facility area and an adjacent 35-acre parcel of undeveloped land.

2.1 Facility Description

Molycorp, Inc.'s Washington, Pennsylvania facility is situated on the outskirts of the City of Washington, PA at 300 Caldwell Avenue in Canton Township. The active site consists of approximately 20 acres that are fenced. The main process buildings are located on the north side of Caldwell Avenue, while employee vehicle parking, equipment and miscellaneous storage areas are located o the south side.

Molybdenum oxide manufacturing was begun in the 1920s, but processing of the material was idled in 991. The plant also produced ferro-columbium, as well as other ferroalloys, e.g., molybdenum.

2.2 Buildings

Building 39 and Building 42 (north-end) are the only two buildings within the scope of this Final Status Survey. All other buildings and structures will be surveyed at a later time.

2.2.1 Building 39, Maintenance Storage & Warehouse

Building 39 is a 103' long x 40' wide x \sim 20' high wood frame and wood truss structure with exterior corrugated metal wall and roof panels, and a concrete slab floor. The building runs from east to west and has a large sliding door at either end. Personnel doors are located on the east end of the north wall and the north end of the west wall.

2.2.2 Building 42 (north-end), Storage Warehouse

Building 42 (north-end) is a 121.5' long x 50' wide x \sim 30' high prefabricated metal structure with a structural steel frame, corrugated exterior metal wall and roof panels and a reinforced concrete floor.

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3.0 **OPERATING HISTORY**

3.1 Licensing and Site Operations

Molycorp, Inc.'s Washington. Pennsylvania facility produced a ferrocolumbium alloy from Brazilian ore (pyroclore) between 1964 and 1970. While the use of pyroclore was commonplace by that time, the particular ore contained thorium, and slight traces of uranium, as an accessory metal. It should be noted that thorium contamination is the major isotope of concern. The thorium was in concentrations that required Molycorp to acquire a Source Materials License (December 19, 1963). The current Source Materials License is SMB-1393 (Docket 4008778). The license operation resulted in the production of thorium bearing slag, some of which was used as fill material over portions of the site.

Currently, much of the slag produced during this operation is relocated in a stabilized, soil-capped, pile on the south side of the southern portion of the site. There is also a smaller pile in the northern portion of the site. Ferro-columbium slag is also mixed with soils at various locations no the site.

The Decommissioning Plan for the Washington, PA Facility, RSI, June 1999, contains additional information on past license amendments and specifics on the operational history of the facility.

3.1.1 Operational Use of Building 39

Building was originally constructed in 1983. Since 1983, this building has been used as an equipment and parts storage area. This building is currently still being used in that capacity.

3.1.2 Operational Use of Building 42

Building was originally constructed in 1989. This building was used to store raw materials to support the Lanthanide metal and alloy production from 1981 to 1987. From 1993 to 1996, this building was leased out. Building 42 currently is used as a stores warehouse.

4.0 DECOMMISSIONING ACTIVITIES

A description of planned decommissioning activities required to complete the site decommissioning and release the site for unrestricted use, including decommissioning objectives, tasks and schedule, is given in the Decommissioning Plan for the Washington, PA Facility, RSI, June 1999. This section will summarize the activities performed to prepare Buildings 39 and 42 for Final Survey.

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4.1 Re-Staging of Radioactive Material Packages

The initial task for the current phase of decommissioning was the removal of all packages and equipment from Buildings 39 and the northern end of 42. Although no radioactive materials were located in the two buildings, soil located around and adjacent to the buildings has been determined to have radioactive contamination.

The soil located in the grounds surrounding Building 39 is elevated with radioactive contamination. It was necessary to take shielded and unshielded measurements on the structure during final status surveys to obtain actual beta measurements without interference from the elevated gamma dose rates caused by the contaminated soils. The soil decontamination effort will be handled at a later time and discussed in a separate report.

5.0 FINAL STATUS SURVEY PROCEDURES

This section describes the methods used to demonstrate that radiation and radioactive contamination levels at specific portions of the Molcorp, Inc. Washington, PA facility have been reduced to levels below criteria established for unrestricted use. The basis for governing the conduct of the Final Status Survey was provided by procedure FSP-AP-001, Final Status Survey Design and Implementation. The methods described in that procedure were derived from regulatory guidance, specifically NUREG/CR 5849, Manual for Conducting Radiological Surveys in Support of License Termination, the Decommissioning Plan for the Washington, PA Facility (RSI, June 1999), and the Radiological Health and Safety Plan.

5.1 Initial Area Classifications

The initial classification for the survey areas within the scope of final status survey were based on site characterization data, history of radioactive materials involvement or potential for contamination of the survey area, recommendations by Molycorp, Inc. personnel knowledgeable of the facility conditions, and any applicable survey data such as routine surveillance or surveys conducted to support decommissioning activities. Survey areas were classified as follows:

- <u>Unaffected Survey Areas</u>: These areas have a low potential for radioactive contamination, based on knowledge of site history and previous survey information. Previous remediation precluded a survey area from initially being classified as unaffected.
- <u>Affected Survey Areas</u>: Affected areas are those areas that have potential radioactive contamination (based on site plant operating history) or known radioactive contamination (based on actual radiological surveys).

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Final Status Survey Report Buildings 39 and the north-end of Building 42 were classified as unaffected areas. Final status surveys were taken on the top surfaces of floors in Buildings 39 and the north-end of 42. However, due to the impact of contaminated soils on the undersides of concrete floors at the Molycorp, York, PA facility, radiological surveys will be required on the undersides of the building concrete floors prior to release.

5.2 Gridding

Gridding is not required in unaffected survey units and therefore, no gridding was necessary. However, some grid marks were used to bound the areas where scanning was performed up to 2 meters high on the walls.

5.3 **Survey Location Designation**

In a structural survey area, a survey location is usually represented by a single grid block or the area to be scanned surrounding a survey point. A survey location can contain one or more survey points. Survey locations were clearly identified to provide a method of referencing survey results to survey measurement locations. All data point measurement locations where the detectors were placed on the surface of the building were marked so to be able to perform confirmatory measurements, etc., as needed.

5.4 **Final Status Survey Packages**

A survey package is a collection of information in a standardized format for controlling and documenting field measurements taken for the Final Status Survey. A survey package was prepared for each survey unit independently and contains, as a minimum, the following:

- Form FSP-AP-001.4, Survey Area Breakdown
- Form FSP-AP-001.1, Radiological Survey Instructions
- Form FSP-AP-001.3, Survey Location Designation, Results and Comments
- Form FSP-AP-001.5, Final Status Survey Map

In addition, the survey packages contain the field data collection results, a copy of the final data converted to the reporting units required to demonstrate regulatory compliance, smear sample reports, a summary report for the survey unit, and any other pertinent data as determined by the project Radiological Engineer. All FSS survey packages prepared for a specific survey unit were reviewed for regulatory and procedural compliance and approved by the project Radiological Engineer prior to implementing the FSS for that specific area.

5.5 **Measurement Frequencies**

Measurement frequencies, or the physical spacing of samples and measurements, were selected to allow for a concentrated survey effort in those areas most likely to be

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contaminated, taking into account the type and size of the survey unit. The *minimum* measurement frequency for each measurement type is described below.

5.5.1 Surface Scans

<u>Unaffected</u> - β scan a minimum of 10% of the accessible surfaces. Alpha scans were also performed on interior and exterior wall surfaces. 2-square-meters were scanned at each TSC location.

5.5.2 Total Surface Contamination (fixed point) Measurements

• <u>Unaffected</u> - a minimum of 30 survey points or one survey point for each fifty square meters, whichever is greater

5.5.3 Removable Surface Contamination Samples

A smear sample for removable contamination was collected from each location where a TSC measurement was made. These samples were analyzed for alpha and beta-gamma contamination.

5.5.4 Exposure Rate Measurements

• <u>Unaffected</u> – a minimum of one exposure rate measurement for each fifty square meters

5.6 Instrumentation

Radiation detection and measurement instrumentation used for the final status survey was selected to provide both reliable operation and adequate sensitivity to demonstrate attainment of the release criteria. Both field survey instrumentation and analytical laboratory equipment were selected based on: (1) the necessary Minimum Detectable Concentrations (MDC), and (2) stability and reliability under environmental conditions. Instrumentation utilized to perform the final status survey is shown in Table 5-2.

Instruments and detectors used in the final status survey were calibrated by the manufacturer or by qualified vendors using NIST traceable sources. Instrumentation used in the final status survey was operated and maintained in accordance with approved procedures. Instruments used for fixed surface contamination measurements were pre-use response checked each day that they were used for data collection. The bench-top alpha and beta counting system was calibrated using sources traceable to NIST and source checked each day the instrument was used for sample counting.

Uncertainties and MDA values were calculated using equations 8-9 and 5-2 respectively of NUREG/CR 5849. Equation 8-9 was modified to correct units to disintegrations per minute. Uncertainty values were calculated using an average efficiency for the instruments used in the performance of the final status survey. Instrument MDAs were

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calculated after calibration and/or field repairs. Count times were selected to ensure that the measurements would be sufficiently sensitive with respect to the release criteria.

Instrument/ Detector Type	Description	Measurement Types(s)	Det. Eff.	MDA Dpm/100cm ²
Ludlum 2350-1 Data Logger/ 43-37- 1	582 cm ² gas flow proportional	Beta scan	29.42%	200-600
Ludlum 2360 Data Logger/ 43-89	100 cm ² scintillation probe	Alpha/Beta scan Beta surface contamination Alpha surface contamination	β~13% α~17%	β-300-600 α-25-75 (achieved w/ 1 min. count)
Bicron Micro Rem	Tissue-equivalent organic scintillator	Exposure rates		
Ludlum 2929/ 43-10-1	Scintillator: Zn (Ag) adhered to plastic scintillation material	Alpha and beta activity on smear samples		

Table 5-2, Final Status Survey Instrumentation

5.6.1 Instrument Use Technique

Techniques used in the performance of final status survey measurements were in accordance with section 9 of procedure FSP-AP-001, Final Status Survey Design and Implementation. Operation of the instrumentation used to perform the final status survey was done in accordance with procedures FSP-OP-003, Operation of the Bicron Micro Rem Meter and RPP-OP-105, Operation and calibration of the Ludlum 2929.

5.6.1.1 Surface Scans

Scan surveys were performed for alpha/beta activity in the Rate Meter mode at a rate of 1.5 to 2 inches per second, at a distance of approximately 0.25 inches from the surface. Visual and audible count rates were observed for an increase in activity. Verified areas of elevated activity were physically marked in the field and documented on the survey sheet. Scans were performed over 2-square meters around each TSC measurement location

5.6.1.2 Total Surface Contamination Surveys

Total surface contamination (TSC) measurements were performed for beta activity at a specific survey location after the scan for that survey location was completed. TSC measurements were obtained as prescribed in the survey instructions and at any areas of elevated activity identified during the scan survey. The measurements were obtained by placing the detector within one-quarter inch of the surface to be surveyed and counted in the Integrate mode for the specified time (normally one minute). All count rate values were recorded on the survey for each area.

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5.6.1.3 Removable Surface Contamination Surveys

Removable surface contamination (smear) samples were obtained at each TSC measurement location and were taken over an area of 100 cm^2 . All smears were analyzed for beta and alpha contamination.

5.6.1.4 Exposure Rate Surveys

Exposure rate measurements were taken by placing the detector at one meter from the surface of the location specified in the survey instructions and counted in the Rate Meter mode for the specified time (normally 15-30 seconds). All μ R/hour values were recorded.

5.7 Background/Baseline Levels Identified

Material-Specific background levels were established for each type of instrument used for total surface contamination and exposure rate measurements. Background measurements were collected on surfaces of similar construction as the buildings at the site and having no possibility of being impacted by site operation. Measurements to establish background for a specific material were collected from multiple locations to provide an estimate of the variability or uncertainty. Background determination was performed using the same instruments that were used for FSS data collection. An average background value was determined for each material surveyed and this value was subtracted from each FSS measurement to determine a net count rate. Background determinations were required for concrete, and a class of materials designated as generic material. The required number of background measurements per material is as follows:

- Concrete a minimum of 20 measurements
- Cinderblock a minimum of 20 measurements
- Generic a minimum of 10 measurements for each type of material surveyed (i.e., wood, insulation, corrugated steel, etc.)

5.7.1 Background in Buildings 39 and 42

The background response of the 100 cm^2 scintillation detectors used for surface activity measurements in Building 39 included a significant contribution from the gamma radiation "background" in the vicinity. The nominal exposure rate on the Washington site ranged from 5 to well over 30 microR/hour.

A method was devised to improve the accuracy of the detector background response for surface beta activity measurements. For a typical measurement at the Washington site, the major component of the detector background response was the contribution from gammas due to the soil concentrations adjacent to the building. A small contribution to the background response also came from the surface material beneath the detector sensitive area (the window). This component was mostly beta radiation with a minor gamma radiation contribution. A pair of measurements were taken at each survey location in Buildings 39 and 42 during the final status survey. The first measurement was

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taken with an aluminum shield placed between the detector face and the surface of the material being measured. The shield was of sufficient thickness (3/16 inch) to completely attenuate the maximum beta energy of the thorium series beta emitters. The shielded measurement provided a good estimate of the background at the measurement location as it shielded the detector from emissions from surface contamination. Next, an unshielded measurement was obtained at the same location of the shielded measurement. The difference between the shielded and unshielded measurement, then was largely due to surface contamination from residual activity contamination and material background. Concrete and generic material surfaces were surveyed at off-site locations where background measurements were taken and found to have some contributing beta activity in the material make-up. These activities were subtracted from the measurements taken for each material type in buildings 39 and 42.

5.7.2 Background Anomalies in Buildings 39 and 42

While performing the final status survey on Buildings 39 and 42, numerous surface activity measurements exceeded the release criteria. This was due to unusually high background radiation in the area of the Buildings. The high background was caused by thorium in the surrounding soil.

5.7.2.1 Floor and Lower Walls

While performing the final status survey of the lower walls in Buildings 39 and 42, numerous total surface contamination measurements taken along the walls initially exceeded the release criteria. According to characterization data, the soil outside of Buildings 39 and 42 contain high concentrations of thorium. These measurements were taken on corrugated metal that is prevalent on the interior and exterior walls throughout Buildings 39 and 42. In each instance, a shielded and unshielded measurement was taken. In every instance, the data obtained from the resurvey was well below the release criteria.

5.7.2.2 Gamma scans of Building Roof-tops

Gamma measurement surveys taken on the roof were not performed due to the inability to safely access the roofs of the buildings.

5.8 Major Contaminants Identified

The major contaminants at the Molycorp. Inc. Washington, PA site are natural thorium and natural uranium.

5.9 Guideline Established

All final status survey measurements were compared to the values in FC 83-23, Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material. The criteria for natural thorium are more conservative than natural uranium and were applied at the site. In addition, an exposure rate criterion of 5 uR/hr was applied.

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Final Status Survey Report The unrestricted use criteria for the buildings and structures are shown in Table 5-3 below.

Measurement Type	Average	Maximum
Total Surface Contamination	$1000 \text{ dpm}/100 \text{ cm}^2$	$3000 \text{ dpm}/100 \text{ cm}^2$
Removable Surface Contamination		$200 \text{ dpm}/100 \text{ cm}^2$
Exposure Rate	5 µrem/hr	10 μrem/hr

Table 5-3 Guideline Values (values above background)

5.9.1 Maximum Guideline Values

Individual measurement values were checked to determine if any were above the maximum guideline values in Table 5-3. The maximum guideline values were established for total surface contamination, removable surface contamination and exposure rate measurements.

The maximum guideline value for:

- A total surface contamination measurement is the maximum net dpm allowed in any 100 cm^2 area.
- A removable surface contamination measurement is the maximum net dpm allowed in any 100 cm^2 area.
- An exposure rate measurement is the maximum μR per hour above background allowed for any single measurement.

5.9.2 Average Guideline Values

FC83-23 allows for individual measurements to be screened against guideline values (sometimes referred to as the average guideline value). Areas of elevated activity between one and three times the guideline value could be tested to assure that the average surface activity level within a contiguous 1 m^2 area containing the elevated area is less than the guideline value. Since all final status survey data are below the average guideline values, this test was not performed.

6.0 SURVEY FINDINGS

This section provides the methods for evaluating all final radiological survey data. Detailed Data Reports for each survey unit is provided in Appendix A. Field data

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collection forms and other information from the individual survey packages, as discussed in section 5.4 are provided in Appendix B.

The results for removable contamination indicate that the removable beta activity was always higher than the removable alpha activity. There was essentially no alpha contamination identified during the final status survey. Therefore, for demonstrating compliance with the unrestricted use criteria. Appendix A summarizes the results for removable beta contamination only. The removable alpha contamination counting results are provided in Appendix B.

6.1 Techniques for Reducing/Evaluating Data

All final status survey data was converted to the correct reporting units to demonstrate compliance with license termination requirements. The formulas used in the conversion process are provided in Appendix C.

There were a few exposure rate measurements that exceeded the maximum value of 10 μ R/hr above background. These elevated results are believed to be attributable to contamination in the soil surrounding buildings 39 since there was essentially no surface contamination above background identified on the building surfaces. To confirm that the elevated exposure rates were due to soil contamination, a portion of wall was removed from building 39 and taken to a low background area for resurvey. The highest gamma dose rate location was MWB39-UG-15. The one-square meter of wall containing location code MWB30-UG-15 was removed from building 39. During final status surveys this location code had a gamma dose rate of 30 μ R/hr. The wall section was resurveyed in a low background area with no findings above the background of 7 μ R/hr. This survey verifies that the elevated exposure rates are due to the soils surrounding the building and not from the building materials or any activity located on the building itself.

The impact of having elevated gamma dose rates was evident in the surface mea surements as well. Although shielded and unshielded measurements were taken, the higher count rates caused by the gamma constituent in the soil created a larger degree of fluctuation between counts.

6.2 Comparison of Findings with Guideline Values and Conditions

The final status survey data was evaluated to ensure that the unrestricted use criteria were satisfied at the 95% confidence level in accordance with NUREG/CR 5849. The data are summarized in Appendix A. All survey results are well below the unrestricted use criteria and are essentially indistinguishable from background.

The average beta surface contamination levels in Buildings 39 and 42 were 16 dpm/100 cm² and 42 dpm/100 cm², respectively. The upper 95% confidence levels were 116 and 164 dpm/100 cm². These results are not likely to be statistical different from background levels. Removable contamination results were all less than MDA. The average exposure rates were 5.7 and -0.4μ R/hr for Buildings 39 and 42, respectively, with 95% upper confidence levels of 6.7 and 0.2 μ R/hr.

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7.0 SUMMARY

The final status surveys for Buildings 39 and 42 were performed in accordance with NUREG/CR 5849 and the Decommissioning Plan for the Washington, PA Facility. Results of the final status survey demonstrate that the residual contamination in all Building 39 and 42 survey units is below the unrestricted use criteria at the 95% confidence level and confirm that the buildings are suitable for unrestricted use.

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REFERENCES

- 1) Draft NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination
- 2) Decommissioning Plan for the York, PA Facility, Revision 1, RSI, June 30, 1999
- Policy and Guidance Directive FC83-23, Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-Products, Sources or Special Nuclear Materials
- 4) Final Survey report for Decommissioning of the Molycorp, Inc. York, PA Facility, IT Corporation, May 1997
- 5) USNRC Materials License No. SMB-1408, Amendment 9
- 6) Molycorp, Inc., Radiological Health and Safety Plan
- 7) FSP-AP-001, Final status Survey Design and Implementation
- 8) FSP-OP-002, FSS Data Processing and Reporting
- 9) FSP-OP-003, Operation and Use of the Bicron Electra Plus
- 10) FSP-OP-005, Survey Area Turnover and Control
- 11) RPP-IP-001. Operation of the Bicron Micro Rem Meter
- 12) RPP-OP-105. Operation and calibration of the Ludlum 2929



FINAL STATUS SURVEY GENERAL INSTRUCTIONS

				O Arra Catanami	Structure			
Survey Area Name:	Building 42			Survey Area Category:				
Survey Area Locatic	on: Molycorp, Wa	shington, PA		Survey Unit Classification:	Unaffected			
Survey Unit Name:	Interior (MWB	42-01)						
		Su	urvey Instructions					
Measurement Type	Instrument & Detector	Count Time	Instructions/Remarks					
Alpha/Beta Scan	Ludlum 2360/43- 89 or Ludlum 2350/43-37-1	N/A	Perform building to be per floor su designat perform on the s	n a scan of 10% of the interior of floors and up to 2 meters of erformed on the walls. Beta rfaces. Scan a minimum of 4 ated on map MWB42-01-02. ned at 1 inch per second. No survey map.	or and exterior surfaces of the n the walls. Alpha/beta scans scans are to be performed on 4m ² around each TSC location Scan survey will be ote the location of any alarms			
Alpha/Beta TSC	Ludlum 2360/43- 89	1 minute	Collect survey be colle	alpha/beta TSC measureme area map MWB42-01-02. U scted for beta at each locatio	ents at locations indicated on Inshielded measurements will on.			
RSC smears	Ludlum 2929	1 minute	Collect Smears	a smear at the location of e s will be analyzed for both al	ach TSC measurement. pha and beta contamination.			
Gamma ER	amma ER Micro Rem N/A		Collect exposure rate measurements at each TSC measurement indicated on survey area map MWB42-01-02. ER measurements will be collected one meter from the surface.					
All	Various	Various	Repeat Record Survey	t a minimum of 5% of all mea I the number of the repeat m Location Designator.	asurement types collected. leasurements on the attached			

Prepared By: Craig E. Miller Date: 11/9/01



SURVEY AREA BREAKDOWN FORM

Survey Area Na	ame	Building	42			Classif	ication	Unaffec	ted			
Survey Area Lo	cation	Molycorr	Washington,	PA		Catego	ry	Structu	re			
······	Surve	y Unit			Survey Material				Survey Locations			
Description	Classi	fication	Area	Description	Loca	ation	Surve	y Area	TSC	TSC	ER	RSC
			(m²)		Cc	ode	(n	n²)	β	α		
			891.5 x	Concrete	MWB	39-UC	(547	.5) 55	14	14	14	14
Interior	Unaf	fected	10% (90 m ²)	Generic	MWB	39-UG	(344	4) 35	9	9	9	9
Exterior	Unaf	fected	176 x 10% (18 m ²)	Generic	MWB	39-UG	(17)	3) 18	5	5	5	5
QC Interior	Unaf	fected	108 x 5% (5.4 m ²)	Generic	MWB	39-UC		8	2	2	2	2
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Prepared By: Craig E. Miller Date: 11/9/01



Building 42 (North End) Molycorp Washington, PA MWB42-01-02 **Grid and Data Point Layout** 4x4 meters UC-07 ⁻ MW42-**UG-08 MW42-**UG-09 MW42-UG-14 MW42-UG-13 MW42-MW42-MW42-**UG-04** MW42-UC-01 MW42-UC-13 MW42-UC-06 MW42-**UG-06** UC-09 1 MW42-UG-01 MW42-UC-03 MW42- MW42-UG-03 UC-10 UG-10 **MW42-**MW42- MW42-UC-11 UG-05 → MW42-UC-05 MW42-UC-14 UC-02 MW42-MW42- MW42-UC-07 UG-02 UC-04 MW42-UC-08 MW42-UC-12 MW42-**M**₩42-UG-11 UG-12 MW42-UG-11 QC-MW42-UG-12 QC-MW42-Map not to scale

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Molycorp Washington, PA Building 42 (North End) Data Point Layout MWB42-01-03

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		4 MW42- UG-15	
		ŗ	/IW42► JG-16
MW42- UG-20	QC-MW UG-20	42-	
		N	1W42- G-17 →
<u> Fature</u>	Remainin of buildin	g portion g 42	
MW42- ◀UG-19			MW42- UG-18 [→]
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Map not to scale



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induitionogram o ar		SURVEY	POINT	DESIGN	ΙΑΤΟ	R		
Survey Area	a Name: Bu	ilding 42	(MWB42	2)				
Survey Unit	Name: MV	VB42-01 ((Interior)					
	Instrument		Probe	CDD	S	can MDA	TS	C MDA
	SN	000	SN		α	ß	βα	β
Instrument	134735	6/9/02	149471	6/9/02	NA	13	<u> </u>	NA
Data 19	303141303 (u	11/2/02	151059-4	411/2/02			\	
	145478		15648	2	p n	NI	1 36	- 521
	A396E	4/2/02	NA	NA	NA	N N		NA
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	Dave	Riley			Dau	dJ.R.J	ley	11/9/01
Performed	Howa	ard Nordb	y	-	tere	and The	orable	11/9/01
By:				-			17	
				· -				
Location N	lumber	ß	α	β		α	ER	Smears
MWB4	42-	Scan	Scan	TSĊu	nsh	(cpm)	(µR/hr)	
		(cpm)	(cpm)	(cpm	1)			
UC-C)1	570	NA	3.54		ス	7	Y
UC-C)2	550	NA	348		4	10	Y
UC-0)3	560	NA	361		6	10	Y
UC-0)4	520	NA	312		2	11	Y
UC-0)5	420	NA	282		5	9	Y
UC-0)6	650	NA	332	ζ	6	10	Y
UC-0)7	610	NA	3.33	~~	2	10	Y
UC-0)8	620	NA	. 3 43		7	8	Y
UC-0)9	550	NA	32	7	7	9	Y
UC-1	10	520	NA	30	5	3	8	Y
UC-1	11	640	NA	30	3	3	9	Y
UC-1	12	530	NA	30	ζ	8	9	<u>Y</u>
UC-	13	600	NA	27	3	7	7	Y
UC-	14	630	NA	27	4	6	7	• • Y
NA	ł	NA	NA	NI	1	NA	NA_	N,A_
				l. l				

Prepared by: Craig E. Miller Date: 11/9/01

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Page 1 of 1

RSI

Radiological Services, Inc.

		SURVE	POINT	DESIGN	IATO	R		
Survey Area Survey Unit	a Name: E Name: M	Building 42 IWB42-01	(MWB42 (Interior)	2)				
	Instrume	nt CDD	Probe	CDD	Sc	an MDA	TS	C MDA
	SN 3		SIC 59		α	β	α	β
la staria sent	141303	an 11/2/02	151059 ^{C4}	11/2/02			5 1.7	5-1
Deta	<u>14347</u>	<u>4</u> <u>A12102</u>	156790	ζ. NA	176 NA	<u>/-3_3</u> NA	X OX NA	NA NA
Dala	ASADE	4/2/02	NA I					
				1				
		Print Nam	ne:		ک ۸	sign Na	me:	
Performed	<u>Dav</u>	ve Riley		-	plan	lf.	(len	11/12/01
Bv:	Hov	ward Nordb	<u>у</u>	1	tom	no 72	ordlorg	11/12/01
			<u> </u>	-				
	r		1		<u> </u>		ED	Currente
Location N	lumber	β	α	β		α		Smears
MWB4	42-	Scan	Scan	I SC _{ur}	nsh	(cpm)	(μκ/nr)	
		(cpm)	(cpm)	(cpm			(V
UG-0)1	260		222		3	10	r V
UG-0)2	290_	2	269	·	<u> </u>		
UG-0)3	240	4	210		10	<u> </u>	
UG-0)4	260	6	28	2	6	<u> </u>	ř V
UG-0)5	280	5	2.30	2	10	10	Y Y
UG-0)6	240	8	220	2		8	Y
UG-0)7	180		19	6	<u> </u>	7	Y Y
UG-0)8	250	5	27	0	_6	7	Y Y
UG-0)9	250	8	30	2	. 9	7	Υ
NA		NA_	<u>NA</u>	NA NA		_NH_	NA_	NA NA
				├			<u>├</u>	
			┼──┼───					
			┼─┟──	╞───┦─			<u>├</u>	
			-	<u>├</u>				<u>├ </u>
				├──┤─				
			_ 	<u> </u>				<u> </u>
				<u>├</u> ─── │ ─			<u> </u>	
1 J		I V	1	1 4	1	A	V	N

Prepared by: Craig E. Miller Date: 11/9/01

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Page 1 of 1

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Radiological Services. Inc.

		SURVE	POINT	DESIGN	ATOR	2		
Survey Area Survey Unit	a Name: Bu Name: MV	uilding 42 VB42-01	(MWB42 (Exterior)	2)				
	Instrument	CDD	Probe	CDD	Sca	In MDA	TS	C MDA
	14 SN 3		SN		α	β	α	β
	- 141303 -C	11/2/02	-151059 ⁷	¥11/2/02	illa	157	1 62	571
Instrument	1454784	4000	156798		NA			NA NA
Data	A396E	4/2/02	NA	NA				
						-		
		Print Nam	l <u> </u>	<u> </u>	Si	ign Na	 me:	Date:
	Dave	Rilev			Naud	M R:	Pen	11/12/01
Performed	How	ard Nordh		-	H course	Lead 5	Filke	11/12/01
By:			<u> </u>	-	10403	<u>~~~</u> /	the way	
				-				
Location N	lumber	β	α	β		α	ER	Smears
MWB4	12-	Scan	Scan	TSCur	nsh (cpm)	(µR/hr)	
		(cpm)	(cpm)	(cpm)			
UG-1	0	260	8	220	2	4		Y
UG-1	1	300	6	258	<u>~</u>	6	12	Y Y
UG-1	2	300	41.	240	>	9	13	Y
UG-1	3	300	7	229	>	3	10	Y
UG-1	4	400	10	27	0	5	13	Y
(QC) U(G-11	270	7	257	7	3	14	Y
(QC) U(G -12	280	3	22-	3	2	13	Y
NA		NA	NA	NF	¥	NA	NA_	NA
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				╞──┥			<u> </u>	<u>↓ </u>
				<u> </u>				<u> </u>
				<u> </u>			┼──┦───	
		.√		∛/		V	V V	4

Prepared by: Craig E. Miller Date: 11/9/01

Reviewed By. Crig SMill.

Page 1 of 1

RPP-OP-019 Revision 1

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					∧دن	<u>sh.</u>
	DDO-138 Radiatio	on Protection Surv	ey Repor	t Site: Ma	lycorp / Yor	K, PA
Section 1: Survey Information						
Date:	^{ime:} 1155	Location:	2.	Survey Iss	ue Log Numt ー ろっぷ	xer:
RW/P Number	Purpose of Survey:	11001			7. 4	3
N/A	RWP Routine Survey	Unconditional Release 🗶 O	her:	Page_	U	·
	Survey Title			Smear Number d	Beta Ipm/100cm ²	Alpha dpm/100cm ²
MWB42-				1.	< MOA	< MDA
	50008			2		
()ucol				3		
DUCOZ	(9UC09			4		
A	Touco			6		
30000				7		
٩٦٢٩	Doch			8		
BULDS	BUCIZ			9		
	(1) (1) (1) (1) (1)			10		
Qucob				11		
(1	PUC14			12		
(7)0207	_			13	<u> </u>	
				14	<mda< td=""><td>X MDA</td></mda<>	X MDA
				15	<u> </u>	
				16		
				1/		
				18	_	
				19		A
				20	-N	Α
		×B		21		
		BKG .2 60	>			$ \rightarrow $
	WILL ALLB	(LD 4,5 2°	2	23		
E++	3440 . 3171					L
Legend:	` = mRem/h gamma contact	() - Smoor Location	$\nabla - Air S$	omple Location	~ ~ ~ ~	- Pone
$00 \beta = mRem/h beta 00 \beta$	C = mRem/h beta contact		v − Auros	Material Sample	Bounda	ary, or Barrier
Section 2: Instruments Used						
Instrument Name:	Model Number:	Serial/ID Number:	Calibratio	on Due Date:	X/B	MDA:
Ludium	2929/43-10-1	167842/171328	11-20	4-01	13/91	DPm/100cm
A	, \ A	A		A		<u>\</u> A
				<u> </u>	/*	<u> </u>
Section 3: Review and Approv	val			Data and Tim	<u>.</u>	
Survey Performed By (Sign):	Store-	Area Posted and/or b	Required		. 12.15	-
Dediction Cofet: Officer (Drink M				Date and Tim	e: ,	
Radiation Safety Utficer (Pfint N	SLOM / SLOW	•		11-15-0	1/1215	
L		3				

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Radiological Services, Inc.

Bicron Micro-Rem Routine Performance and Background Data Form

1onth	/ Year	200 Instrumen	nt ID #: <u>B6</u>	936 (Operating Voltage:	Internally Sat	Cal Due:	8-20-02
ource ID #	5 44	/ (Mean S	Source Value: _	110 un/HR N	lean - 20% Value	<u>88 ur/ Ha</u> N	vlean + 20% Valı	ie 132 us/H
Date	Time		,		Backg	round		
		x.1 (sat/unsat)	x1 Reading	<u>+</u> 20% (y/n)	x10 Reading	<u>+ 20% (y/n)</u>	Reading	Sat/Unsat
11-8-01	1500	Δ	110	Ý	90	<u> </u>	6	5
11-12-01	0715	/	100		40	IY.	?	ک
	•	/-			· ·			
			· · · · · · · · · · · · · · · · · · ·					
		· · / · ·						
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		A						
			<u> </u>					
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		/						
		V						

Radiological Services, Inc.

Bicron Micro-Rem Routine Performance and Background Data Form

Date	Time		Background					
		x.1 (sat/unsat)	x1 Reading	<u>+</u> 20% (y/n)	x10 Reading	<u>+ 20% (y/n)</u>	Reading	Sat/Unsat
11-8-01	0635		·		70	<u> </u>	G	5
1.9.31	0 700				.70	Y	7	<u> </u>
1-12-01	<u> </u>		·		<u>४</u> ०	<u> </u>	5	·S
1-14-01	1030			/	<u> </u>	<u> </u>	_	5
2-14-01	1300				80	¥	<u> </u>	5
2-17-01	1330			/	80	<u> </u>	¥	
				/				
					· · · · · · · · · · · · · · · · · · ·			
					· · · · · · · · · · · · · · · · · · ·			
				,				
				· · · · · · · · · · · · · · · · · · ·				
		/						

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Sec. 19

EFF 2442

Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

Instrum	ent: <u>23</u>	50-1	310	594	Pro	be:	43-37-1		31197	
Cal Due	·· ·		-9-02		Cal	Due:		5-9-00	2	
Source ID#	4 <u>3 4</u> 41	м <u>25</u> С S	1ean Source ount Rate: igma Value::	1921 - 40,	Mea , 2 +2σ Mea 2 +3σ	n Value: n Value:	2001 2041	Mean -2ơ Val Mean -3ơ Val	ue:	1840
	BA	CKGROU	ND			SOURC	E CHECK		RES	ULTS
DATE	TIME	COUNT TIME	GROSS COUNTS	BKGD CPM	COUNT TIME	GROSS COUNTS	W/1 2 σ	₩/1 3 σ	LLD	SAT /UNSAT
11-7-01	0645	i	472	472	1	1464	5	5	104	3
11-8-01	0650	1	480	480	<u>(</u>	1482	5	3	105	3
11-9-01	0658	l	416	416		1978	5	5	97	5
							-			

Molycorp Washington PA site source checks

	:	Source Checks
Ludlum 2350-1	#31094 and	43-37-1 #31197
Measurement		Source
Number		Counts
1	11/6/01	2010.0
2	11/6/01	1919.0
3	11/6/01	1948.0
4	11/6/01	1889.0
5	11/6/01	1949.0
6	11/6/01	1865.0
7	11/6/01	1944.0
8	11/6/01	1933.0
9	11/6/01	1875.0
10	11/6/01	1864.0
11	11/6/01	1862.0
12	11/6/01	1938.0
13	11/6/01	1907.0
14	11/6/01	1916.0
15	11/6/01	1950.0
16	11/6/01	1964.0
17	11/6/01	1870.0
18	11/6/01	1961.0
19	11/6/01	1934.0
20	11/6/01	1926.0
Average		1921.2
Standard Deviation (+3) standard d (+2) standard d (+2) standard d	40.204216 2041.8126 1800.5874 2001.6084 1840.7916	
(=) =		

nb = 0.0479597

nb = ((t97.5% x stdev)/(0.2 x average))2

Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

, (

Cal Du	ient: <u>2</u>	929	1/~19-02	167846	Pro Ca	obe:	43-10		/	71938
Source ID	# <u>5 स</u> हि	<u>415</u>	Mean Source Count Rate: Sigma Value::	367 5 9	 <u></u> Μea +3σ	an Value: Nalue:	3793 3852	 Mean 2σ Va Mean 3σ Va	lue:	3 <i>555</i> 3496
	BA	CKGROU	JND			SOURC	E CHECK		RE	
DATE	IIME	TIME	GROSS COUNTS	BKGD CPM	COUNT TIME	GROSS COUNTS	W/1 2 σ	W/I	LLD	SAT /UNSAT
12-4-01	1100	50	2862	50	MIN					
12-5-01	6730	50	2925	-28		3672	5	5	28	5
12-14-01	6800	50	2961	59	1	3753			28	5
12-17-01	2400	50	3004	60	/	37110		5	25	5
								5	28	
										······
	da		I							

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RPP-OP-019 Revision 1

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	DDU-138 Radiation	Protection Surv	ey Kehon	Sile. m	loiycoip i Jei	4		
Section 1: Survey Information	DN	Location:		Survey Is	sue Log Num	ber:		
11-15-01	1220	1220 MWB42						
RWP Number:	Purpose of Survey:	Unconditional Release 🔏 O	ther:	Page	<u> </u>	3		
	Survey Title			Smear Number	Beta dpm/100cm ²	Alpha dpm/100cm²		
MWB4Z-	· · · · · · · · · · · · · · · · · · ·			1	< MDA	< MDA		
, <u>, , , , , , , , , , , , , , , , , , </u>	Q0609			2				
$() \cup G \circ I$				3				
QUGOZ	DUGIO			4				
	\bigcirc $0 < 1$			5				
30603	() UG II			6				
DUG04	(12)0612			7				
				9				
30605	(13 UG 13			10				
() v ol	0.00.14			11				
60608	(4)0011			12				
70607	BQC-UGII			13				
	mor-1612			14				
BUGOG				15				
				16	< MOA	< MDA		
		•		17	<u> </u>			
				18		- 1		
				19		1		
				20	N	<u> </u>		
		~ P		21				
		BKG .2 60)	22				
	ault and B	LLD 4.5 29		23		\vdash		
E+F, =	.344 x .314 P		<u> </u>	24	l	`		
Legend:	0 C = mRem/h damma contact		$\nabla - \Delta i \epsilon S \epsilon$			- Bono		
$00^{\circ} \beta = mRem/h beta 00^{\circ}$	0 BC = mRem/h beta contact	(1) = Large Area Wipe		Imple Location	Bounda	ary, or Barrier		
Section 2: Instruments Use	d				<u> </u>			
Instrument Name:	Model Number:	Serial/ID Number:	Calibratio	n Due Date:	x/B	MDA:		
Ludium	2929/43-10-1	167842/171328	11-2	4-01	13/91	DPm/100 cri		
A	A .	R		A	A			
				<u>\</u>		<u> </u>		
Section 3: Review and App	roval							
Survey Performed By (Sign):	Starre :	Area Posted and/or B	arricaded:	Date and Tin	ne: /	0		
		I Yes I No ZI Not	required	Date and Tin	ne: ,			
Radiation Safety Officer (Print	Name & Sign):			11-15-0	1/1240	>		
	Jung Lord			·····	/			

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RSI Radiological Services, Inc.

FINAL STATUS SURVEY GENERAL INSTRUCTIONS

Survey Area Name: Building 42				Survey Area Category:	Structure			
Survey Area Location: Molycorp, Washington, PA				Survey Unit Classification:	Unaffected			
Survey Unit Name: Interior/Exterior (MWB42-01								
Survey Instructions								
Measurement Type	In	strument & Detector	Count Time	ount Instructions/Remarks				
Alpha/Beta Scan	Lud 89 c 235	lum 2360/43- or Ludlum 0/43-37-1	N/A	Perform an alpha and beta scan around 2-square meter of TSC location MWB42-UG15 through UG20.				
Alpha/Beta TSC	Lud 89	lum 2360/43-	1 minute	Collect additional shielded and unshielded beta TSC data points MWB42-UG15 through UG20.				
RSC smears	Lud	lum 2929	1 minute	Collect UG20.	a smear at each TSC location	on MWB42-UG15 through		
Gamma ER	Mic	ro Rem	N/A	Collect a gamma exposure rate measurement at each TSC location MWB42-UG15 through UG20 at one meter from the surface.				
All	Var	ious	Various	NA				
				1 11	21 11			

Prepared By: _____ Date: 11/16/01



Radiological Services, Inc.

	Instrument	CDD	Probe	CDD	Sca	n MDA		78	C MDA
	SN		8N		à	β		α	β
nstrument	NA	NA	NA	NA	NA	N/		NA	NA
Data	141303	11/2/02	151059	11/2/02	(30	14	33 -4	5.2	435
	AJSSE	4/2/02	NA	NA	NA	N		NA	NA
Ø	F	Print Nam	18:	<u>L</u> t	Si	gn Na	me:		Date:
erformed	Denn	is Whitlo	<u>ck</u>	<u> </u>	<u> </u>	_	al.	•	11-19-0
By:					•				
•									4
ocation N	umber	ß	<i>a</i>	ß		·	59		Smeare
		Scan	Scan	TSC	. (c	2000)	/uR/h	r)	
		(cpm)	(cpm)	(cpm)			(per er c	• /	
UG-1	5	300	2	281		0	10		Y
UG-1	6	440	2	317		4	11		Y
UG-1	7	440	2	330		5	11		Y
<u> </u>	8	340		263		3	8		Y
UG-1	9	340	1	284		3	4		Y
UG-2	0	400	1	339		6	10		Y
QC-UG	-20	400	2	326		5	10		Y
		**	├ ────┤				·····		
			1						
			<u> </u>			F			
		<u>.</u>							

Prepared by: Craig Miller Date: 11/16/01



RPP-OP-019 Revision 1

waaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	Site: N	Site: Molycorp / York, PA				
Section 1: Survey Information)	and the second states of the second				
Date: 11-76-01	Time: 1400	Location: Ride, 4	2	Survey Is	isue Log Numl ヘノー マノ	per:
RWP Number:	Purpose of Survey:		0	Pane	2// 2 of	2.
N/A	RWP Routine Survey	Unconditional Release Oth	er:	l age	Dete	Alaba
-	Survey Title	•		Smear Number	dpm/100cm ²	dpm/100cm ²
MUR47-				1	- MDA	-120A
140012				2	-MDA	-ADA
MUG-15				3	-11.1.1	2 nist
				4	-MSA	-MDH
(2) il 6 ⁻ -16				5	~ MAM	~ AINIT
3116-17				6	- Alsit	2- MA A
(T)				7	- MOH	~ 1/3 A
4 46 10				8	\	
(5) UG-19				9	<u> </u>	
(m) 11G - 20				10		
	O .			12		
(7) GC-UG-20				12	<u>├</u> \	
				14		A
				15	-7	1
				16		
-				17		\backslash
				18		
· ·				19		
				20		
	· 1 /	1 2 500		21		
BKG×	D7 DA	66-20.0		22	ļ	<u> </u>
FF X C	0,362 EFI	F. B-0.309		23		$ \longrightarrow$
Elline	· · · · · · · · · · · · · · · · · · ·			24		\\
Legend:		0				
00 = m Rem/h gamma 00	C = mRem/h gamma contact	(1) = Smear Location	∇ = Air San	nple Location	n -X-X-X-X- Bounds	- = Rope, arv. or Barrier
$00 \beta = m \text{Rem/h beta} 00$	βC = mRem/h beta contact	= Large Area Wipe	🗌 = Bulk Ma	aterial Sampl	le Douride	
Section 2: Instruments Used	Madel Number:	Social/ID Number	Calibration	Due Date		MDA:
		GISTAND Rumber.	9 - 2	7-02	a,4	A-86
hull full	43-10	DZ43/9	8-20	- 02	N	<u>, ~ </u>
200-107-5						
Section 3: Review and Appro	oval					
Survey Performed By (Sign):	21	Area Posted and/or Ba	rricaded:	Date and Tir	me: ////7	0
	87018	🗆 Yes 🗆 No 🎝 Not R	Required	11-26-0	1170	-
Radiation Safety Officer (Print N	Name & Sign):	Love		Date and Tir	ne: 01/14ZC)
				.,	_{	



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FINAL STATUS SURVEY GENERAL INSTRUCTIONS

Survey Area Name: Building 42					Survey Area Category:	Structure		
Survey Area Location: Molycorp, Wa		/corp, Wa	shington, PA	· · · · · · · · · · · · · · · · · · ·	Survey Unit Classification:	Unaffected		
Survey Unit Name: Interior (MWB42-01)								
Survey Instructions								
Measurement Type	Instrun Dete	nent & ector	Count Time	Instructions/Remarks				
Alpha/Beta Scan	Ludlum 2 89 or Luc 2350/43-	2360/43- dlum -37-1	N/A	NA				
Alpha/Beta TSC	Ludlum 2 89	2360/43-	1 minute	Collect shielded and unshielded beta TSC measurements at locations previously indicated on survey area map MWB42-01-0				
RSC smears	Ludlum 2	2929	1 minute	NA				
Gamma ER	Micro Re	em	N/A	NA				
All	Various	····	Various	NA				

Prepared By: (15711) Date: 12/5/01

PROM : CRAIG MILLER

FAX NO. : 7574558435 Dec. 04 2001 12:31PM P2

29

Radiological Services, Inc.

SURVEY POINT DESIGNATOR

	Instrument SN	CDD	Probe SN	CDD	Scan MDA		TSC MDA			
instrument	141303	11/2/02	161059	11/2/02	NA	NA	MA	6470		
Data	N/A -		······································					NIA		
	N 4 <							NA		
· · · · · · · · · · · · · · · · · · ·		Print	Name:		Sign N	Name:	<u></u>	Date:		
Performed	Denni	s Whitlocl	< .	\[345	ble		2/5/01		
By:										
Location N MWB4	umber 2-	β TSC	β TSC-	b	β TSC		β TSC			
		(cpm)	(cpm)	(ncpm)	(dpm)			
UC-0	1	289	192	•	97		722			
UC-02	2	318	230		88		6	55		
UC-0:	3	350	256		94			9		
UC-04	4	322	224		98		729			
UC-0	5	274	208		66			491		
UC-00	3	326	241		85			632		
UC-01	7	357	250		107		796			
UC-01	В	362	232		/30		967			
UC-0	9	313	230		83		618			
UC-1	0	307	220		87		647			
UC-1	1	310	239		71		528			
UC-1;	2	300	220		80		5	95		
UC-13		313	224		89		662			
UC-14		290	223		67		4	19		
			· · · · · · · · · · · · · · · · · · ·							

Prepared by:

Miles_____ Date: 12-05-01

Page 1 of 1

POM : CRAIG MILLER

FAX NO. : 7574558435

Dec. 04 2001 12:31PM P3

ALS!

Radiological Services, Inc.

Curry A.		SURVE	Y PI	DINT DES	<u>SIGN</u>	ATO	۲				
Survey Area	a Name: Bu	ilding 42	! (M)	NB42)							
Survey Unit		/B42-01	(Inte	∋rior Shiel	ded s	and L	Jnshie	lded W	alis)		
	Instrument	nt CDD Prohe CDD				20					
	SN			SN		50	Scar		TSC	MDA	
Inotrum ont	141303	11/2/02		151059	11/2	2/02	NA	NA NA	<u>~</u>	<u> </u>	
Date			ļ						NA	425	
Duit	NA <					·····				NIA	
	N/A <		_							NIA	
		Print	Na	me:			Sign	Vama.			
Deve	Denni	s Whitloo	:k			<u> </u>			41		
Performed							~~~72		12/5/01		
By:											
							_				
Location N	umber	β	<u></u>	β			ß	1	ß		
MWB4	2-	TSCunsh		TSC _{sh}			TSC		тรс		
		(cpm)		(cpm)		(ncpm)			(dpm)		
				· · · · · · · · · · · · · · · · · · ·							
UG-01	[238		208		30			223		
<u> </u>	2	247		225		22			164		
UG-03	3	187		175					89		
UG-04	ł	204		212		-8			-60		
<u> </u>	2	219		204		15			116		
UG-06	3	193		175		18			134		
UG-07		174		156		18			134		
<u> </u>	3	210		195	15			112			
UG-09	,	255		159		96			<u></u>		
46-15	5	198		207		-9			- 67		
<u>ug-16</u>	2	236		243			- 7		-52		
<u>ug-1-</u>	1	251		246		5			37		
<u>ug-15</u>	t	199		190			9		67		
46-10	2	207		215			-8	Į	-60		
<u> 46-26</u>	5	244		219			25		186	<u> </u>	
<u> </u>	20	254		285			31		-231		
							······				
Prenared by	. /	- 5-1			r	Data		2-05	.01		

4
FAX NO. : 7574558435

Dec. 04 2001 12:32PM P4



Radiological Services, Inc.

SURVEY POINT DESIGNATOR Survey Area Name: Building 42 (MWB42) Survey Unit Name: MWB42-01 (Exterior Shielded and Unshielded Walls) Instrument CDD Probe CDD Scan MDA TSC MDA **SN** SN β α α β 141303 11/2/02 161069 11/2/02 NA NA N/A Instrument 435 Data NA NA NIA NA Print Name: Sign Name: Date: Dennis Whitlock in the house 12/5/01 Performed By: Location Number ß β β β MWB42-**TSC**_{unsh} TSC_{sh} TŚĊ TSC (cpm) (cpm) (ncpm) (dpm) UG-10 222 224 -2 - 15 UG-11 257 256 7 1 QC-UG-11 246 221 25 186 **UG-12** 239 9 230 67 QC-UG-12 -23 226 249 - 171 UG-13 195 194 7 UG-14 249 219 30 223 Quin 5 Mil Date: 12-05-01 Prepared by: _____

Page 1 of 1



FINAL STATUS SURVEY GENERAL INSTRUCTIONS

Survey Area Name:	Building 39		Survey Area Category: Structure						
Survey Area Locatio	on: Molycorp, Wa	shington, PA	A Survey Unit Classification: Unaffected						
Survey Unit Name:	Interior (MWB	39-01)							
		Su	Survey Instructions						
Measurement	Instrument &	Count	Instructions/Remarks						
Туре	Detector	Time							
Alpha/Beta Scan	Ludlum 2360/43-	N/A	Perform a scan of 10% of the interior and exterior surfaces of the						
•	89 or Ludlum		building floors and up to 2 meters on the walls. Alpha/beta scans						
	2350/43-37-1		to be performed on the walls. Beta scans are to be performed on						
			floor surfaces. Scan a minimum of 4m ² around each TSC location						
ч. - С			designated on map MWB39-01-02. Scan survey will be						
			performed at 1 inch per second. Note the location of any alarms						
			on the survey map.						
Alpha/Beta TSC	Ludlum 2360/43-	1 minute	Collect alpha/beta TSC measurements at locations indicated on						
	89		survey area map MWB39-01-02. Unshielded measurements will						
			be collected for beta at each location.						
RSC smears	Ludium 2929	1 minute	Collect a smear at the location of each TSC measurement.						
			Smears will be analyzed for both alpha and beta contamination.						
Gamma ER	Micro Rem	N/A	Collect exposure rate measurements at each TSC measurement						
			indicated on survey area map MWB39-01-02. ER measurements						
			will be collected one meter from the surface.						
All	Various	Various	Repeat a minimum of 5% of all measurement types collected.						
			Record the number of the repeat measurements on the attached						
			Survey Location Designator.						
		Carl							

Prepared By: _____

Date: //- 7-0/



SURVEY AREA BREAKDOWN FORM

.

Survey Area Na	ame	Building	39			Classif	ication	Unaffeo	ted			
Survey Area Lo	ocation	Molycor	washington,	PA		Catego	ory	Structu	re			
	Surve	y Unit		Survey Material					Survey Locations			
Description	Class	ification	Area	Description	Loca	ation	Surve	yArea	TSC	TSC	ER	RSC
			(m²)		Co	ode	(r	n²)	β	ά		
1		if a at a d	544 x 10%	Concrete	MWB:	39BUC	3	38	10	10	10	10
Interior	Unat	Teclea	(55 m²)	Generic	MWB:	39BUG	1	8	5	5	5	5
Exterior	Unaf	fected	172 x 10% (18 m ²)	Generic	MWB:	39AUG		18	5	5	5	5
QC Interior	Unat	ffected	73 x 5% (4 m ²)	Concrete	MWB:	39BUC		4	1	1	1	1
							-					
- 1 . Alter v		- · <u>.</u>										
		· · · · · · · · · · · · · · · · · · ·										
			-									

Prepared By: Craig E. Miller Date: 11/8/01









MAP MWB39-01-03

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1

Washington, PA Building 39 Floor Grid Layout

MWB39- UG-11 UG-20		▲ MWB39- UG-12		▲ MWB39- UG-13	MV UG	VB39- -14 →
QC-MWI UG-20	339-					
 ➡ MWB39- UG-19 	MWB39- UG-18 ↓			MWB39- UG-17	MWB39- U UG-16	4WB39- JG-15

Denotes 4x4 meters square

Map not to sale

RSI

Radiological Services, Inc.

SURVEY POINT DESIGNATOR Survey Area Name: Building 39 (MWB39) Survey Unit Name: MWB39-01 (Interior) Instrument CDD Probe CDD Scan MDA TSC MDA SN SN ά β α ß 134735 6/9/02 149471 6/9/02 191 NA NA NA Instrument Data 141303 11/2/02 151059 11/2/02 126 1689 51 498 A396E 4/2/02 NA NA NA NA NA NA Print Name: Sign Name: Date: Dave Riley David J. Rile 11/8/01 Performed By: ER Location Number β Smears β α α $(\mu R/hr)$ La La Larra Scan Scan **TSC**_{unsh} (cpm) (cpm) (cpm) (cpm) 360 4 13 Y UC-01 736 NA 13 UC-02 789 NA 330 7 Y Y 304 8 12 UC-03 773 NA 351 13 UC-04 847 5 Y NA 13 315 6 Y UC-05 942 NA 387 4 14 Ŷ UC-06 896 NA Ŷ 330 7 14 NA UC-07 816 14 Y 835 311 4 NA UC-08 8 16 Y NA 414 UC-09 1250 Y 335 15 4 UC-10 810 NA 3 13 Y (QC)UC-01 750 NA 348 NA NA NA NA NA KIA. V/D

Date: _____8/01

Prepared by: <u>Un E Mills</u> Newsunel By: <u>Mills</u>

Page 1 of 1

RSI

4

Radiological Services, Inc.

<u>g</u>		SURVE	POINT	DESIGN	IATO	R				
Survey Area	a Name: I	Building 39	(MWB3	9)						
Survey Unit	Name: N	/IVVB39-01	(Interior)							
	Instrume	nt CDD	Probe	CDD	S	can MDA	TS	C MDA		
	SN		SN		α	β	α	β		
Instrument	NA	NA	NA	NA	NA		A NA	NA		
Data	145478	11/2/02	156748	11/2/02	10:	3 169	97 62	481		
	A396E	4/2/02	NA	NA	NA	N/	A NA	NA		
<u>, , , , , , , , , , , , , , , , , , , </u>		Print Nam	ne:			Sign Na	me:	Date:		
Performed	Ho	ward Nordb	y	-	Hore	and TI	ordby_	11/8/01		
Bv:	·	·		-			0			
Location N	lumbor	0		0		~	FR	Smears		
Location	lumber	p Scan	Scan	TSC	aab	(cpm)	(uR/hr)	onicars		
		(cpm)	(cpm)	(cpm	1511 1)	(0011)	(μα στη γ			
UG-0	1	480	2	294		0	14	Y		
UG-0	2	320	4	274		2	13	Y		
UG-0	13	360	4	266		4	14	Y .		
UG-0	4	420	6	352	352		19	Y		
UG-0	5	300	6	256		6	15	Υ		
N/A_		NA_	<u> N</u> A	NH		NA	NA	<u>NA</u>		
 										
 										
			+							
							`			
V	· · · · · · · · · · · · · · · · · · ·	1	V V			V		<u> </u>		
		N N			 .	1				
Prepared	Prepared by: 9/11/1 Date:/8/0/									
A 1A	1	1:01	11.0				, .			
Kerrynel 15	r" Cl	MIM	at							

Page 1 of 1

RSI

-9

Radiological Services, Inc.

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0	,	SURVE	Y POINT	DESIGN	JATO	R		
Survey Area Survey Unit	a Name: I Name: N	Building 39 IWB39-01	(MWB39 (Exterior	9))				
	Instrume	nt CDD	Probe	CDD	S	can MDA	TS	C MDA
	SN		SN		α		3 α	β
Instrument	145478	11/2/02	156748	11/2/02	72	16	94 44.6	467
Data	A396E	4/2/02	NA	NA	NA	A N	A NA	NA
	NA	NA	NA	NA	NA	A N	A NA	NA
		Print Nam	ne:	-		Sign Na	ime:	Date:
Dorformod	Ho	ward Nordb	y	<u>i</u>	Hore	and	nordby	11/9/01
By:				<u>-</u>				
				-		<u> </u>	<u> </u>	
	<u> </u>		······			· · · · · · · · · · · · · · · · · · ·		
Location N	umber	β	α	β		α		Smears
		Scan (com)	Scan (opm)		nsh	(cpm)	μκ/nr)	
	6	(cpin) 600		<u>(Cpii</u> 540	<u>')</u>	6	14	
	7	400	2	330	1	0	17	Y Y
	8	400	0	384		4	24	Y
UG-0	9	420	1	379		2	20	Y
UG-1	0	460	2	298		5	15	Y
N (A		614	NA	NI	7	NA	NA	NA
				<u></u>				
								<u> </u>
ļ			 ,					
<u> </u>			↓	¥		<u></u>	<u> </u>	
Y I		N	I V	1				1 1

Prepared by: Craig Miller Date: 11/9/01

Review Mj. AcjEMels

RPP-OP-019 Revision 1

	DDO 129 Padiation	Protection Surve	v Report	Site: I	<u>م</u> در Nolvcorp / Xor l	<u>sh.</u>
		I FIUIECIIUII UUI Ve	y Keport			
Date:	Time:	Location:	······	Survey Is	ssue Log Numb	ver:
11-15-01	//40	MWB37	<i>}</i>	C	, 308	
RWP Number:	□ RWP □ Routine Survey □	Unconditional Release 🕱 Oth	er:	Page	of	<u> </u>
·	Survey Title	· · ·		Smear Number	Beta dpm/100cm ²	Alpha dpm/100cm ²
MWB39-	(A) 14 - 7	· · · · · · · · · · · · · · · · · · ·		1	< MDA	< MOA
()ucol	(13)0003			2		
2 UCOZ	(T) JG04			3		
30003	30605			4		
Guco4	(UGOb			6		
30c05	(1)0607			7		
20000				9		
	(8)0600			10		
DUC07	(9 UG09			11		
BUCOB	EOUG10	•		12		
90209	Ener-ucol			13		
DUC 10				15		
100001				16		
				18		
1200002				19		
				20		
		~	ß	21	<mda< td=""><td>< MDA</td></mda<>	< MDA
	· · · ·	BKG .2	60	22		A
		LLD 4.5 -	29	23	\mathcal{N}	
Eff. =	.344× .314B			24		
Legend: $\underline{00}$ = mRem/h gamma $\underline{00} \beta$ = mRem/h beta	<u>00</u> C = mRem/h gamma contact <u>00</u> βC = mRem/h beta contact	① = Smear Location ① = Large Area Wipe	∇ = Air San □ = Bulk Ma	ple Locatio	n -X-X-X- Bounda	- = Rope, ary, or Barrier
Section 2: Instruments U	sed				·····	
Instrument Name:	Model Number:	Serial/ID Number:	Calibration	Due Date:	<u> ~//³</u>	MDA:
Ludium	2929/43-10-1	167842/171328	/1-24-	01	13/91	DPM/100CM "
A	A	A			N	\ <u></u>
Section 3: Paylow and A	pproval	<u> </u>			, ,,	_
Sunny Deferred By (Sim), - hhiorai	Area Posted and/or Ba	arricaded:	Date and Ti	me: / '	
Survey Pendimed by (Sign	Store	□ Yes □ No 角 Not F	Required	11-15-0	1 /1155	·
Radiation Safety Officer (Pr	int Name & Sign): SLore	fore		Date and Ti	ime: 21/1155	-
L					1	-



FINAL STATUS SURVEY GENERAL INSTRUCTIONS

					· ·				
Survey Area Name:		Building 39			Survey Area Category:	Structure			
Survey Area Locatio	on:	Molycorp, Wa	shington, PA		Survey Unit Classification:	Unaffected			
Survey Unit Name:		Interior/Exteri	or (MWB39-0	1)					
			Su	urvey Ins	rvey Instructions				
Measurement Instrument & Cour Type Detector Time				Instructions/Remarks					
Alpha/Beta Scan	Lud 89 (235	llum 2360/43- or Ludlum 0/43-37-1	N/A	Perforn additior	uare meters around each				
Alpha/Beta TSC	Lud 89	llum 2360/43-	1 minute	Collect each ol area m through	a shielded and unshielded b the previously designated lo ap MWB39-01-02. Take ado UG20 and a QC at UG20.	eta TSC measurements at ocations indicated on survey ditional data points from UG11			
RSC smears	Lud	llum 2929	1 minute	Take a UG11-I	smear at each of the additio JG20.	nal data point TSC locations			
Gamma ER	Mic	ro Rem	N/A	Perform a gamma exposure rate measurement one the surface of each data point location UG11-UG20					
All Various Various N					NA				
		/	· MALLA						

Prepared By: ______

_____ Date: _____///////____

Page 4 of 8



Radiological Services, Inc.

	····	SURVE	Y POINT	DESIGN	AIOR			······
Survey Area Survey Unit	a Name: I Name: I	Building 39 VIWB39-01	(MWB3) (Interior)	9)				
	Instrum	ent CDD	Probe	CDD	Scan	MDA	TS	C MDA
	SN NA		- 544	NA	<u>G</u>	<u>β</u>	- <u>a</u>	<u> </u>
Instrument					n A	na.	NA	NA
Data	14130	3 11/2/02	151059	11/2/02	103	1596	6 45	472
	AJDGE	4/2/02	NA	NA	NA	NA	NA	NA
		Print Nan	ne:	LL	Sia	n Neme	<u></u> >:	Date:
Durate and	De	nnis Whitlo	ck			50	Z	11-19-01
Pencimea By:				ار				
Uy.				_				
Location N	umber	β	α	.β	1.	α	ER	Smears
		(com)	Scan	TSC _{un}	sh (C	pm) (µR/hr)	
UG-1	4	380	1	230			1 E	
UG-1	2	340		<u>ن درد</u> انتمات				Ý
UG-1	3	200		300		5		Ý
UG-1	4	100	0	244		2	157	Ý
UG-1	5	600	A	1152			10	Y
UG-1	6	440	4			G	17	Y
UG-1	7	440	4	350		-	18	Y
UG-1	8	400	(346		8	17	Y
UG-1	9	500	2	392		5	16	Y
UG-2	0	400	t	262		6	15	Y
QC-UG	-20	400	(305		2	15	Ŷ
							· · · · · · · · · · · · · · · · · · ·	
								}
			<u> </u>					
			+					
L								

Prepared by: Craig Miller Date: 11/16/01

Page 1 of 1

RPP-OP-019 Revision 1

ection 1: Survey information hate: //- $z_6-o/$ Tin WP Number: N/A MWB 39 -	ne: /430 Purpose of Survey: RWP I Routine Survey I Survey Title	Location: Bldg. 39 Unconditional Release & Othe	ər:	Survey Is Page	ssue Log Numt <i>つノ ー </i>	per.
MWB 39 -	ne: / 4 3 0 Purpose of Survey: RWP I Routine Survey I Survey Title	Location: BILS. 39 Unconditional Release & Othe	er	Survey Is Page	ssue Log Numb <u> </u>	per: 22
MWP Number: N/A MWB 39 -	Purpose of Survey: RWP Routine Survey Survey Title	Unconditional Release to Othe	er:	Page	of	2
MWB 39-	Survey Title			Cmoor		·
MWB 39-				Number	Beta dpm/100cm ²	Alpha dpm/100cm ²
140001				1	LMOA	2mda
				2	1 MOA	zmda
11c - 11				3	LMDA	2mdA
				4	LMSA	LMBA
2 46 - 12				5	~moA	LMDA
0				6	~ mbA	2mdA
3 46 75				7	LMAN	LMDA
(i) 46-14				8	LMBA	2mbA
0				9	4MDA	LMDA
(5) 46 - ¹ - 1				10	LMUA	LMOA
Q 46-16				11	LMDA	LMDA.
				12	Ν	
Q 46 -11				13	$\left \right\rangle$	
				14		
(8) 46 - 10				15		
$\tilde{\odot}$ $\mu c - 19$				16		A
y vo				17		71
in) 46 - 20				18	\Box	
\mathcal{P})			19		
1) QC-46 20				20		
				21		
	nic			22		
BKG: ~ O.4	13/C6: B	50 -		23		
FFF: ~ 0.360	EFF: B	0.309		24		١
Legend:					all with a	
00 = mRem/h gamma 00 C	= mRem/h gamma contact	① = Smear Location	∇ = Air Sar	nple Locatio	n -X-X-X	- = Rope,
$\underline{00} \beta$ = mRem/h beta $\underline{00} \beta$	C = mRem/h beta contact	① = Large Area Wipe	🗌 = Bulk Ma	aterial Samp	e Bounda	ary, or Barrier
Section 2: Instruments Used						
Instrument Name:	Model Number:	Serial/ID Number:	Calibration	Due Date:		MDA:
Lubium	2929	6/549	8-20	-02	~ /4	1 15 86
Ludium	43-10	024319	8-20	-02		A
Section 3: Review and Approv	al				!	
Super Deferred Ry (Sign)		Area Posted and/or Ba	rricaded:	Date and T	ime: /	· · ·
Survey Ferrornieu by (Sign).	fors	I Yes I No ATNOLF	Required	11-26-	01/1445	
Radiation Safety Officer (Print Nar	me & Sign)			Date and T	ime	
54	ong/Store			11-26-0	1/ 1445	



FINAL STATUS SURVEY GENERAL INSTRUCTIONS

Survey Area Name:	Building 39		<u> </u>	Survey Area Category:	Structure			
Survey Area Locatio	on: Molycorp, Wa	shington, PA		Survey Unit Classification:	Unaffected			
Survey Unit Name:	Interior (MWE	39-01)						
		Si	urvey Ins	tructions	·			
Measurement Type	Instrument & Detector	Count Time	Instructions/Remarks					
Alpha/Beta Scan	Ludlum 2360/43- 89 or Ludlum 2350/43-37-1	N/A	NA					
Alpha/Beta TSC	Ludlum 2360/43- 89	1 minute	Collect each of area m	a shielded and unshielded b f the previously designated lo ap MWB39-01-02.	eta TSC measurements at ocations indicated on survey			
RSC smears	Ludlum 2929	1 minute	NA					
Gamma ER Micro Rem N/A				NA				
All	Various	Various	NA					

Prepared By: July

___ Date: ___/2-5-0/

FROM : CRAIG MILLER

FAX NO. : 7574558435

Dec. 04 2001 12:33PM P6

87 G I

Radiological Services, Inc.

SURVEY POINT DESIGNATOR Survey Area Name: Building 39 (MWB39) Survey Unit Name: MWB39-01 (Floor Shielded and Unshielded Walls) CDD Instrument Probe CDD Scan MDA TSC MDA SN SN α ß α β 141303 11/2/02 151069 11/2/02 NA NA Instrument NA 528 Data NIA ► NIA NA NIA Print Name: Sign Name: Date: Dennis Whitlock 12/5/01 Performed By: **Location Number** β β β β MWB39-TSC_{sh} TSC TSCunsh TSC (cpm) (cpm) (ncpm) (dpm) . UC-01 315 80 235 595 QC-UC-01 340 241 99 737 UC-02 89 662 336 247 UC-03 347 234 113 841 UC-04 348 298 50 372 UC-05 328 237 91 677 UC-06 <u>348</u> 262 640 <u>&6</u> UC-07 402 278 224 <u>54</u> UC-08 655 317 रुरत 88 UC-09 354 300 54 402 UC-10 341 260 81 603 mis Mell Date: ______ Prepared by:

Page 1 of 1

12/06/01 12:49

Dec. 04 2001 12:32PM P5

CRAIG MILLER

FAX NO. : 7574558435

RSI

Radiological Services, Inc.

: :

SURVEY POINT DESIGNATOR Survey Area Name: Building 39 (MWB39)

Survey Unit	Name: MV	VB39-01 (I	nterior Shiel	ded and l	Jnshie	lded W	alls)	
	instrument	CDD	Probe	CDD	Scan	MDA	TSC	MDA
	SN		8N		α	β	_α	β
Instrument	141303	11/2/02	151059	11/2/02	NA	NA	NIA	466
Data	N/A •							N/A
	NA	•						NA
	i da se	Print	Name:		Sign I	Name:		Date:
Performed By:	Denn	is Whitlocl	<u> </u>	⊊	<u>) ' </u>	e de C	<u>5</u> <u>1</u>	2/5/01
Location N	umber	β	β		β		1	3
MWB3	9-	TSCunsh	TSC,	ih .	TSC		T	SC
•		(cpm)	(cpm)	(ncpri	(ו	(dr	om)
· UG-0	1	295	.300	, ·	-5		- 7	17
UG-0	2	298	271		27		<u></u> 2c	<u>1</u>
<u> </u>	3	296	297		-1_			7
<u>UG-0</u>	4	412	387	<u> </u>	25		18	36
UG-0	5	312		<u>r</u>	<u>_17</u>			26
UG-1	1	295	28°		6		4	5
UG-1	2	292	28-	ī	1			2
UG-1	3	294	30	1	-13		- (97
UG-1	4	224	22:	3				L
UG-1	5	463	440	·	_23			<u>l</u>
UG-1	6	346	345	F				
UG-1	7	_320	319		<u></u>			(=
UG-1	8	<u> </u>		·····				<u> </u>
UG-1	9	362		ſ			<u> </u>	Q
UG-2	<u>5-20</u> <u>283</u>			·				21
	5-20	271	246	7	_dS_		1	10
		7	mill			l		
Prepared	by:	KijE-	Uld 1	Dat	e:	12-	5-01	-

Page 1 of 1

FROM : CRAIG MILLER

FAX NO. : 7574558435

Dec. 04 2001 12:33PM P7

Radiological Services, Inc.

·····		SURVE	POINT DE	SIGNATO	R				
Survey Are Survey Uni	a Name: Bu t Name: MV	ilding 39 /B39-01	(MWB39) (Exterior Shie	elded and	Linshi				
	Instrument	CDD	Probe				rans)		
	SN		SN	000	_ Scar		180	MDA	
Instrument	141303	11/2/02	151059	11/2/02	NA	NA	NIA	466	
Data	NIA <							NA	
	N/A <	·						NIA	
Performed	Denni	Print s Whitloc	Name: k		Sign I جــنْـد	Vame:	<u>ب ا:</u>	Date: 2/5/01	
ву:				·····					
Location N MWB3	umber 9-	β TSC _{unsh} (cpm)	β TSC ₄ (cpm	;h)	β TSC (ncpm)			iC m)	
UG-0	3	295	263		32		22	8	
UG-0	7	242	242		0		Ø		
UG-0	8	345	45 335		10		70	4	
UG-0	9	280	287		- 7		-52		
UG-1	0	238	218	·	20		14	9	
								· · · · · · · · · · · · · · · · · · ·	
								······································	
Prepared b	ıy:	· ~ -	Mil	Date		12-0	5-0	/	

Page 1 of 1



FINAL STATUS SURVEY GENERAL INSTRUCTIONS

Survey Area Name:		Building 39		Survey Area Category:		Structure		
Survey Area Locatio	on:	Molycorp, Wa	shington, PA		Survey Unit Classification: Unaffected			
Survey Unit Name:		Interior (MWB	39-01)					
Survey Instructions								
Measurement Type	lr	strument & Detector	Count Time	Instructions/Remarks				
Alpha/Beta Scan	Lud 89 (235	lum 2360/43- or Ludlum 0/43-37-1	N/A	NA				
Alpha/Beta TSC	Lud 89	lum 2360/43-	1 minute	Collect MWB39 locatior	shielded and unshielded bet 9-UG-15 after that section of has been removed and take	ta TSC measurement on wall containing the data point en to a low background area.		
RSC smears	Lud	llum 2929	1 minute	NA				
Gamma ER	Mic	ro Rem .	N/A	Collect exposure rate measurements at MWB39-UG-15 once the wall section has been removed and taken to a low background area. ER measurement will be collected one meter from the surface.				
All	Var	ious	Various NA					

Prepared By: ______

_____ Date: ____ 12/18/01

From: Craig Miller To: Dennis Whitlock



Radiological Services, Inc.

SURVEY POINT DESIGNATOR

Survey Area	Name: E Name: M	WB39-01	(Interior) S	iurvey of	remov	ed se	ction of wa	all
	instrumer	nt CDD	Probe	CDD	Sca	n MDA	TS	C MDA
	SN		SN		α	β	α	β
Instrument	NA	NA	NA	NA	NA	NA	NA	NA
Data	141303	11/2/02	151059	11/2/02	NA	NA	NA NA	440
	A396E	4/2/02	NA	NA	NA	NA	NA	NA
·····		Print Nar		Sig	n Na	me:	Date:	
Performed By:		inis Whitlo	ck	-		And		12-19-01
				-				
Location Number		β Shielded (cpm)	β TSC _{unsh} (cpm)	ββ net ne (cpm) (dp		β net lpm)	ER (µR/hr)	Smears
UG-1	5	216	246	30	22.3		7	N
		- <u></u>		-				
								·
<u> </u>							<u></u>	
						i		

Prepared by: Craig Miller Date: 12/18/01

			Daily	Instrumen	tation Oper	ational Che	ck Sheet			
Instrum Cal Due Source ID	ent: _2 e: # <u>54</u>	360 1 1415 (<u>1413</u> <u>11-2-07</u> Mean Source Count Rate:	Pro Ca Mea 3	ube: Il Due: an Value:	1468	/5 //~ ,2 - 0 Mean -207 Val	<u>7059</u>		
	<i>β</i>	S	Sigma Value::	Mean +3σ Value: 15			Mean 3σ Value:		150.5	
	BA	CKGROU	IND			SOURC	ECHECK		0150	
DATE	TIME	COUNT	GROSS	BKGD	COUNT	GROSS	W/I T	W/1	KES	
		TIME	COUNTS	СРМ	TIME	COUNTS	2 σ	3σ	LLD	SAT /UNSAT
11-6-01	0850	5	1119	224	1	1421				Ļ
11-7-01	0625	5	1185	237	,	1726	5		57	5
11-8-01	0640	5	1167	233	1	1374		5	58	3
11-9-01	0640	5	1110	222	1	131.9			_58	<u> </u>
11-12-01	0705		1149	230	1	1347			_36_	
11-14-01	1020	5	1212	242	(1434	5			5
12-5-01	1130	_5	1099	220	1	1455		-2	_ 3 9	
12-0-01	0700		1150	230	1	1425	5		<u> </u>	<u>_</u>
12014-01	0800	_5		263	_/	1461	3	<u> </u>	61	S
		l		L						

Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

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EFF 17.49

Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

(

Cal Due	e:	i	1-2-02	4(303		I Due:	43-89	11-2-0	15 02	1059
Source ID	# <u>54</u> ~	4 <u>1.3</u> (Mean Source Count Rate: Sigma Value::		Mea 8 +20 Mea +30	an Value: in Value:	202 214	Mean -2σ Val Mean -3σ Val	lue:	137
	BA	CKGROU	ND			SOURC	E CHECK		RES	STIL
DATE	TIME	COUNT TIME	GROSS COUNTS	BKGD CPM	COUNT TIME	GROSS COUNTS	W/1 2 σ	₩/I 3 σ	LLD	SAT /UNSAT
11-6-01	0850	5	23	5	1	172				
11-7-01	0025	5	0	0	·	103	<u> </u>			
11-8-01	0640	5	3	. 6)	126			3	- 3
11-9-01	0640	5	25	5	1	11.3	5	<u> </u>	2	
11-12-01	0705	<u></u>		. (1	175	5		<u> </u>	
11-14-01	1020	5	6	1.2	<u> l </u>	190	5	5	- <u></u>	
12-5-01	1130	5	3			182	5	5		
12-6-01	0100		4	- 8		179	3	5	6	
/# 17°C1			///	<u>_</u>		185	3	3	8	5

ALPHA EFF.= .1749

DATE:11/05/01

INSTRUMENT:2360 #141303 DETECTOR:43-89 #151059 SOURCE ID: TH-230 #S4413 OPERATING VOLTAGE: 725V

Chi² and Sigma Calculator

Co	unts	(n-n _{avg}) ²
 1	156	392.04
2	152	566.44
2	182	38.44
. З А	151	615.04
- - -	160	249.64
6	177	1.44
7	172	14.44
8	183	51.84
a	176	0.04
40	184	67.24
44	182	38.44
12	179	10.24
13	190	201.64
14	198	492.84
45	186	104.04
16	187	125.44
17	167	77.44
12	170	33.64
19	182	38.44
20	182	38.44

n avg= 175.8

A second second

 \geq_{22}

 $\Sigma (n - n_{avg})^2 = 3157.2$

 $X^2 = 17.95904$ $\sigma = 12.89063$

 $n_{avg} + 2\sigma$ 201.5813 $n_{avg} - 2\sigma$ 150.0187 $n_{avg} + 3\sigma$ 214.4719 $n_{avg} - 3\sigma$ 137.1281

RADIOLOGICAL SERVICES, INC.

MEAN COUNT RATE STANDARD DEVIATION

FROM :

з**,** Г.

DATE:11/05/01

BETA EFF.= .1344

INSTRUMENT:2360 #141303 DETECTOR:43-89 #151059 SOURCE ID: TC-99 #S4415 OPERATING VOLTAGE: 725V

n

	Ch	i' and Sigma Calculator
c	ounts	(п-п _{аvg}) ²
	1436	1836.122
1	4294	83.7225
2	1004	683.8225
3	1307	909.0225
-4	1303	14.8225
5	1397	26 5225
6	1388	3 4225
7	1395	004 1225
8	1376	294.1220
. 9	1345	2318.425
10	1338	3041.523
11	1341	2719.623
12	1450	3231.922
42	1411	318.6225
4.4	1300	9.9225
14	1272	447.3225
35	1012	17.2225
16	1369	1922.822
17	143/	8621,122
18	1486	61 6225
19	1401	44 9225
20	1397	14.0223
nt avg=	1393.15	$\Sigma(n-n_{svg})^2 = 26576.55$

x ² = 1; σ= 3	37,40008
n _{avg} + 2σ n _{avg} - 2σ	1467.95 1318.35
	1605 35

 $m_{avg} = 20$ 101010 $m_{avg} + 3\sigma$ 1505.35 $m_{avg} - 3\sigma$ 1280.95

MEAN COUNT RATE STANDARD DEVIATION

RADIOLOGICAL SERVICES, INC.

EFF. 12,55

Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

1.(

Cal Du	e: 	1	1-2-02		Ca	I Due:		11-2-01	7 <u>56</u> Z	148
Source ID	# <u>5 44</u> . B	/ <i>1.5</i> () ~ S	Mean Source Count Rate; ligma Value::	 42	Mea 42σ Mea +3σ	an Value: m Value:	1485 1527	Mean 20 Val Mean -30 Val	ue:	1317 1275
DATE	BA	CKGROU	IND			SOURC	E CHECK		RES	ULTS
DATE	TIME	COUNT TIME	GROSS COUNTS	BKGD CPM	COUNT TIME	GROSS COUNTS	W/I 2 σ	₩/I 3 σ	LLD	SAT /UNSAT
11-6-01	0955	5	934	187	1	1330	<	3	5-7	
1-7-01	0620	5	420	184	1	1419	5	5	57	
1-8-01	0640		486	197		1401	5	5	<u></u>	
. 1-0 (0640		885	177	1	1377	5	5	51	5
					N A				•	
					· · · · · · · · · · · · · · · · · · ·					
								_		······

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Radiological Services, Inc. Daily Instrumentation Operational Check Sheet

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Cal Due Source ID	# 540	// - S	Mean Source Count Rate:	, 	Γη Ca Mea <u>\$</u> +2σ Mea +3σ	an Value: Value: Value:	199 210	/1-2-02 Mean -2σ Valu Mean -3σ Valu	<u>156</u>	148 153 141	
DATE	BA	CKGROU	ND		[SOURC	ECHECK		DEG	LU (De	
DATE	TIME	COUNT TIME	GROSS COUNTS	BKGD CPM	COUNT TIME	GROSS COUNTS	W/I 2 σ	W/I 3 σ	LLD	SAT /UNSAT	
11-6-01 11-7-01	0855	<u>5</u> 5	24	5	1	199	5	5	19	.5	
<u>11-8-01</u> 11-9-01	0640	<u>5</u> 5	6	1.2	(181 174 178	5 5 5	5 -5 -5	5 7 8	<u>5</u> <u>5</u> 5	
											SEN Reel
					A	_					to SEC
											11-12
	2										

ł.

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BETA EFF.= .1255

DATE:11/05/01

INSTRUMENT:2360 #145478 DETECTOR:43-89 #156748 SOURCE ID: TC-99 #S4415 OPERATING VOLTAGE: 700V

Chi² and Sigma Calculator

n	1	Counts	(<i>п-п</i> _{avg}) ²
	1	1431	882.09
	2	1401	0.09
	3	1433	1004.89
	4	1425	561.69
	5	1322	6288.49
	6	1357	1962.49
	7	1330	5083.69
	. 8	1439	1421.29
	· 9	1399	5.29
	10	1450	2371.69
	11	1415	187.69
	12	1409	59.29
	13	1434	1069.29
	14	1442	1656.49
	15	1374	745.29
	16	1407	32.49
	17	1397	18.49
	18	1353	2332.89
•	19	1341	3636.09
	20	1467	4316.49
л	avg=	1401.3	$\Sigma (n \cdot n_{svg})^2 = 33636.2$

 $X^2 = 24.00357$ $\sigma = 42.07525$

$n_{\sigma m} + 2\sigma$	1485.45
$n_{ave} - 2\sigma$	1317.15
$n_{me} + 3\sigma$	1527.526
n ava - 30	1275.074

RADIOLOGICAL SERVICES, INC.

MEAN COUNT RATE STANDARD DEVIATION

FROM :

FROM :

ALPHA EFF.= .1744

DATE:11/05/01

INSTRUMENT:2360 #145478 DETECTOR:43-89 #156748 SOURCE ID: TH-230 #S4413 OPERATING VOLTAGE: 700V

Chi² and Sigma Calculator

n	Co	ounts	(n-n _{avg}) ²
•-	1	195	368.64
	2	179	10.24
	3	178	4.84
	Ă	171	23.04
	5	185	84.64
	6 ·	180	17.64
	7	160	249.64
	, 8	170	33.64
	Q.	175	0.64
	10 -	157	353.44
	11	174	3.24
	12	159	282.24
	42	186	104.04
	14	183	51.84
	45	187	125.44
	15	177	1.44
	10	190	201.64
	18	186	104.04
	19	170	33.64
	20	154	475.24

n_{avg=} 175.8

 $\Sigma(n-n_{avg})^2 = 2529.2$

 $X^2 = 14.3868$ $\sigma = 11.53758$

 $n_{arg} + 2\sigma$ 198.8752 $n_{arg} - 2\sigma$ 152.7248 $n_{arg} + 3\sigma$ 210.4127 $n_{arg} - 3\sigma$ 141.1873

MEAN COUNT RATE STANDARD DEVIATION

RADIOLOGICAL SERVICES, INC.

Washington, PA Paved Concrete Backgound Survey Ludlum 2360 ser: 145478 43-89 ser: 156748

Date

4

0/40			
	Beta	Alpha	
	242	1	
11/7/01	246	0	
	256	1	
	249	4	
	254	1	
	223	2	
	212	6	
	232	2	
	200	3	
	218	3	
	267	3	
	287	2	
	301	3	
	230	2	
	255	1	
	229	0	
	244	0	
	265	4	
	305	1	
	231	1	
	4946	40	
	247.3	2	

Technician:

Total Average

Reviewed By:

H. Nordby H. Monolby C. Miller Cit E Mrs.

Site: Manufacturer: Model Number: Detector: CAL Date: //-2-02 Washington, PA Ludlum 2360 Data Logger 43-89 Alpha/Beta $\neq 145478/156748$ B - 12.55%A - 17.44%

Material Surveyed:	CONCRETE	<i>u</i> ····		
Unshielded	Alpha	Shielded	Net	Net
Beta CPM	CPM	Beta CPM	Alpha CPM	Beta CPM
242		205	(37
246	0	217	0	24
256	ii	308	11	48
249	4	206	4	43
254	1	186	<u> </u>	68
223	2	218 319 1/2	2	5
212	6 Kith the	190	6	.22
232	2	194	2	38
200	3	195	3	5
218	3	190	3	28
267	3	187	3	79
187	2	251	2	36
301	3	251	3	50
230	2	253	2	-23
255	1	225	1	30
229	0	206	<u> </u>	23
244	0	198	0	46
265	4	225	4	40
305-	1	249	i	56
231	1	212	1	19
247,3	2	213.35	2	33.95

Technician: Howard Nordby Signature: Howard 22000by n E Mal Date: 1/7/0 Reviewed By:

Washington, PA Cinder Block Backgound Survey Ludlum 2360 ser: 145478 43-89 ser: 156748

Date

5748		
	Beta	Alpha
	334	0
11/7/01	299	3
	343	0
	425	2
	432	6
	254	8
	283	5
	293	3
•	254	2
	302	0
	213	4
	203	0
	257	3
	250	4
	270	7
	235	3
	253	4
	268	3
	257	′ <u>2</u>
	261	2
	5686	61
	284.3	3.05

Technician:

Total Average

Reviewed By:

H. Nordby H. Mordby C. Miller Customer

	Site:	Washington, PA	
	Manufacturer:	Ludlum	11-7-02
	Model Number:	2360 Data Logger	145 478 11-2-2
	Detector:	43-89 Alpha/Beta	156748
CAL	Date: +//0 - 11/2/	7 2.	B 12,55%
	Itu		a 17.440%
	Material Surveyed	SLECK	

Material Surveyed:	Bieck	•	-	
Unshielded	Alpha	Shielded	Net	Net
Beta CPM	CPM	Beta CPM	Alpha CPM	Beta CPM
334	Û	285	0	49
299	3	215	3	24
343	0	306	<u>്</u>	37
425	2	146 296	2	129
432	6	355	6	77
254	8	315	8	39
283	5	255	5	28
293	3	264	3	29
254	2	228	22	26
302	· a	315	٥	-13
213	4	185	4	28
203	0	(72	0	31
257	3 .	386	3	-29
250	4	224	4	26
270	7.	252	1	18
235	3	276	3	-41
253	4	296	4	-43
268	3	268	3	0
257	2	284	2	-27
261	2	252	2	it to 9
284.3	3,05	364.45	3.05	19.4

Technician: Howard Nerdby Signature: Howard 22orolby Date: 11/7/01 The Mer Reviewed By:____

Washington, PA Metal Backgound Survey Ludlum 2360 ser: 145478 43-89 ser: 156748

Date

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56748		
	Beta	Alpha
	156	3
11/7/01	118	4
	150	- 3
	141	4
	142	1
	159	8
	164	5
	152	3
	135	6
	149	1
	159	1
	166	4
	157	3
	183	4
	166	5
	152	1
	176	8
	182	3
	162	6
	179	2
	3148	75
	157.4	3.75

Technician:

Total Average

Reviewed By:

H. Nordby H. 7700by C. Miller C. Z. Mark

Washington, PA Site: Ludlum Manufacturer: 145478 Model Number: 2360 Data Logger 43-89 Alpha/Beta 156 748 Detector: (1AL Date: 11-2.02 ial Surveyed. mELAL

B- 12.55%0 a 17.44 %

Unshielded	Alpha	Shielded	Net	Net
Beta CPM	СРМ	Beta CPM	Alpha CPM	Beta CPM
156	3	115	3	41
118	4	142	4	-24
150	3	130	3	20
141	4	137	4	4
142	1	169	1	-27
159	8	169	8	-10
164	5	167	5	- 3
152	3	184	3	-32
135	6	164 +64 14	6	-29
149	ĺ	157		-8
159	1	151	i	8
166	4	189	4	-23
157	3	162	3	- 5-
183	4	194	4	-11
166	.5	210	5	- 44
152		155	1	- 3
176	8	261	8	- 85
182	3	230	3	-48
162	6	290	6	-128
179	2	251	2	- 72
157.4	3,75	181.35	3,75	-23.95

Technician: Heward Nordby Signature: Howard zrarolby Date: 11/7/01

Reviewed By:_

Washington, PA Wood Backgound Survey Ludlum 2360 ser: 145478 43-89 ser: 156748

Date

-

6748			
[Beta	Alpha	
	154	2	
11/7/01	195	1	
	206	1	
	277	8	
	156	2	
	173	3	
	162	1	
	135	1	
	205	3	
	149	1	
	159	0	
	161	4	
	177	0	
	157	1	
	145	1	
	173	0	
	194	1	
	200	0	
	191	0	
_	185	1	
	3554	31	
	177.7	1.55	

Technician:

Total Average

Reviewed By:

H. Nordby 4. 77000by C. Miller Criftler

CAL	Site: Manufacturer: Model Number: Detector: Date: ++/+/0 (11/2/01)	Washington, P Ludlum 2360 Data Log 43-89 Alpha/E	PA gger 1-15478 Beta 156748 B 12.2 A 17.1	バース・Cス 55% 44 例	
	Unshielded Beta CPM	Alpha CPM	Shielded Beta CPM	Net Alpha CPM	Net Beta CPM
	152	2	149	2	5
	195	1	187	1	8
	206	i	190	1	16
	271	ÿ	148	8	- 79
	156	2	160	2	- 11
	173	3	(7)	3	.2
	162	1	188	1	-26
	135	1	182	/	- 47
	the 19205	3	195	3	10
	149	1	190	į į	-41
	159	0	174	0	-15
	161	4	167	ч	-6
	177	0	186	0	-9
	152	ι	182		-25
	145	1	177	1	-32
	173	0	167	<u> </u>	6
	194	1	175	1	19
	200	0	188	Ċ	12
	191	0	176	0	1.5
	185-)	172		13
	176	5.15	264.2	5.15	11/2 01

Technician: HowArd Nerdby Signature: How and morely Date: 11/7/01 ÷. Reviewed By:

Molycorp Washington PA site background assessment Poured Concrete Surfaces

Ludlum 2350-1 serial number: 134735 43-89 serial number: PR-149171

-0-00 Schul Hul		
Measurement		unshielded
Number		Beta cpm
1	11/7/01	429.0 ⁻
2	11/7/01	498.0
3	11/7/01	515.0
4	11/7/01	433.0
5	11/7/01	453.0
6	11/7/01	406.0
7	11/7/01	375.0
8	11/7/01	431.0
9	11/7/01	435.0
10	11/7/01	431.0
11	11/7/01	414.0
12	11/7/01	467.0
13	11/7/01	444.0
14	11/7/01	431.0
15	11/7/01	395.0
16	11/7/01	435.0
17	11/7/01	445.0
18	11/7/01	426.0
19	11/7/01	419.0
20	11/7/01	454.0
Average cpm		436.8
Standard		

Deviation

31.706881

nb =

0.5770591

nb = ((t97.55% x stdev)/(0.2 x average))2 Surveyors Name: Craig Miller

Jun EMU
Molycorp Washington PA site background assessment Generic Surfaces

Ludlum 2350-1 serial number: 134735 43-89 serial number: PR-149171

Measurement		unshielded
Number		Beta cpm
- 1	11/7/01	302.0
2	11/7/01	298.0
3	11/7/01	313.0
4	11/7/01	314.0
5	11/7/01	311.0
6	11/7/01	282.0
7	11/7/01	299.0
8	11/7/01	331.0
9	11/7/01	298.0
10	11/7/01	326.0
11	11/7/01	321.0
12	11/7/01	332.0
13	11/7/01	330.0
14	11/7/01	307.0
15	11/7/01	317.0
16	11/7/01	328.0
17	11/7/01	324.0
18	11/7/01	359.0
19	11/7/01	324.0
20	11/7/01	344.0
Average com		318.0

Standard Deviation

17.823698

nb =

0.3440486

nb = ((t97.55% x stdev)/(0.2 x average))2 Surveyors Name: Craig Miller

Location: MolyCorp Washington PA	İı	nstruments		
Material Type: Concrete	Detector: Lu	dlum 2360		
Prepared By: Craig Miller	Probe: 43-89	}		
Date: 12/18/01				
Survey Instructions : Collect a total of 20 shielded and 20 unshielded TSC measurements on poured concrete surfaces. The measurements will be collected on concrete structures that are not located on the Molycorp site and have not been impacted by Molycorp operations. Record measurement results on the attached form. Count time for the measurements will be 1 minute.				
Approved By: in Sollar		Date: /2//	18/-01	
Notes/Remarks:	In	strument Da	ta	
Survey Data	ln	strument Da		
Surveyed By:	Туре	Serial #	Cal Due	
Date/Time:				
Reviewed By:				
Date/Time:				
Background Criteria: $n_b = $ Sat:				
Reevaluated Background Criteria: n _b =	Sat: Unsat:	<u>.</u>		

.

Location: MolyCorp Washington PA		nstruments	
Material Type: Concrete	Detector: Lu	dlum 2380	
Prepared By: Craig Miller	Probe: 43-88	9	
Date: 12/18/01			
Survey Instructions: Collect a total of 20 measurements on poured concrete surfaces. Th concrete structures that are not located on the impacted by Molycorp operations. Record me form. Count time for the measurements will be 1	shielded and e measureme Molycorp sit asurement re minute.	20 unshi nts will be and hav sults on th	ielded TSC collected on re not been ne attached
Approved By:	· · · · ·	Date:	
Notes/Remarks:			<u></u>
REAdings TAKEN Q CANto	W VEC.	Stat Ion	52-1
	CANGON	TOWNS	hip
		P.A.	
Survey Data		1	
Survey Data		trument Da	
Data Times	Туре	Serial #	Cal Due
Date: 11me: 12-19-01 10.30	2429	141303	11-2-02
Date/Time: 12 / 6 / 1/ 1/1/	43-89	151059	11-2-02
Background Criteria: n. = Sat	Uneat	· · · · · · · · · · · · · · · · · · ·	
Reevaluated Background Criteria: n -			
The service new ground of the list in the service of the service	unsat		
	WELLS		

Washington, PA Concrete Backgound Survey

Fudium 234	50 ser: 1413	301		
43.89 ser:	151059		Beta	
		Unshid	Shielded	Net
		395	288	107
Date	12/19/01	353	295	58
		327	320	٦
		340	301	39
		313	285	28
		362	268	94
		346	265	81
		380	242	138
		303	251	52
	·	323	229	94
		345	243	102
		340	241	99
		326	262	64
		331	224	197
		329	237	88
		316	236	80
		328	228	<i>too</i>
		.326	270	_56
		299	215	84
		361	276	85
Total		6743	5176	1563
Average		337	259	78
Techniciar	1 :	D. Whitloo	:k 🕞	Luin 7

makes

Reviewed By:

C. Miller

Location: MolyCorp Washington PA		nstruments		
Material Type: Generic	Detector: Lu	dlum 2360		
Prepared By: Craig Miller	Probe: 43-8	9		
Date: 12/18/01				
Survey Instructions: Collect a total of 20 shielded and 20 unshielded TSC measurements generic material surfaces (i.e., wood, sheet metal, etc.). The measurements will be collected on generic materials that are not located on the Molycorp site and have not been impacted by Molycorp operations. Record measurement results on the attached form. Count time for the measurements will be 1 minute.				
Approved By:		Date: /2//	18/01	
Notes/Remarks:				
· ·				
· · · · · · · · · · · · · · · · · · ·				
· · ·				
Survey Data	lr	strument Da	ita	
Surveyed By:	Туре	Serial #	Cal Due	
Date/Time:				
Reviewed By:				
Date/Time:				
Background Criteria: n _b = Sat:	Unsat:			
Reevaluated Background Criteria: $n_b = $	Sat:			
9	Unsat:			

Location: MolyCorp Washington PA		Instruments		
Material Type: Generic	Detector: Li	udium 2360		
Prepared By: Craig Miller Probe: 43-89				
Date: 12/16/01				
Survey Instructions: Collect a total of 20 shielded and 20 unshielded TSC measurements generic material surfaces (i.e., wood, sheet metal, etc.). The measurements will be collected on generic materials that are not located on the Molycorp site and have not been impacted by Molycorp operations. Record measurement results on the attached form. Count time for the measurements will be 1 minute.				
Approved By:		Date: 10/	alai	
Notes/Remarks:				
REACHINGS TAKEN & CANGON V.F.C. SHAFION 52-1 CANGEN TOWNShip				
		Px	F.	
Survey Data	in	strument Da	ita	
Surveyed By: DENNIS whitlack	Туре	Serial #	Cal Due	
Date/Time: 12-19-01 0930	2929	14/303	11-2-02	
Reviewed By:	43-8-9	151059	11-2-02	
Date/Time: 12-19-01 14:00				
Background Criteria: np = Sat:	Unsat: _			
Reevaluated Background Criteria: n _b ≖	Sat: Unsat:	,		

Washington, PA Generic Backgound Survey Ludium 2360

43-89 ser: 151059		Beta			
		Unshid	Shielded	Net	
		218	209	Ŷ	
Date	12/19/01	242	202	0	
		216	194	22	
		193	179	14	
		190	190	· 0	
		194	202	-8	
•		185	178	<u> </u>	
		207	19.3	14	
		190	175		
		139	181	8	
		211	190	_21	
		193	172		
		200	171	29	
		182	186	<u> </u>	
		195	209	-14	
		17.6	179	<u>*3</u>	
		191	179	12	
		202	188	14	
		198	194	4	
Total		177	181	-4	
1 OTBI	·	1904	1 2 2 2 1	157	
Average	1	195	187		

Total	
Average	
Techniciar	I;

Reviewed By:

D. Whitlock

C. Miller

Distales

6 to 6 9089

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Washington, PA Paved Concrete Backgound Survey Ludlum 2360 ser: 14130+3 6m 43-89 ser: 151059

Date

4

059			
	Beta	Alpha	
	287	4	
11/6/01	293	3	
	319	5	
	219	2	
	280	1	
	288	5	
	265	3	
	232	2	
	203	4	
	224	3	
	287	5	
	292	2	
	296	0	
	286	2	
	225	0	
	308	4	
	282	3	
	277	3	
	290	.3	
	276	2	
	5429	56	
	271.45	2.8	

Technician:

Total Average

Reviewed By:

D. Riley pland J. Role C. Miller Cit Thick

J

141 3 03 151 0 5 9 11-02-02

Site:	Washington, PA
Manufacturer:	Ludlum
Model Number:	2360 Data Logger
Detector:	43-89 Alpha/Beta
Date:	-

Material Surveyed: Concrete

Unshielded	Alpha	Shielded	Net	Net
Beta CPM	СРМ	Beta CPM	Alpha CPM	Beta CPM
287	4	258	. 4	29
293	3	247	3	46
319	5	284	5	35
219	ス	260	ス	- 41
280	1	272	1	e .
288	5	324	5-	- 36
265	3	333	3	-68
232	2	297	2	-65
203	4	271	4	-63
224	3	288	3	-64
287	5	344	5	-57
292	2	335	2	-43
296	C	334	0	-38
286	ス	306	<u>२</u>	-20
225	0	265	ۍې	-40
308	4	299	4	Ĩ
282	3	314	3	-32
277	3	286	3	- 9
290	3	241	3	49
276	2	294	2	-18
			2.8	-21.15

Technician: Dave Riley Signature: Naud J. R. Date: 11-6-01 Reviewed By

Washington, PA Cinder Block Backgound Survey Ludlum 2360 ser: 14130+3 cm 43-89 ser: 151059

Date

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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	1059			
$\begin{array}{r c c c c c c c c c c c c c c c c c c c$	i	Beta	Alpha	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		393	1	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	11/6/01	335	24	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		325	3	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		444	9	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		404	3	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		297	3	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		329	4	
267 4 301 4 233 3 236 0 237 0 231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295.5 4.35		225	7	
301 4 233 3 236 0 237 0 231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295.5 4.35		267	4	
233 3 236 0 237 0 231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295 5 4 35		301	4	
236 0 237 0 231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295 5 4 35		233	3	
237 0 231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295 5 4 35		236	0	
231 6 266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295 5 4.35		237	0	
266 3 280 2 310 3 272 3 307 5 218 0 5910 87 295.5 4.35		231	6	
280 2 310 3 272 3 307 5 218 0 5910 87 295 5 4.35		266	3	
310 3 272 3 307 5 218 0 5910 87 295 4 35		280	2	
272 3 307 5 218 0 5910 87 295 5 4 35		310) 3	
307 5 218 0 5910 87 295 5 4.35		272	2 3	
218 0 5910 87 295 5 4.35		307	7 5	
5910 87 295.5 4.35		218	3 0	
295.5 4.35		5910) 87	
200.0		295.5	5 4.35	

Technician:

Total Average

Reviewed By:

D. Riley Janoy Roley C. Miller C. Miller

141303

151059

5 13,44 ⁽¹⁾ ...

13 499.

Site:	Washington, PA
Manufacturer:	Ludlum
Model Number:	2360 Data Logger
Detector:	43-89 Alpha/Beta
Date:	· .

Unshielded Beta CPM	Alpha CPM	Shielded Beta CPM	Net Alpha CPM	Net Beta CPM
393	1	371	1	22
335	24	336		- 1
325	3		· · · · · · · · · · · · · · · · · · ·	3
	ÿ	573	· · · · · · · · · · · · · · · · · · ·	51
	3	×13	.:	111
297	3	340	3	- 43
329	4	347	4	-18
225	7	२४८	· · · · · · · · · · · · · · · · · · ·	-15
267	4	3.76	÷ 7	- 4
301	4	321	· · · · · · · · · · · · · · · · · · · ·	- 56
233	3	304		-76
236	<i>C</i> .	x '> 6	· · · · · · · · · · · · · · · · · · ·	-30
237	C			1
231	6	24		-13'
2/6	3	<u> </u>		-12
280	2	295	2	- 15
<u> </u>	-3	270		40
<u>, , , , , , , , , , , , , , , , , , , </u>		<u> </u>	· · ·	- 35
3,7	5	269	5	33
218	<u>د</u>	265		- 4 7
2955			4.35	- 51

Serial #: Serial #:

Av

Technician: Dave Riley Signature: planing J. P. J.C. Date: 11-6 - 01 Reviewed By: C: 75 AIC

11-02-02

Washington, PA Metal Backgound Survey Ludlum 2360 ser: 14130+? 43-89 ser: 151059

Date

2

1059		· ·	
	Beta	Alpha	
	154	1	
11/6/01	170	2	
	168	1	
	154	1	
	200	10	
•••	189	9	
	207	3	
	174	7	
	199	. 6	
	203	5	
	169	3	l
	184	2	
	145	3	
	208	4	
	211	. 5	
	210	1	
	165	4	
	196	4	
	192	0	
	180	3	
•	3678	74	
	183.9	3.7	

Technician:

Total Average

Reviewed By:

D. Riley Sandy Rule

141303 11-0202

Site:	Washington, PA
Manufacturer:	Ludlum
Model Number:	2360 Data Logger-
Detector:	43-89 Alpha/Beta
Date	

Material Surveyed: metal

Unshielded Beta CPM	Alpha CPM	Shielded	Net	Net
Deta Crivi	Crivi	Beta CPM	Alpha CPM	Beta CPM
154	/	204	1	- 50
170		199		- 29
165	1	201	1	-33
154	<u> </u>	207	1	- 5 <u>-</u> ?
200	<u>/o</u>	7 .		24
189	9	247	ή	-58
207	3 .	.266	7	->' Y
174	7	<u> </u>	7	÷ 3
(19	2	.245	(,	ΥĠ
203	5	257	5	- 54
169	3	6، لح	3	-37
184	<u> </u>	242		53
145	3	153	3	- 3
20S	<u> </u>	<u>ג ג ג ג ג ג ג ג ג ג ג ג ג ג ג ג ג ג ג </u>	4	- 4.2
211		354	5	41
210		263	5	- 53
165	:4	ي د ج	.+	- 53
1 4 le	7	234	Ÿ.	- 33
192	<u> </u>	201-	<u>.</u>	5
180	. 3	2.1.2	3	5
			3,9	-37,6

Technician: Dave Rivey Rle Signature: Naid Date: 11-6:01 Reviewed By:

Washington, PA Wood Backgound Survey Ludlum 2360 ser: 1413073

Date

	Beta	Alpha]
	216	1	
11/6/01	193	3	
	171	1	
	176	0	
· · · · ·	226	2	
•	171	4	
	205	4	
	155	1	
	175	0	
	160	2	
	159	0	
	162	1	
	202	4	
	223	0	
	193	2	
	145	1	
	238	5	
	211	1	
	233	0	
	203	1	
	3817	33	•
	190.85	1.65	
	D. Riley	Janiel R. E.	5
	C. Miller	in 8 /1	7. A

Technician:

Total Average

Reviewed By:

Site:	Washington, PA			· · ·
Manufacturer:	Ludlüm			
Model Number:	2360 Data Logger	Serial #:	141303	$(1 - \alpha) = \alpha$
Detector:	43-89 Alpha/Beta	Serial #:		
Date:			17/051	

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Unshielded Beta CPM	Alpha CPM	Shielded Beta CPM	Net Alpha CPM	Net Beta CPM
216	1	219	1	٤
193	3	195	3	.২
171	1	164	1	7
176	с .	19.2	C	16
226	2	× 2 3	. ک	
171	4	253	<u>۲</u>	٥.X
205	4	301	4	96
155	1	2.51	<u>(</u>	96
175	Ċ	4.9	· · · ·	£ 9
160	<u> </u>	144 A	2	5.2
159	o	165	ى	106
162	1	1518	1	36
202	4	240	4	3 5
123	:	2 -7	C	17
193	2	<u> </u>	٠	. 1
145	1	21	1	66
238	5	242	5	.
<u>211</u> .		.216		>
233	c			
203	//	.? ~ 3'	1	5
.*			1.65	4195

Technician: Dave Riley Signature: pland J. C.l. Date: 11-6-01 Mu Reviewed By:

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FAX NO. : 8604446110

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RADIOLOGICAL SERVICES, INC.

Chain of Custody Record

Sne: - Samp le Type	Molycorp Lalashington, h) ipes	<u>ρ</u> Α	Seal Number	MWB42-01 (shee
	Sampling Location	Date Tir	me Collected By	Remarks (including container and related information
ILGOL	B104 42	11.12.02 143	30 Nordby	Count for years
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UG03				
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LG13				· · · · · · · · · · · · · · · · · · ·
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	RA	DIOLO	GICA	L SERVICE	s, INC.		
		Chain	of Cus	tody Record	·		
Site	Molucore 1	Vashiryt	on PA	Seal Number	MWB39-01		
Sample Type	Wipes						
Mumber	Sampling	Date	Time	Collected By	Remarks (including container and related information		
MIND 34-	BIDG 39	11/8/01	143C	Nordby /Kiley	Count for gress alphe		
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Castody Log (Name, Date, Time

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