

2009 Annual Inspection and Radiological Survey Results for the Piqua, Ohio, Decommissioned Reactor Site

Summary

The former Piqua Nuclear Power Facility (PNPF), a decommissioned nuclear power demonstration facility, was inspected on April 9, 2009. The site, located on the east bank of the Great Miami River in Piqua, Ohio, is in good physical condition. There is no requirement for a follow-up inspection.

The PNPF consists of a reactor containment building and an associated auxiliary building that are both used by Piqua Power Systems (PPS) as storage space, shops, and offices. The city will lease the property until radioactive decay allows the facility to be released for unrestricted use. At that time, ownership reverts to the city.

The City of Piqua is constructing a water retention tank immediately east of the facility. Construction of the water retention tank should not affect the integrity of the PNPF entombment.

Deterioration in the interior of the containment building, noted in previous inspections, (e.g., peeling lead-based paint, plaster falling off the walls in some areas, worn pipe insulation) appears to be about the same.

PPS completed some modifications to the facility since the 2008 inspection. Specifically:

- A small wall was removed from Room B-3 on the 79 foot level,
- Rooms R-6 and R-7 were painted, shelving was added, and an air duct connecting the two rooms was removed,
- New epoxy flooring was installed in Rooms 115 and 121-A on the 100 foot level, and
- A new air conditioner was installed in Room 121-A on the 100 foot level.

The cathodic protection system and the high water alarm system continue to be routinely inspected and maintained by PPS.

An annual radiological survey was performed in conjunction with the annual inspection. This year samples were collected at 106 locations. Survey results revealed no removable contamination at any of the 106 sample points. Only two direct readings exceeded the minimum detectable activity (MDA): the floor drain at the 56 foot level (2,240 dpm/100 cm²), and the top of an air duct on the 83 foot level (812 dpm/100 cm²). Beta activity has been detected in the past at the floor drain. Both readings are well below the action level of 5,000 dpm/100 cm².

1.0 Introduction

This report presents the findings of the annual U.S. Department of Energy (DOE) inspection of the Piqua Nuclear Power Facility (PNPF) in Piqua, Ohio. This facility is assigned to the DOE Office of Legacy Management (LM) for long-term custody and care.

K. Broberg (Chief Inspector), R. Mowen and G. Weidenbach (Assistant Inspectors), all of S.M. Stoller Corporation, the contractor for the DOE Office of Legacy Management, conducted the inspection on April 9, 2009.

Mr. Sommer, the Power Systems Director of PPS, was contacted at the start of the inspection. It was learned that Mr. Sommer is retiring, and Mr. William Wheelock will be assuming his responsibilities. Mr. Wheelock participated in most of the inspection. A copy of this report will be forwarded to Mr. Wheelock.

The purpose of the inspection was to confirm the integrity of the visible features at the facility and to verify that no radiological or non-radiological hazards are present. The inspection took approximately 5.5 hours.

2.0 Inspection Results

Features discussed in this report are shown on the attached drawings. Photographs to support specific observations are identified in the text and on the drawings by photograph location (PL) numbers.

Exterior

The Containment Building exterior was refurbished around 1995. The exterior of the reactor containment building is in good shape (PL-1). Rust stains that were present on the northeast side of the containment building during the 2008 inspection are no longer present (PL-2).

Surrounding Area

The city water department began construction of a large water retention tank immediately east of the facility since the 2008 inspection. The foundation for the tank was installed at the time of the inspection this year (PL-3). Construction of the water retention tank should not affect the integrity of the PNPf entombment. No other changes in the area immediately surrounding the Piqua facility were observed.

Interior

Inspectors examined the facility interior looking for evidence of structural deterioration and entombment degradation. Interior concerns remain unchanged from the 2008 inspection (i.e., peeling lead based paint, falling plaster, and deteriorating pipe insulation).

56 foot level: The 56-foot level is the lowest level of the facility. PPS uses this level to store cable spools. The amount of peeling paint on the interior walls appears to be unchanged from the 2008 inspection (PL-4). Peeling paint that is falling onto the floors was analyzed in 2006 and found to contain 0.35 percent lead. The paint will probably continue to peel and fall to the floor. Inspectors are not exposed to unacceptable risk when performing routine inspection activities. PPS is aware of the presence of lead-based paint.

A spiral staircase is present in the west corner of the facility. Plaster is falling off the walls at the base of the spiral staircase at the 56-foot level (PL-5). This damage was noted in the 2008 inspection report. Plaster is also damaged just outside the entrance to the spiral staircase at the 56-foot level. It appears that some of the cable spools have rolled into the walls, damaging the plaster, as shown in PL-6.

79 foot level: Conditions concerning broken plaster, peeling paint and possible water damage noted in the 2008 inspection appeared to be about the same. Possible water damage is present on the 79 foot level in room B-1. The southwest side of this room is the curved wall of the containment structure. Rust is present along the upper seam of this wall, where the wall meets the ceiling, and rust staining is present on the wall (PL-7). Paint is also peeling off the wall of Room B-3 (PL-8).

PPS modified Room B-4. The room is used to store large equipment and trailers. A small section of wall in the back of the room was removed in order to utilize more of the room for storage (PL-9, PL-10, and PL-11). The inspection map has been updated accordingly.

PPS completed some minor remodeling in the OAP room. Shelves and pegboards were mounted on freshly painted walls. The inspection map has been updated accordingly.

100 foot level: PPS completed some minor remodeling in Rooms R-6 and R-7. The rooms were cleaned out, walls freshly painted, and shelves installed. An air duct opening that once connected the two rooms was filled in and painted over (PL-12 and PL-13). New epoxy flooring was installed in Rooms 115 and 121-A. A new air conditioner unit was installed in Room 121-A. The room containing the rectifier unit control panel was freshly painted. The 100-foot level inspection drawing has been updated accordingly to reflect these changes.

2.1 Cathodic Protection System

A cathodic protection system is installed on the Containment Building to protect the steel shell. Corrosion of the pressure vessel could allow water to enter and spread radioactive contamination beyond the entombment.

The system consists of 10 carbon (graphite) electrodes, buried radially approximately 10 feet to 20 feet from the building foundation, and a rectifier unit that provides DC current. The rectifier unit is mounted in the break room south of and outside the airlock on the 100-foot level (PL-14). Each carbon electrode is 3 inches in diameter and 60 inches long. The electrodes are connected to the rectifier unit by a header cable; splices are protected in flush-mounted boxes. A structure contact point for monitoring potential can be found on the shell associated with each electrode; some of the contact points also have cables remaining from an abandoned zinc anode protection system. The system also includes reference electrodes and test holes.

Maintenance of the cathodic protection system is specifically addressed in Contract AT(11-1)-1798, dated May 10, 1968, between the U.S. Atomic Energy Commission and the City of Piqua. The City agrees to maintain the system in an operational condition as long as required to preserve the integrity of the entombment until radiological decay renders the contents safe, estimated to be approximately 100 years. Maintenance requirements are not specified but include monthly inspections of the rectifier unit, recording the current and voltage output, and periodic (estimated to be every five years) inspections of the entire system by a qualified service provider. Operating and maintenance costs are borne by the City. The cathodic protection system is being checked monthly and the entire system was last checked by a qualified service provider in 2005.

2.2 High Water Alarm System

An alarm system is installed in the sump on the 56-foot level to detect high water levels before they rise to the bottom of the pressure vessel. This system is designed to prevent immersion and accelerated corrosion of the pressure vessel. The alarm triggers when the sump fills to near overflow, alerting personnel to both high water and possible sump pump failure. The alarm registers in the power plant on the Supervisory Control and Data Acquisition system, which is monitored 24 hours a day by an operator. The alarm system is included in the monthly building inspection. The reactor sump alarm test log indicates that the alarm is being tested monthly.

2.3 Radiological Survey

S.M. Stoller staff performed the annual radiological survey on the interior of the reactor containment building, auxiliary building, and exterior areas. A total of 106 sample locations were investigated for both removable and surface contamination using direct measurements and smears for the detection of alpha and beta-gamma activity. Gamma exposure rates also were measured. Prior to 2008, 111 sample locations were surveyed. Locations 1–5 were removed from the survey in 2008 because the HVAC equipment being sampled was removed.

As discussed previously, PPS did some minor modifications to rooms R–6 and R–7 in 2009, including the elimination of a connecting air duct between the two rooms. Smear sample #46 was collected from this air duct prior to 2009. Survey location #46 is now located on the floor of Room R–7 in front of the former air duct.

While surveying the designated exterior areas inspectors found that the door to Room 125, which is located off of the loading dock, locked. PPS prefers to keep this door locked. In the future, inspectors will need to have the door unlocked to get radiation sample 109 and gamma readings from inside the room.

Table 1 presents information on the instrumentation used to perform the survey. General area gamma exposure rates measured throughout the facility ranged from 5 to 15 $\mu\text{rem/hr}$.

Table 1. Instrumentation for Radiological Survey

Type of Measurement	Radiation	Detector	Meter	Background	Correction Factor	Minimum Detectable Activity
Surface Activity	Alpha	Ludlum 43–89 #5785	Ludlum 2360 #5751	6 cpm/100 cm ²	8 alpha	68 dpm/ 100 cm ²
Surface Activity	Beta	Ludlum 43–89 #5785	Ludlum 2360 #5751	263 cpm/100 cm ²	4 beta	311 dpm/ 100 cm ²
Exposure Rate	Gamma	N/A	Eberline FH40 GL #13664	14 $\mu\text{rem/hr}$	N/A	1 $\mu\text{rem/hr}$
Removable Activity	Alpha	N/A	Ludlum 3030/ #5903	0.0 cpm	Efficiency 38.8%	7.0 dpm/ 100 cm ²
Removable Activity	Beta	N/A	Ludlum 3030/ #5903	30.6 cpm	Efficiency 35.6%	86.0 dpm/ 100 cm ²

Key: cpm = counts per minute; dpm = disintegrations per minute; cm² = square centimeters;
 $\mu\text{rem/hr}$ = microrem per hour

Table 2 presents direct surface and removable activity results. Direct surface measurement results indicate the floor drain at the lowest level of the containment building exhibited a direct beta activity of 2,240 disintegrations per minute per 100 square centimeters (dpm/100 cm²). The smear from this location indicated that no removable activity is present. This result is consistent with previous surveys. Also, one location on the 83 foot level (Location #28) located on the HVAC duct had a reading of 812 disintegrations per minute per 100 square centimeters (dpm/100 cm²) direct beta source (smear < MDA). All other direct measurements were below the MDA.

No removable contamination was found at any of the 106 sampling points. Attached are the survey maps that indicate the location of each direct measurement and smear sample. The maps also indicate the results of the gamma exposure rate survey conducted at PNPf.

Table 2. Results of the 2009 Radiological Survey at the Piqua, Ohio, Decommissioned Reactor Site

Location/ Building	Elevation ^a	Direct/ Smear #	Direct Reading Activity dpm/100 cm ² Alpha / Beta		Removable Activity dpm/100 cm ² Alpha / Beta		Remarks
Outside	111 ft.	1	NA	NA	NA	NA	HVAC Equip. Removed
Outside	111 ft.	2	NA	NA	NA	NA	HVAC Equip. Removed
Outside	111 ft.	3	NA	NA	NA	NA	HVAC Equip. Removed
Outside	111 ft.	4	NA	NA	NA	NA	HVAC Equip. Removed
Outside	111 ft.	5	NA	NA	NA	NA	HVAC Equip. Removed
Outside	111 ft.	6	<MDA	<MDA	<MDA	<MDA	On concrete platform
Outside	111 ft.	7	<MDA	<MDA	<MDA	<MDA	On concrete platform
Outside	111 ft.	8	<MDA	<MDA	<MDA	<MDA	On concrete platform
Outside	100 ft.	9	<MDA	<MDA	<MDA	<MDA	On concrete platform
Containment	56 ft.	10	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	11	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	12	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	13	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	14	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	15	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	16	<MDA	2,240	<MDA	<MDA	In drain
Containment	56 ft.	17	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	18	<MDA	<MDA	<MDA	<MDA	On pedestal
Containment	56 ft.	19	<MDA	<MDA	<MDA	<MDA	On drain
Containment	56 ft.	20	<MDA	<MDA	<MDA	<MDA	On sump grating
Containment	56 ft.	21	<MDA	<MDA	<MDA	<MDA	On vent by stairwell
Containment	56 ft.	22	<MDA	<MDA	<MDA	<MDA	On drain
Containment	56 ft.	23	<MDA	<MDA	<MDA	<MDA	On drain
Containment	79 ft.	24	<MDA	<MDA	<MDA	<MDA	Floor
Containment	79 ft.	25	<MDA	<MDA	<MDA	<MDA	Floor
Containment	79 ft.	26	<MDA	<MDA	<MDA	<MDA	Floor
Containment	79 ft.	27	<MDA	<MDA	<MDA	<MDA	Floor
Containment	83 ft.	28	<MDA	812	<MDA	<MDA	On top of HVAC duct
Containment	83 ft.	29	<MDA	<MDA	<MDA	<MDA	Grating on platform
Containment	83 ft.	30	<MDA	<MDA	<MDA	<MDA	Pipe adjacent to plenum
Containment	83 ft.	31	<MDA	<MDA	<MDA	<MDA	In duct
Containment	83 ft.	32	<MDA	<MDA	<MDA	<MDA	Floor grating
Containment	83 ft.	33	<MDA	<MDA	<MDA	<MDA	Pump pedestal
Containment	83 ft.	34	<MDA	<MDA	<MDA	<MDA	In drain
Containment	83 ft.	35	<MDA	<MDA	<MDA	<MDA	In drain
Containment	83 ft.	36	<MDA	<MDA	<MDA	<MDA	Pump pedestal
Containment	83 ft.	37	<MDA	<MDA	<MDA	<MDA	Stairwell
Containment	100 ft.	38	<MDA	<MDA	<MDA	<MDA	Floor

Location/ Building	Elevation ^a	Direct/ Smear #	Direct Reading Activity dpm/100 cm ² Alpha / Beta		Removable Activity dpm/100 cm ² Alpha / Beta		Remarks
Containment	100 ft.	39	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	40	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	41	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	42	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	43	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	44	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	45	<MDA	<MDA	<MDA	<MDA	On drain
Containment	100 ft.	46	<MDA	<MDA	<MDA	<MDA	On floor of Room R-7
Containment	111 ft.	47	<MDA	<MDA	<MDA	<MDA	Floor
Containment	111 ft.	48	<MDA	<MDA	<MDA	<MDA	Floor
Containment	111 ft.	49	<MDA	<MDA	<MDA	<MDA	Floor
Containment	100 ft.	50	<MDA	<MDA	<MDA	<MDA	Airlock floor
Aux. Bldg.	79 ft.	51	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	52	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	53	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	54	<MDA	<MDA	<MDA	<MDA	On drain
Aux. Bldg.	79 ft.	55	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	56	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	57	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	58	<MDA	<MDA	<MDA	<MDA	On drain
Aux. Bldg.	79 ft.	59	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	60	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	61	<MDA	<MDA	<MDA	<MDA	On drain
Aux. Bldg.	79 ft.	62	<MDA	<MDA	<MDA	<MDA	On sump cover
Aux. Bldg.	79 ft.	63	<MDA	<MDA	<MDA	<MDA	Pump
Aux. Bldg.	79 ft.	64	<MDA	<MDA	<MDA	<MDA	Floor under tank
Aux. Bldg.	79 ft.	65	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	66	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	79 ft.	67	<MDA	<MDA	<MDA	<MDA	Inside HVAC on floor
Aux. Bldg.	79 ft.	68	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	89 ft.	69	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	70	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	71	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	72	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	73	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	74	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	121 ft.	75	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	111 ft.	76	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	111 ft.	77	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	111 ft.	78	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	111 ft.	79	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	111 ft.	80	<MDA	<MDA	<MDA	<MDA	On vent duct
Aux. Bldg.	111 ft.	81	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	82	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	83	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	84	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	85	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	86	<MDA	<MDA	<MDA	<MDA	On floor drain
Aux. Bldg.	100 ft.	87	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	88	<MDA	<MDA	<MDA	<MDA	On floor drain
Aux. Bldg.	100 ft.	89	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	90	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	91	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	92	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	93	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	94	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	95	<MDA	<MDA	<MDA	<MDA	Floor

Location/ Building	Elevation ^a	Direct/ Smear #	Direct Reading Activity dpm/100 cm ² Alpha / Beta		Removable Activity dpm/100 cm ² Alpha / Beta		Remarks
Aux. Bldg.	100 ft.	96	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	97	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	98	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	99	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	100	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	101	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	102	<MDA	<MDA	<MDA	<MDA	Floor
Aux. Bldg.	100 ft.	103	<MDA	<MDA	<MDA	<MDA	Floor
Containment	56 ft.	104	<MDA	<MDA	<MDA	<MDA	On drain
Containment	100 ft.	105	<MDA	<MDA	<MDA	<MDA	On drain
Outside	100 ft.	106	<MDA	<MDA	<MDA	<MDA	Concrete floor
Outside	100 ft.	107	<MDA	<MDA	<MDA	<MDA	Concrete wall
Outside	100 ft.	108	<MDA	<MDA	<MDA	<MDA	Floor under flange
Outside	100 ft.	109	<MDA	<MDA	<MDA	<MDA	Concrete floor
Outside	100 ft.	110	<MDA	<MDA	<MDA	<MDA	Concrete floor
Containment	79 ft.	111	<MDA	<MDA	<MDA	<MDA	On HVAC duct

^a Elevations are designated as feet above the lowest floor of the original plant.

key: dpm = disintegrations per minute; cm² = centimeters squared; MDA = minimum detectable activity; NA = not applicable, < = less than

3.0 Recommendations

1. As noted at last year's inspection and on prior inspections, peeling paint was observed on areas of the interior dome walls and was falling onto the floors. The deeper levels of the facility are the ones most impacted by the peeling paint. This paint has been previously tested and found to contain approximately 0.35 percent lead (page 2).

Recommendation: The facility manager is aware that the peeling paint contains approximately 0.35 percent lead. DOE and contractor staff will follow health and safety recommendations when entering the property.

4.0 Photographs

Photograph Location Number	Azimuth	Elevation	Photograph Description
PL-1	200	Outside-Ground Level	Containment Dome.
PL-2	200	Outside-Ground Level	Containment Dome.
PL-3	120	Outside-Ground Level	New construction east of the facility.
PL-4	50	56 foot level	Peeling Paint on interior wall: 56 foot level.
PL-5	350	56 foot level	Base of Spiral Staircase: 56 foot level.
PL-6	250	56 foot level	Damage to Walls by Cable Spools: 56 foot level.
PL-7	200	79 foot level	Water corrosion along seam of wall in Room B-1: 79-foot level.
PL-8	60	79 foot level	Peeling paint, Room B-3: 79-foot level.
PL-9	150	79 foot level	Removed wall: 79-foot level.
PL-10	150	79 foot level	Removed wall: 79-foot level.
PL-11	150	79 foot level	Removed wall: 79-foot level.
PL-12	20	100 foot level	Renovations in Room R-7. Painting, shelving, removal of air duct connecting to Room R-6: 100 foot level.
PL-13	120	100 foot level	Renovations in Room R-6, Painting, shelving, removal of air duct connecting to Room R-7: 100 foot level.
PL-14	5	100 foot level	Rectifier control unit.



PIQ 4/2009. PL-1. Containment Dome.



PIQ 4/2009. PL-2. Containment Dome.



PIQ 4/2009. PL-3. New construction east of the facility.



PIQ 4/2009. PL-4. Peeling Paint on interior wall: 56 foot level.



PIQ 4/2009. PL-5. Base of Spiral Staircase: 56 foot level



PIQ 4/2009. PL-6. Damage to Walls by Cable Spools: 56 foot level.



PIQ 4/2009. PL-7. Water corrosion along seam of wall in Room B-1: 79-foot level.



PIQ 4/2009. PL-8. Peeling paint, Room B-3: 79-foot level.



PIQ 4/2009. PL-9. Removed wall: 79-foot level.



PIQ 4/2009. PL-10. Removed wall: 79-foot level.



PIQ 4/2009. PL-11. Removed wall: 79-foot level.



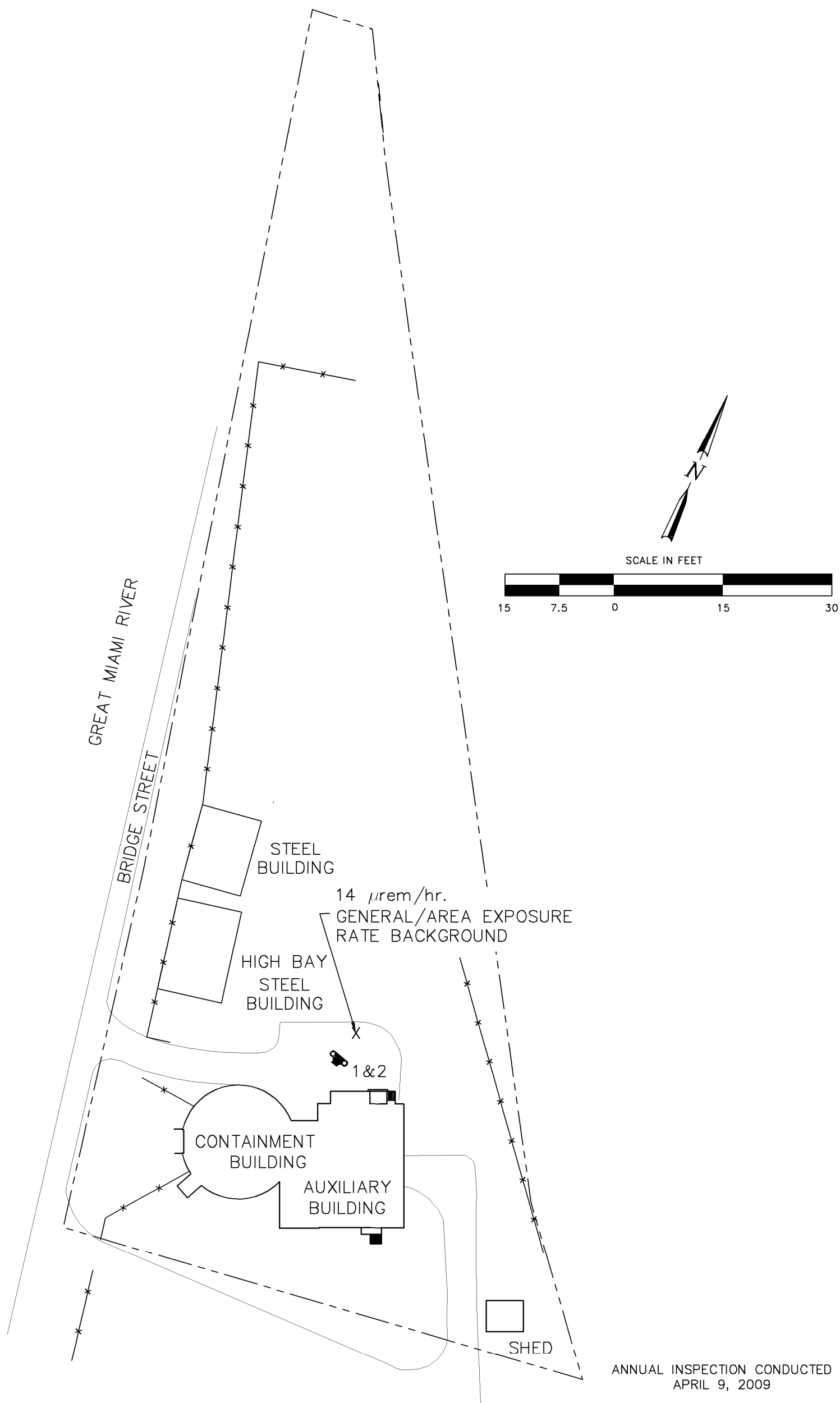
PIQ 4/2009. PL-12. Renovations in Room R-7. Painting, shelving, removal of air duct connecting to Room R-6: 100 foot level



PIQ 4/2009. PL-13. Renovations in Room R-6, Painting, shelving, removal of air duct connecting to Room R-7: 100 foot level



PIQ 4/2009. PL-14. Rectifier control unit



ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

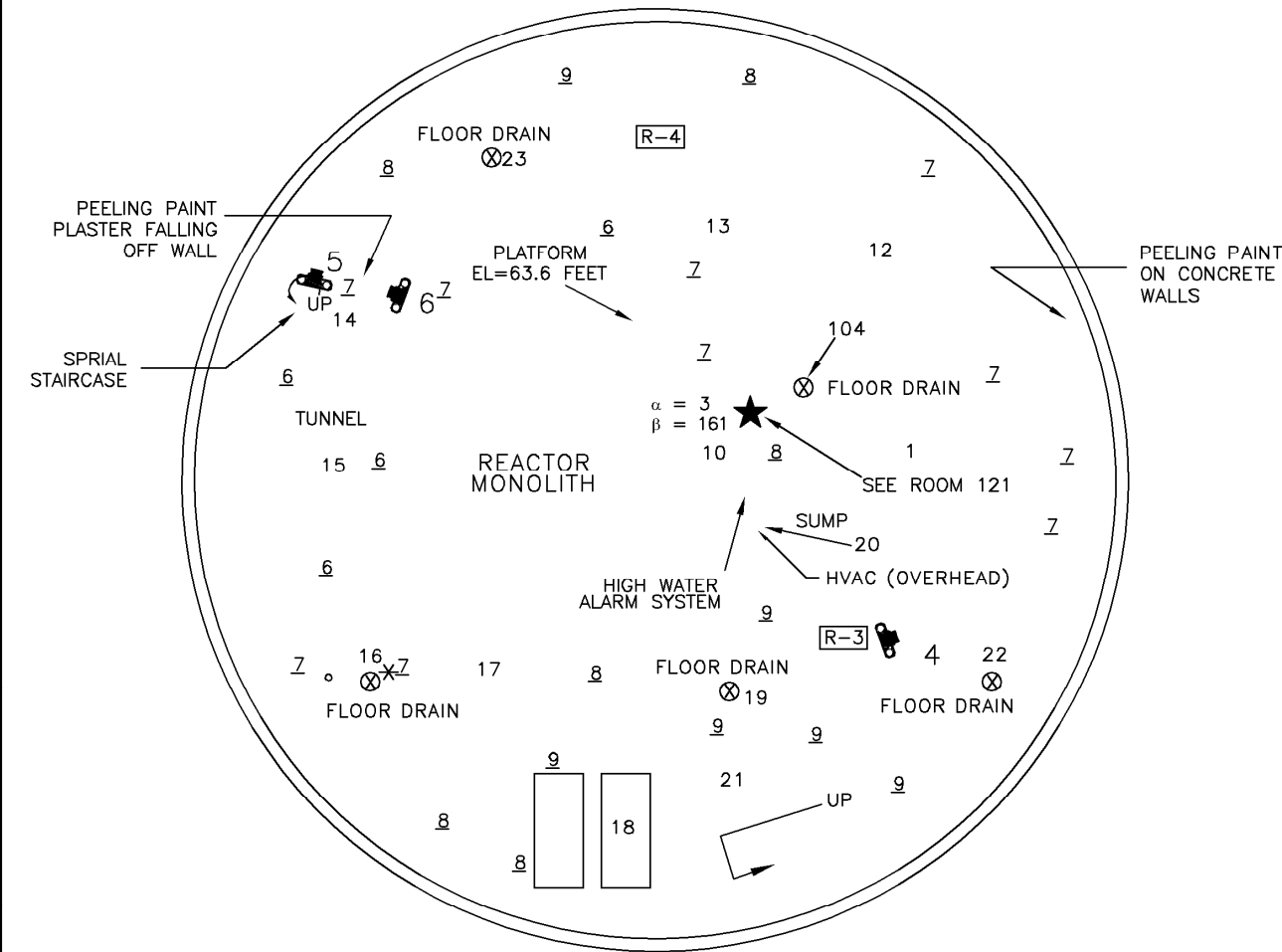
U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO

Work Performed by
S.M. Stoller Corporation
Under DOE Contract
No. DE-AC01-07LM00060

2009 ANNUAL RADIOLOGICAL SURVEY RESULTS
PIQUA DECOMMISSIONED REACTOR SITE
PIQUA, OHIO

DATE PREPARED:
MAY 27, 2009

FILENAME:
S0497900



PLAN - 56 FOOT LEVEL

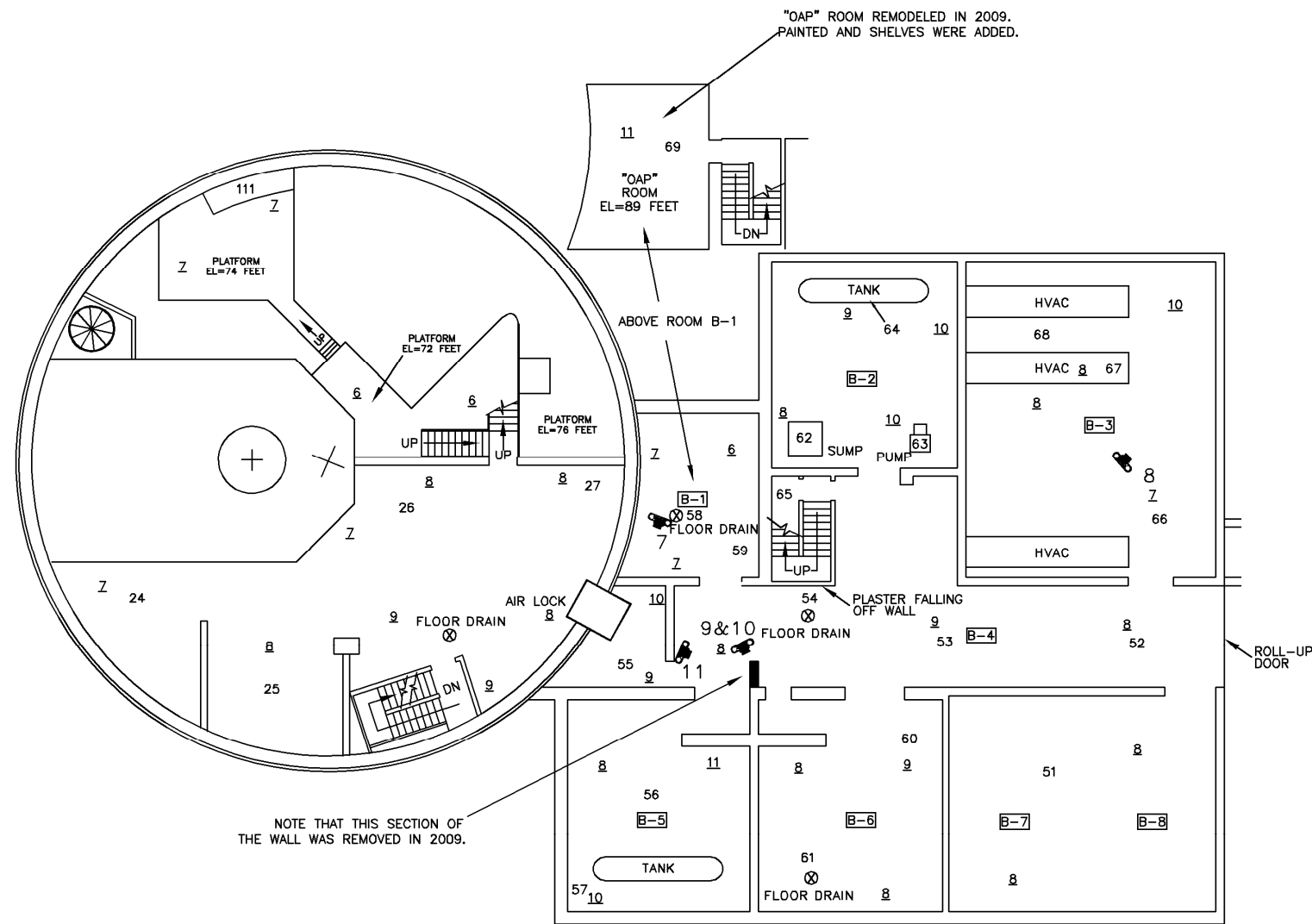
INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	6-2-09	6-2-09	6-27-09
CORRECTION FACTORS	α 8 β 4	α EFF. 16.62% β EFF. 19.98%	N/A
BACKGROUND	α 6 β 263	α 0.0 CPM β 30.6 CPM	14 μ rem/hr
KEY: NO. =GENERAL AREA EXPOSURE RATE (μ rem/hr) X NO. =CONTACT EXPOSURE RATE (μ rem/hr) NO. =SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: DATE: ROY L. MOWEN 4/9/09 REVIEWED BY: DATE:	

★ = BACKGROUND DETERMINATION LOCATION ROOM 121 @ 100' LEVEL
2360 α = 6 cpm
 β = 263 cpm

NOTE: ALL 2009 GAMMA CONTACT AND
GENERAL AREA READINGS
WERE \leq BKGD ON THE 56-FOOT LEVEL.

ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

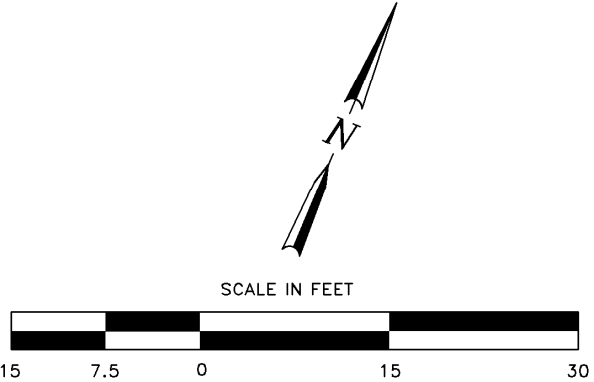
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2009 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: MAY 28, 2009	FILENAME: S0497900



PLAN - 79 FOOT LEVEL

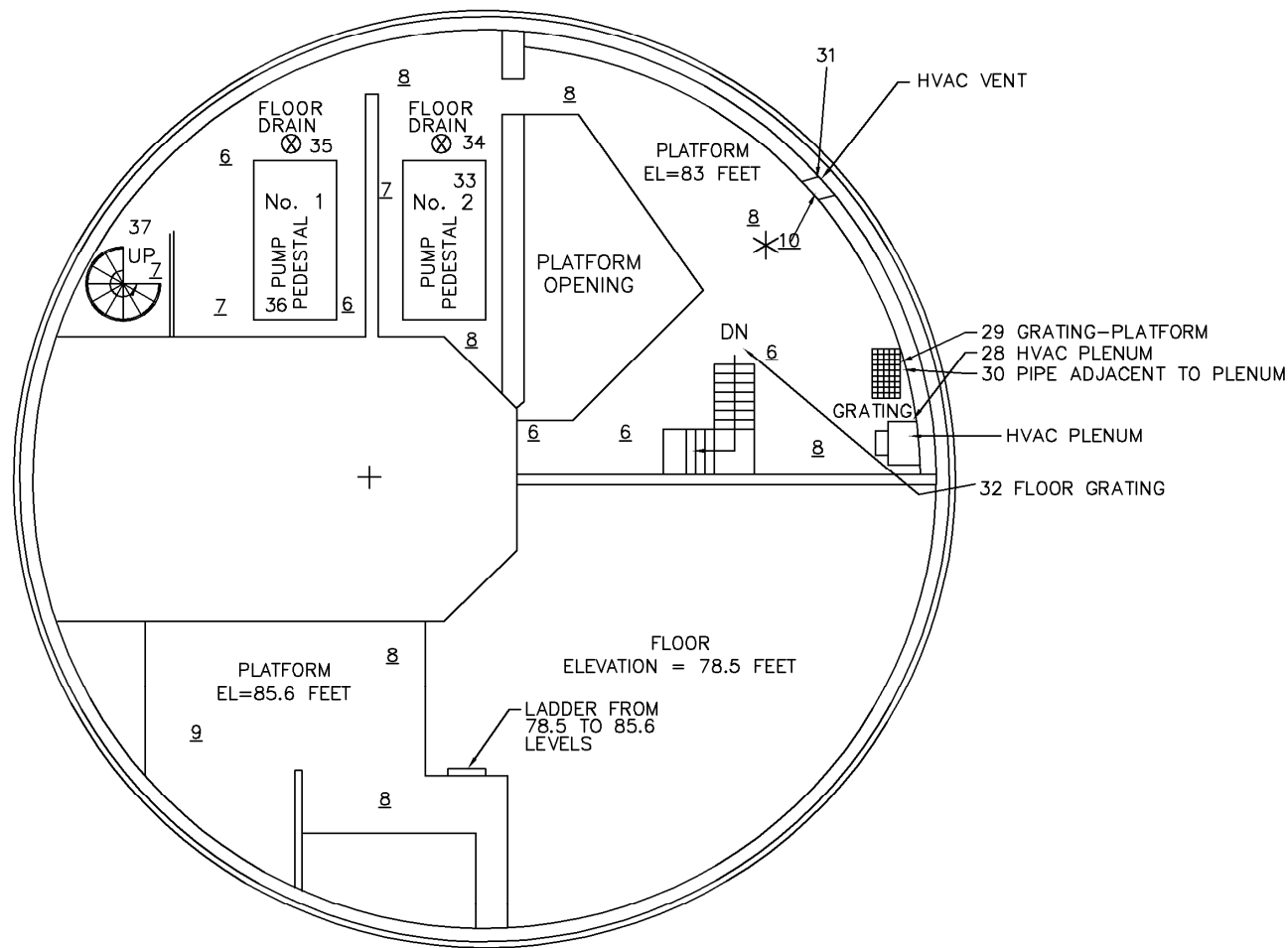
INSTRUMENT	LU DLUM 2360	LU DLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	6-2-09	6-2-09	6-27-09
CORRECTION FACTORS	α 8 β 4	α EFF. 16.62% β EFF. 19.98%	N/A
BACKGROUND	α 6 β 263	α 0.0 CPM β 30.6 CPM	14 μ rem/hr
KEY: NO. =GENERAL AREA EXPOSURE RATE (μ rem/hr) *NO. =CONTACT EXPOSURE RATE (μ rem/hr) NO. =SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: DATE: ROY L. MOWEN 4/9/09	
		REVIEWED BY: DATE:	

NOTE: ALL 2009 GAMMA CONTACT AND
GENERAL AREA READINGS
WERE \leq BKGD ON THE 79-FOOT LEVEL.



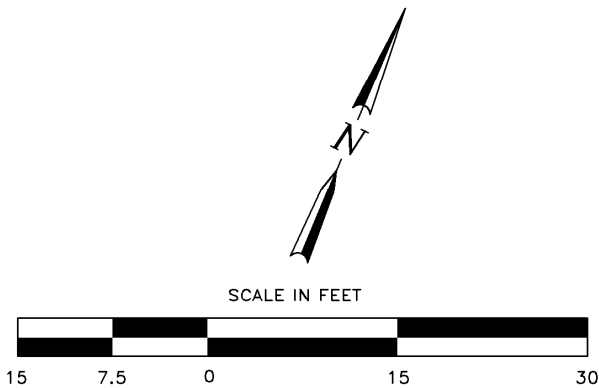
ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2009 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 4, 2009	FILENAME: S0497900



PLAN – 83 FOOT LEVEL

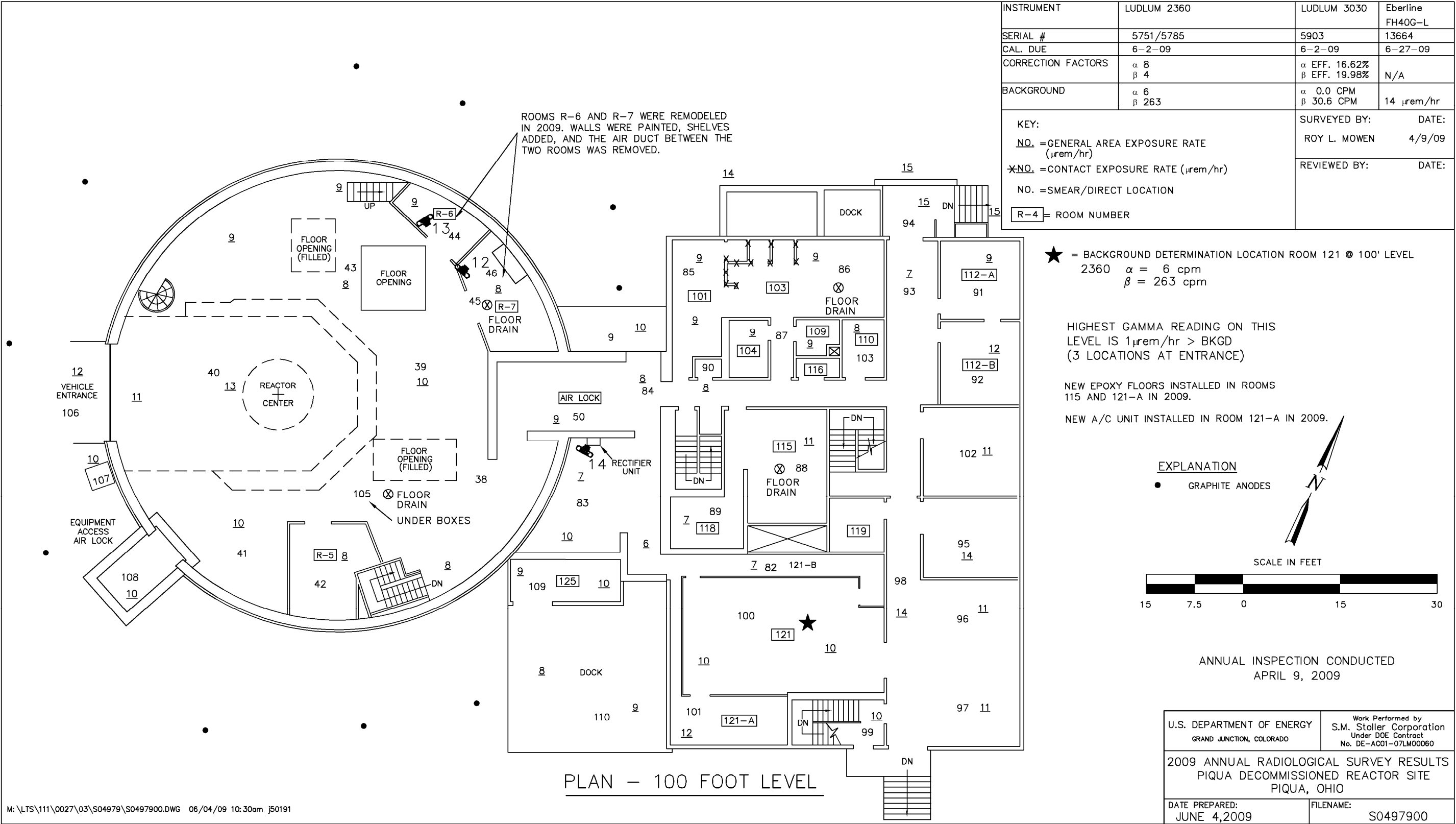
INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	6-2-09	6-2-09	6-27-09
CORRECTION FACTORS	α 8 β 4	α EFF. 16.62% β EFF. 19.98%	N/A
BACKGROUND	α 6 β 263	α 0.0 CPM β 30.6 CPM	14 μ rem/hr
KEY: <u>NO.</u> = GENERAL AREA EXPOSURE RATE (μ rem/hr) X NO. = CONTACT EXPOSURE RATE (μ rem/hr) NO. = SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: ROY L. MOWEN	DATE: 4/9/09
		REVIEWED BY:	DATE:

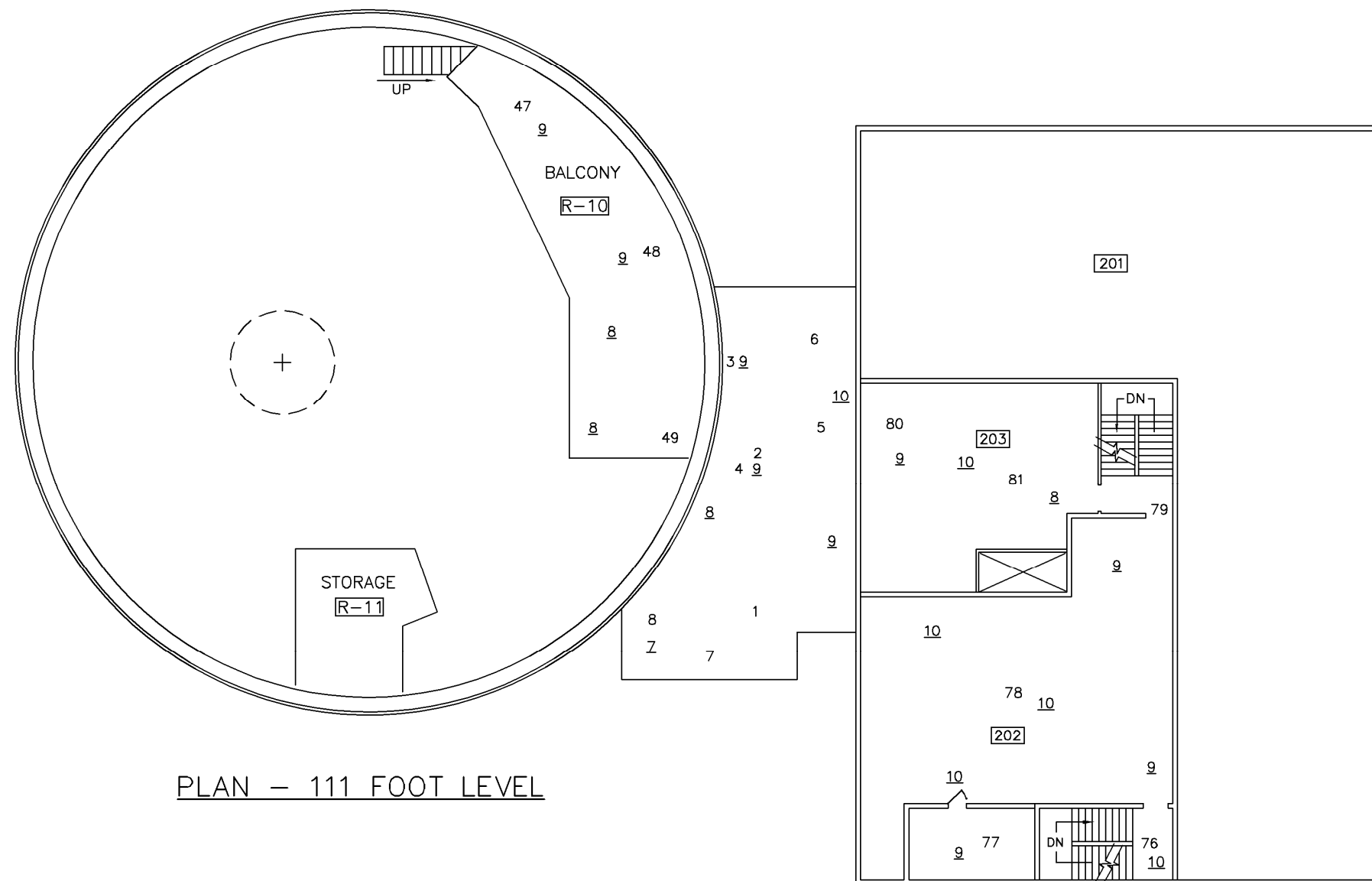


NOTE: ALL 2009 GAMMA CONTACT AND
GENERAL AREA READINGS
WERE \leq BKGD ON THE 83-FOOT LEVEL.

ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2009 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: MAY 28, 2009	FILENAME: S0497900

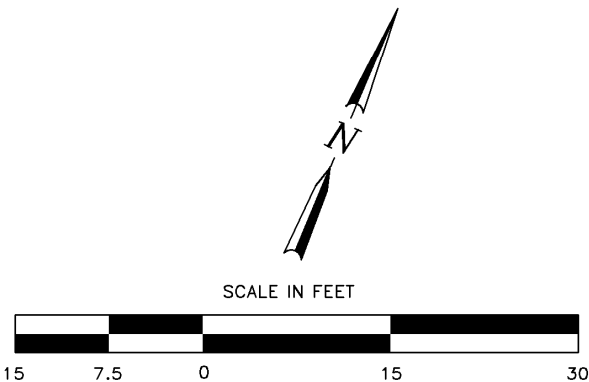




INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	6-2-09	6-2-09	6-27-09
CORRECTION FACTORS	α 8 β 4	α EFF. 16.62% β EFF. 19.98%	N/A
BACKGROUND	α 6 β 263	α 0.0 CPM β 30.6 CPM	14 μ rem/hr
KEY: <u>NO.</u> =GENERAL AREA EXPOSURE RATE (μ rem/hr) *NO. =CONTACT EXPOSURE RATE (μ rem/hr) NO. =SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: ROY L. MOWEN	DATE: 4/9/09
		REVIEWED BY:	DATE:

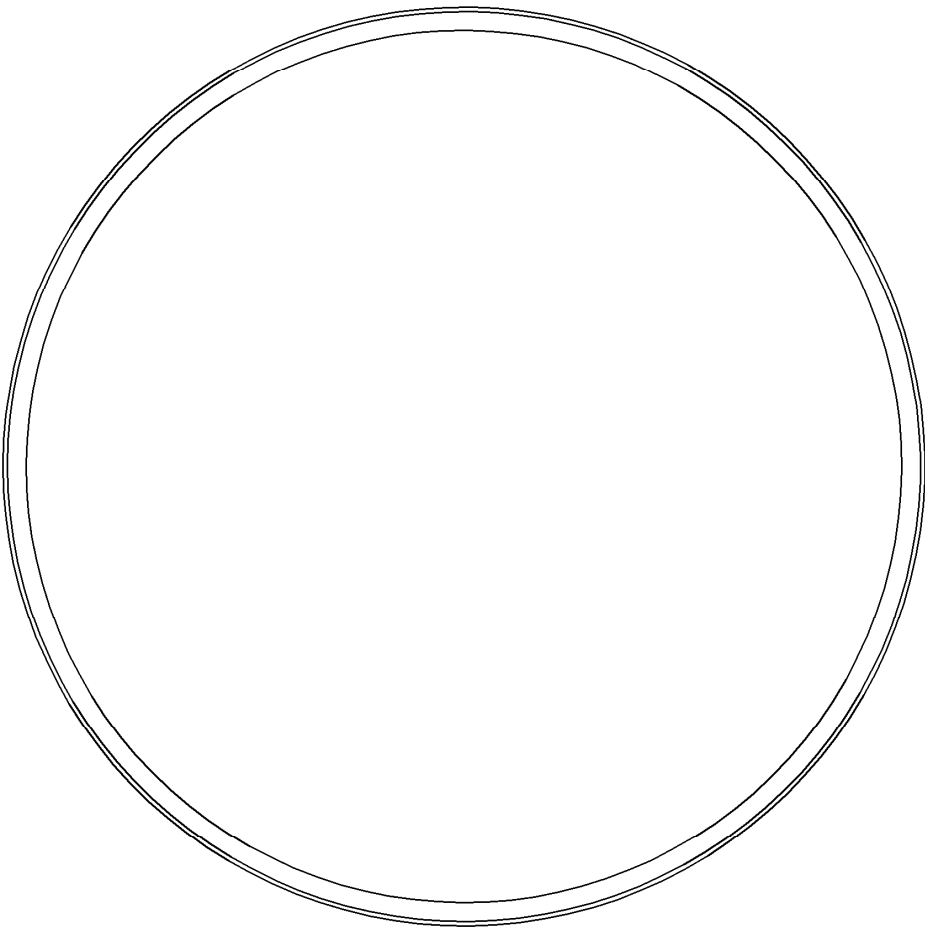
NOTE: SAMPLES 1-5 WERE DELETED BECAUSE HVAC EQUIPMENT HAS BEEN REMOVED FROM THE ROOF.

NOTE: ALL 2009 GAMMA CONTACT AND GENERAL AREA READINGS WERE \leq BKGD ON THE 111-FOOT LEVEL.

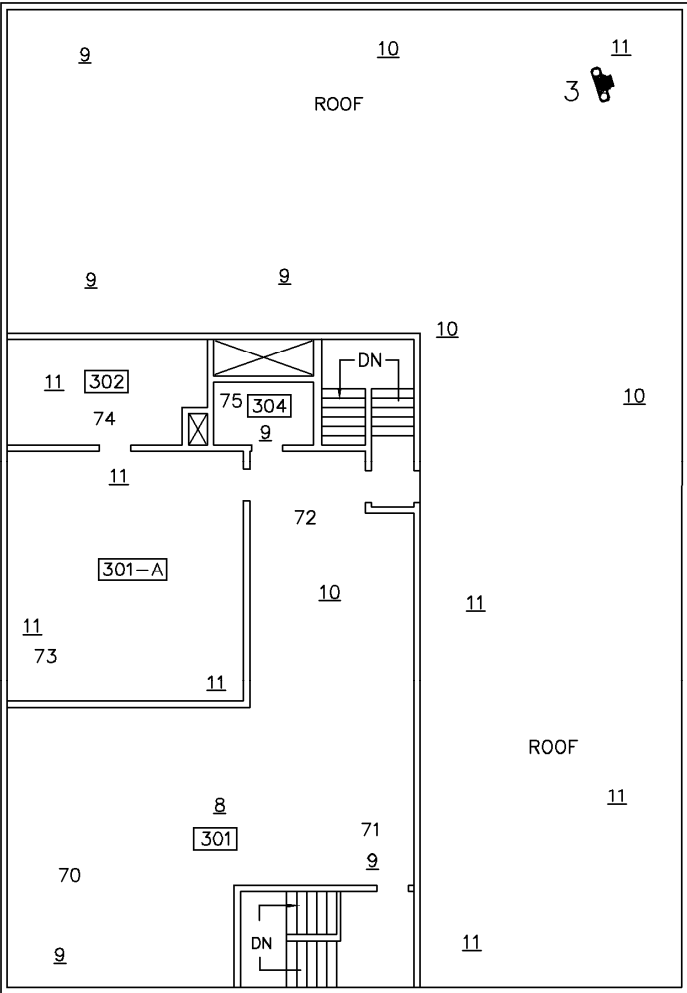


ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2009 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: MAY 28, 2009	FILENAME: S0497900

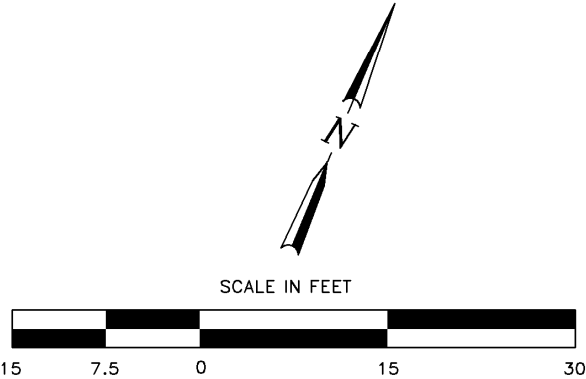


PLAN – 121 FOOT LEVEL



INSTRUMENT	LU DLUM 2360	LU DLUM 3030	Eberline FH40G–L
SERIAL #	5751/5785	5903	13664
CAL. DUE	6–2–09	6–2–09	6–27–09
CORRECTION FACTORS	α 8 β 4	α EFF. 16.62% β EFF. 19.98%	N/A
BACKGROUND	α 6 β 263	α 0.0 CPM β 30.6 CPM	14 μ rem/hr
KEY: <u>NO.</u> =GENERAL AREA EXPOSURE RATE (μ rem/hr) X <u>NO.</u> =CONTACT EXPOSURE RATE (μ rem/hr) NO. =SMEAR/DIRECT LOCATION <div>R–4</div> = ROOM NUMBER		SURVEYED BY: ROY L. MOWEN	DATE: 4/9/09
		REVIEWED BY:	DATE:

NOTE: ALL 2009 GAMMA CONTACT AND
GENERAL AREA READINGS
WERE \leq BKGD ON THE 121–FOOT LEVEL.



ANNUAL INSPECTION CONDUCTED
APRIL 9, 2009

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE–AC01–07LM00060
2009 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: MAY 28, 2009	FILENAME: S0497900