

# **2008 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 24, 2008. 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.

Two notable changes occurred at the PNPF since last year's inspection:

- 1) PPS removed HVAC equipment from the flat roof between the containment dome and office building, and
- 2) PPS remodeled the interior of the men's changing room in the auxiliary/office building.

Inspectors this year noted some deterioration in the interior of the containment building (e.g. peeling lead-based paint, plaster falling off the walls in some areas, worn pipe insulation). All of these issues have been noted in past inspections.

An annual radiological survey is performed in conjunction with the annual inspection. This year samples were collected at 106 locations. This is five less samples than previous inspections. The five samples dropped from the survey targeted the HVAC equipment that was removed from the roof of the facility (as discussed above) and is no longer present. Survey results revealed no removable contamination at any of the 106 sample points. The only direct reading that exceeded the minimum detectable activity (MDA) was at a floor drain, where beta activity has been detected in the past.

The cathodic protection system and the high water alarm system continue to be routinely inspected and maintained by PPS. It is recommended that next year the inspection JSA require that hard hats be worn in the interior of the containment building because low clearances are present.

## **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.

M. Miller (Chief Inspector), R.C. Ransbottom, R. Mowen, and K. Broberg (Assistant Inspectors), all of S.M. Stoller Corporation, the contractor for the DOE Office of Legacy

Management conducted the inspection on April 24, 2008. Mr. W.J. Sommer, Director of the Piqua Power Systems (PPS), was contacted during the inspection and briefed on the results. A copy of this report will be forwarded to Mr. Sommer.

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.

## 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 are present on the northeast side of the containment building (PL-2). This area will be checked again next year to determine if the rust staining is increasing.

No evidence of activities that might affect the integrity of the PNPf entombment was observed either onsite or offsite in the immediate surrounding area.

During 2007 PPS removed HVAC equipment from the flat roof between the containment dome and office building (PL-3). The scrap metal was sent to Franklin Iron and Metal in Dayton, Ohio. The HVAC features have been removed from the 111-foot level inspection drawings.

### Interior

Inspectors examined the facility interior looking for evidence of structural deterioration and entombment degradation. As noted in previous inspections interior concerns include peeling paint, falling plaster, and deteriorating asbestos pipe insulation.

Paint peeling off the interior facility walls and falling to the floor is a concern, especially at the 56-foot level (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.

Plaster is falling off the walls at the base of the spiral staircase at the 56-foot level (PL-5) and on the 79-foot level wall of the auxiliary building. This damage has been noted on prior inspections and the condition remains unchanged. Plaster is also damaged just outside the entrance to the spiral staircase at the 56-foot level (PL-6). PPS stores spools of cable on the 56-foot level. It appears that some of these spools have rolled into the walls, damaging the plaster, as shown in PL-6.

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 (PL-8). Pipe insulation on the 79-foot level exhibits some damage, but appears intact; friable asbestos is not evident (PL-9).

It should be noted that PPS completed some interior remodeling in the men's changing room located on the 100-foot level since the last inspection. Some interior walls previously located on the northwest side of Room 103 were removed and a new epoxy floor was installed. The 100-foot level inspection drawing has been updated to reflect these changes.

A set of original facility blueprints is present at the site. These original facility blueprints will be copied in summer 2008. DOE-LM will maintain the original blueprints. Copies of the blueprints will be returned to PPS for their use.

## **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 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-10). 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 checked monthly and was last checked on April 22, 2008.

## **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 indicated that an alarm test had been conducted on April 22, 2008.

## 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. In previous inspection years a total of 111 sample locations were investigated. Locations 1-5 were removed from the survey because the HVAC equipment being sampled was removed in 2007.

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 14  $\mu\text{rem/hr}$ .

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	3 cpm/100 cm <sup>2</sup>	8 alpha	152 dpm/ 100 cm <sup>2</sup>
Surface Activity	Beta	Ludlum 43-89 #5785	Ludlum 2360 #5751	153 cpm/100 cm <sup>2</sup>	4 beta	506 dpm/ 100 cm <sup>2</sup>
Exposure Rate	Gamma	N/A	Eberline FH40 GL #13664	11 $\mu\text{rem/hr}$	N/A	1 $\mu\text{rem/hr}$
Removable Activity	Alpha	N/A	Ludlum 3030/ #5903	0.0 cpm	Efficiency 37.5%	7.2 dpm/ 100 cm <sup>2</sup>
Removable Activity	Beta	N/A	Ludlum 3030/ #5903	29.0 cpm	Efficiency 29.3%	94.8 dpm/ 100 cm <sup>2</sup>

Key: cpm = counts per minute; dpm = disintegrations per minute; cm<sup>2</sup> = 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 3,825 disintegrations per minute per 100 square centimeters (dpm/100 cm<sup>2</sup>). The smear from this location indicated that no removable activity is present. This result is consistent with previous surveys. 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 2008 Radiological Survey at the Piqua, Ohio, Decommissioned Reactor Site

Location/ Building	Elevation <sup>a</sup>	Direct/ Smear #	Direct Reading Activity dpm/100 cm <sup>2</sup> Alpha / Beta		Removable Activity dpm/100 cm <sup>2</sup> 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	<b>3,825</b>	<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	<MDA	<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
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	In duct
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

Location/ Building	Elevation <sup>a</sup>	Direct/ Smear #	Direct Reading Activity dpm/100 cm <sup>2</sup> Alpha / Beta		Removable Activity dpm/100 cm <sup>2</sup> Alpha / Beta		Remarks
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
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	74 ft.	111	<MDA	<MDA	<MDA	<MDA	On HVAC duct

<sup>a</sup> Elevations are designated as feet above the lowest floor of the original plant.

key: dpm = disintegrations per minute; cm<sup>2</sup> = centimeters squared; MDA = minimum detectable activity;  
 < = less than

NA – Not applicable

### 3.0 Recommendations

1. Low clearance areas are present in the containment building (page 1).

**Recommendation:** Add the use of hard hats to next year's inspection JSA.

2. Rust staining is present on the exterior surface of the containment dome, next to the flat roof separating the containment dome from the office building (page 2).

**Recommendation:** Check area again next year to determine if the rust stains are increasing.

3. Peeling paint was observed on most areas of the interior dome walls, as noted on prior inspections, and is starting to fall onto the floors. 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. A set of original blueprints is present at the site (page 2).

**Recommendation:** DOE will copy the blueprints. DOE-LM will maintain the originals. Copies of the blueprints will be returned to PPS for their use.

### 4.0 Photographs

Photograph Location Number	Azimuth	Elevation	Photograph Description
PL-1	90	Outside-Ground Level	Containment Dome.
PL-2	270	Outside-Ground Level	Containment Dome.
PL-3	180	111 foot level	Flat Roof, 111-foot level, HVAC Equipment Removed.
PL-4	55	56 foot level	Peeling Pain, 56-foot level.
PL-5	270	56 foot level	Water Damage, Base of Spiral Stairs, 56-foot level.
PL-6	270	56 foot level	Damage to Walls by Cable Spools, 56-foot level.
PL-7	270	79 foot level	Water corrosion along seam of wall in Room B-1, 79-foot level.
PL-8	270	79 foot level	Peeling paint, Room B-1, 79-foot level.
PL-9	315	79 foot level	Worn insulation, 79-foot level.
PL-10	330	100 foot level	Rectifier control panel, 100-foot level.

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PIQ 4/2008. PL-1. Containment Dome.



PIQ 4/2008. PL-2. Containment Dome.





PIQ 4/2008. PL-3. Flat Roof, 111-foot level, HVAC Equipment Removed.



PIQ 4/2008. PL-4. Peeling Pain, 56-foot level.



PIQ 4/2008. PL-5. Water Damage, Base of Spiral Stairs, 56-foot level.



PIQ 4/2008. PL-6. Damage to Walls by Cable Spools, 56-foot level.



PIQ 4/2008. PL-7. Water corrosion along seam of wall in Room B-1, 79-foot level.



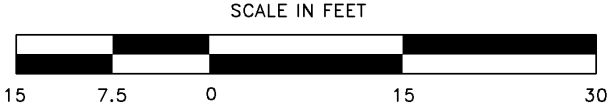
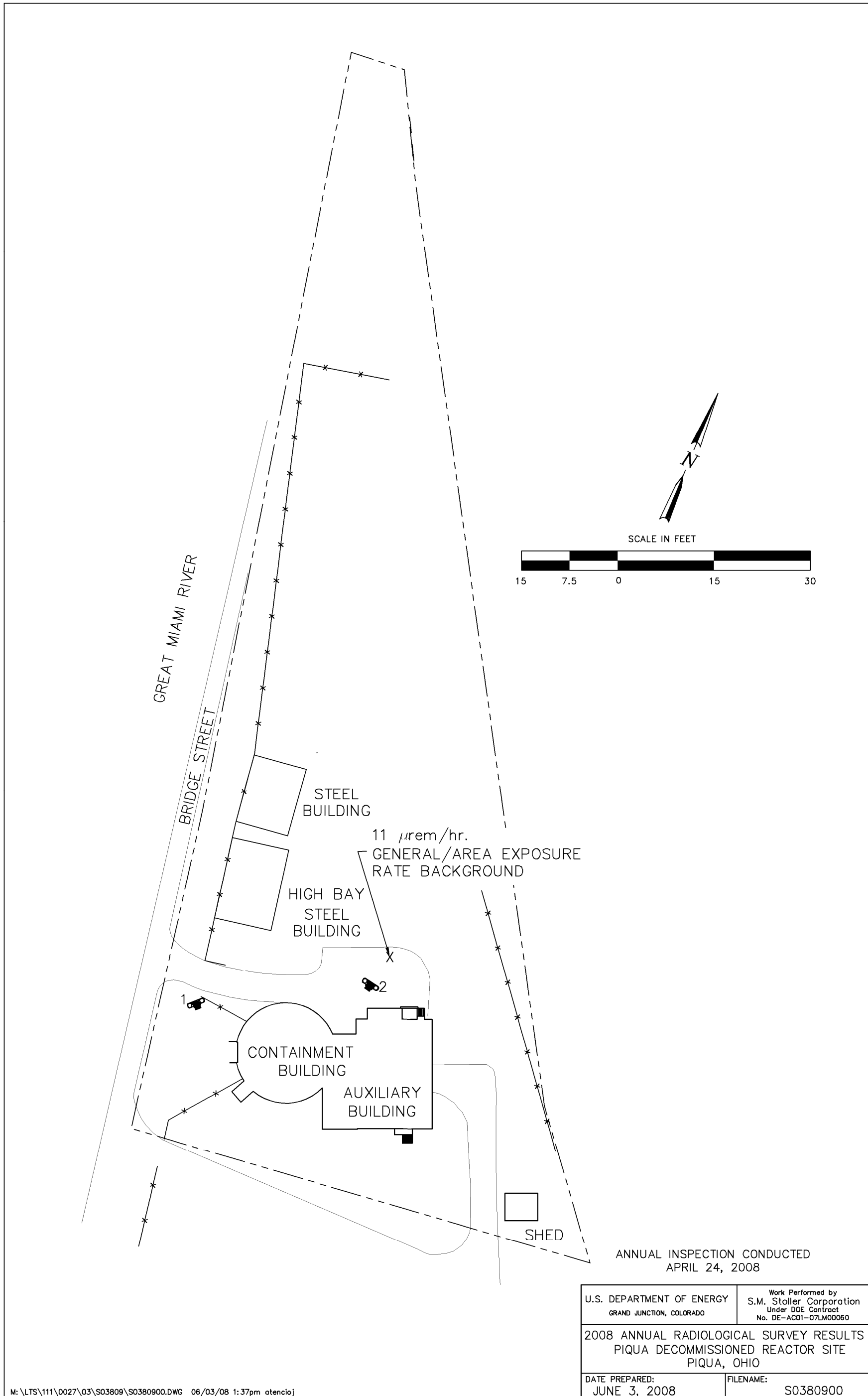
PIQ 4/2008. PL-8. Peeling paint, Room B-1, 79-foot level.



PIQ 4/2008. PL-9. Worn insulation, 79-foot level.



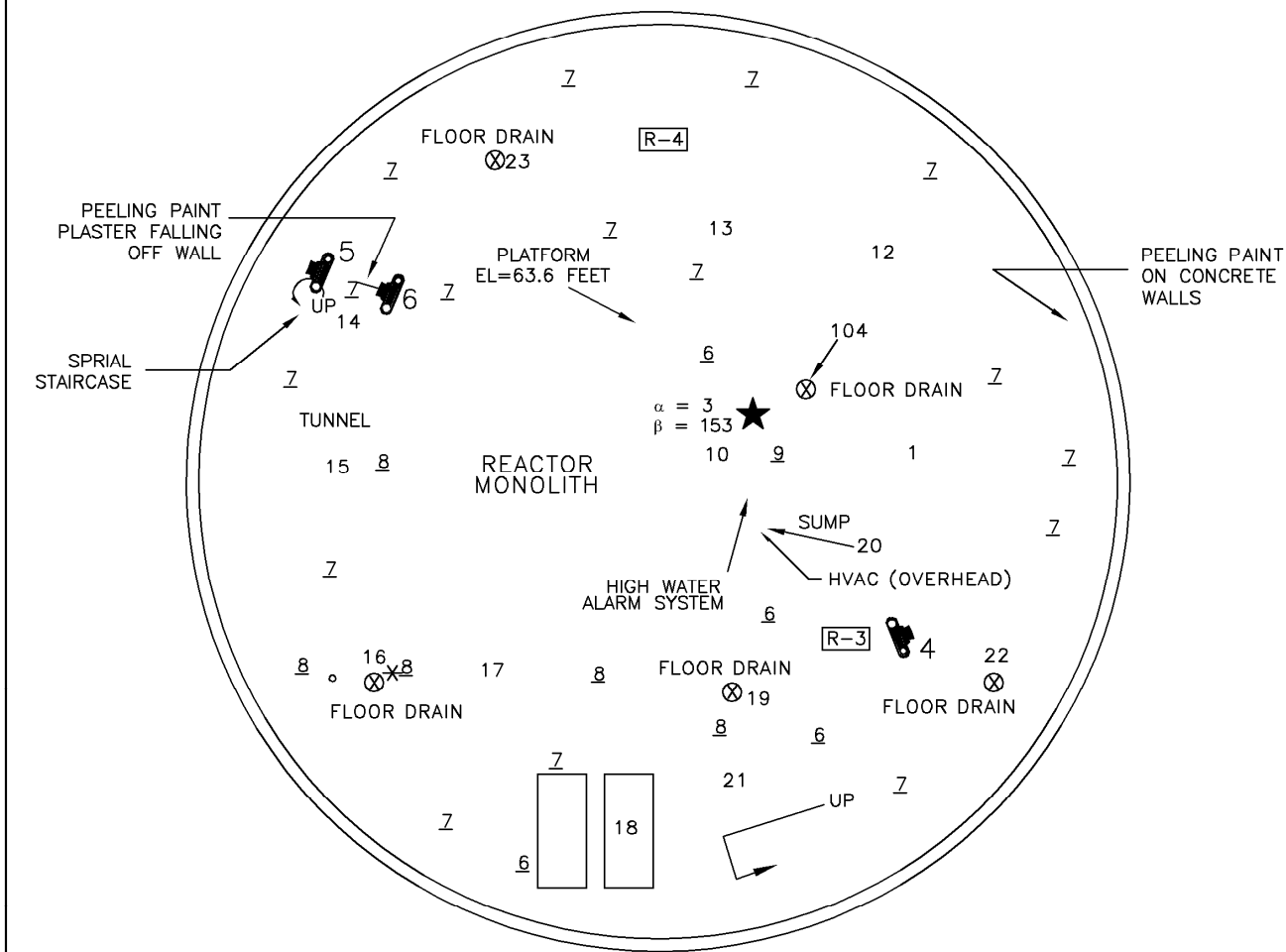
PIQ 4/2008. PL-10. Rectifier control panel, 100-foot level.



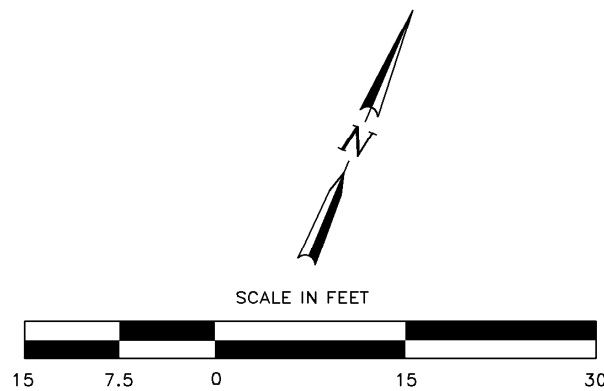
11  $\mu$ rem/hr.  
GENERAL/AREA EXPOSURE  
RATE BACKGROUND

ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900



PLAN - 56 FOOT LEVEL



INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY:		SURVEYED BY:	DATE:
NO. = GENERAL AREA EXPOSURE RATE ( $\mu$ rem/hr)		ROY L. MOWEN	4/24/08
XNO. = CONTACT EXPOSURE RATE ( $\mu$ rem/hr)		REVIEWED BY:	DATE:
NO. = SMEAR/DIRECT LOCATION			
R-4 = ROOM NUMBER			

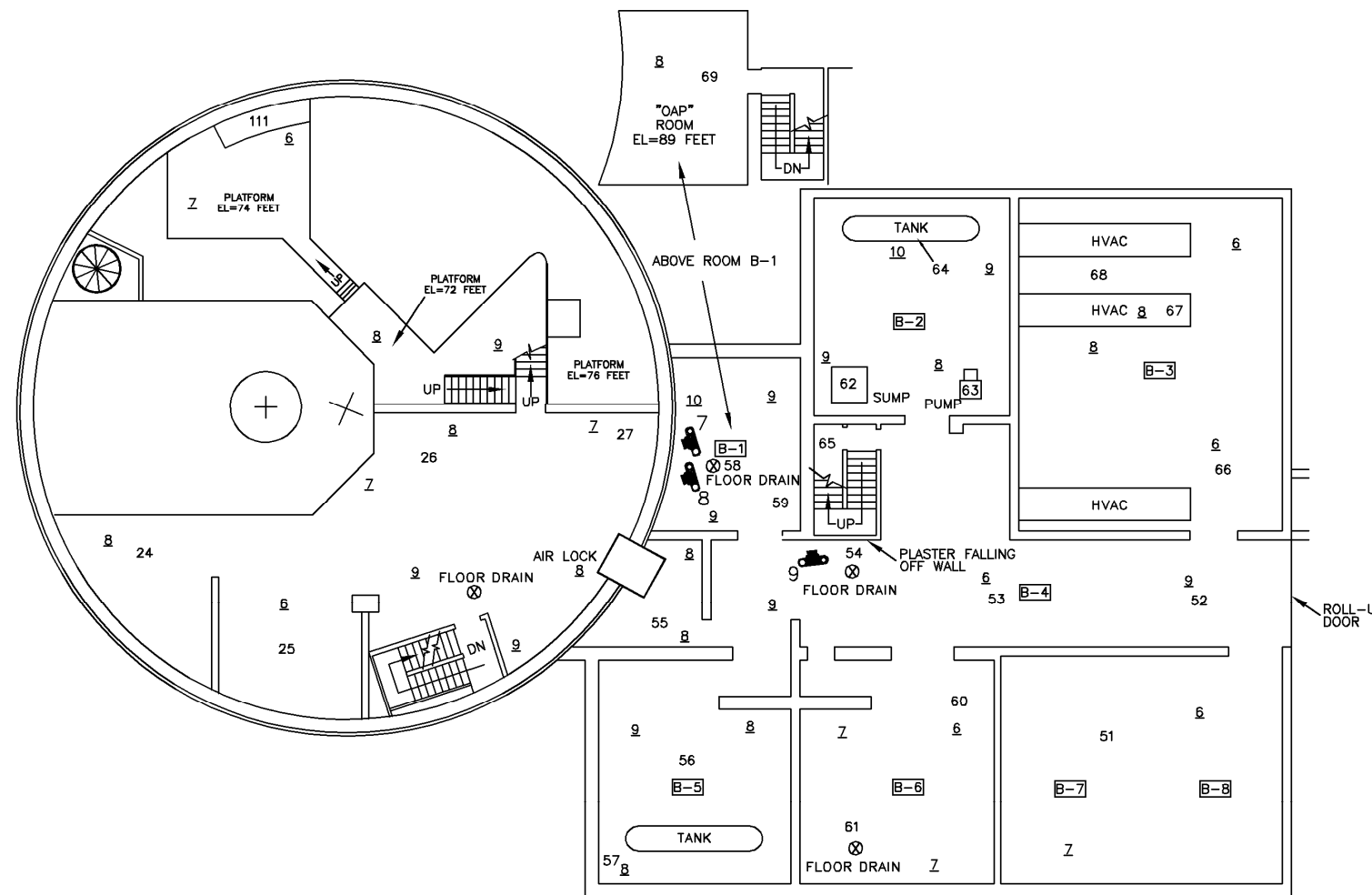
★ = BACKGROUND DETERMINATION LOCATION  
 2360  $\alpha$  = 3 cpm  
 $\beta$  = 153 cpm

NOTE: ALL 2008 GAMMA CONTACT AND GENERAL AREA READINGS WERE  $\leq$  BKGD ON THE 56-FOOT LEVEL.

ANNUAL INSPECTION CONDUCTED  
 APRIL 24, 2008

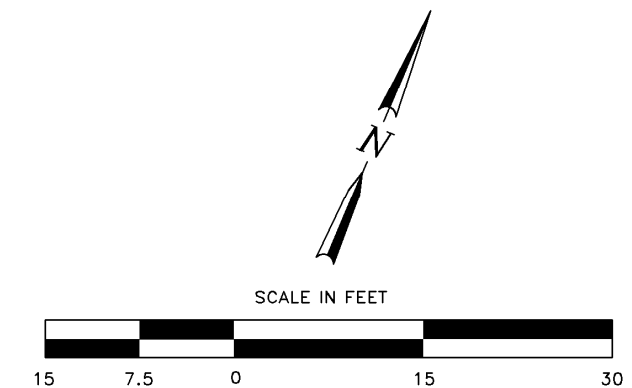
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900

INSTRUMENT	LU DLUM 2360	LU DLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY: NO. = GENERAL AREA EXPOSURE RATE ( $\mu$ rem/hr) <del>X</del> NO. = CONTACT EXPOSURE RATE ( $\mu$ rem/hr) NO. = SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: DATE: ROY L. MOWEN 4/24/08 REVIEWED BY: DATE:	



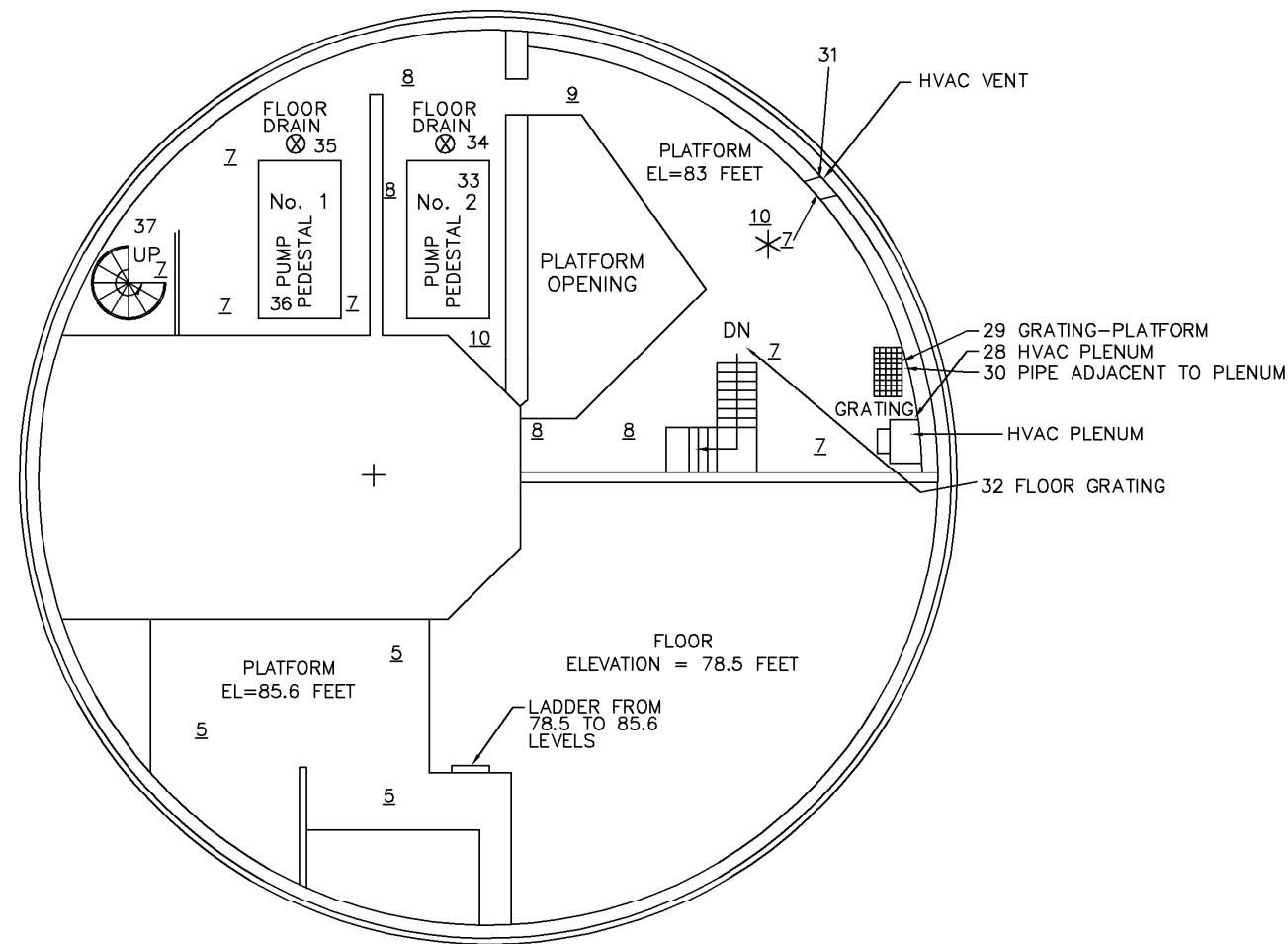
PLAN - 79 FOOT LEVEL

NOTE: ALL 2008 GAMMA CONTACT AND GENERAL AREA READINGS WERE  $\leq$  BKGD ON THE 79-FOOT LEVEL.



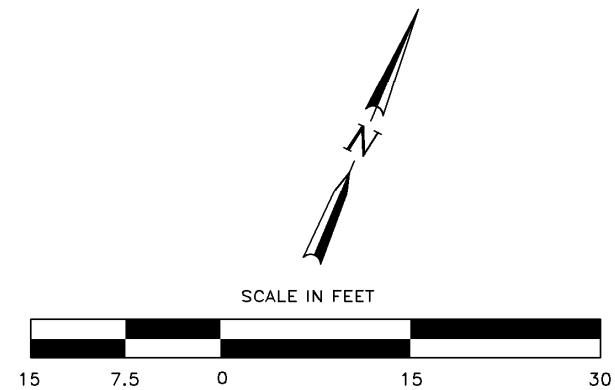
ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900



PLAN - 83 FOOT LEVEL

INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY:	<p><u>NO.</u> = GENERAL AREA EXPOSURE RATE (<math>\mu</math>rem/hr)</p> <p><del>*NO.</del> = CONTACT EXPOSURE RATE (<math>\mu</math>rem/hr)</p> <p>NO. = SMEAR/DIRECT LOCATION</p> <p><span style="border: 1px solid black; padding: 0 2px;">R-4</span> = ROOM NUMBER</p>		
	SURVEYED BY:	ROY L. MOWEN	DATE: 4/24/08
	REVIEWED BY:		DATE:



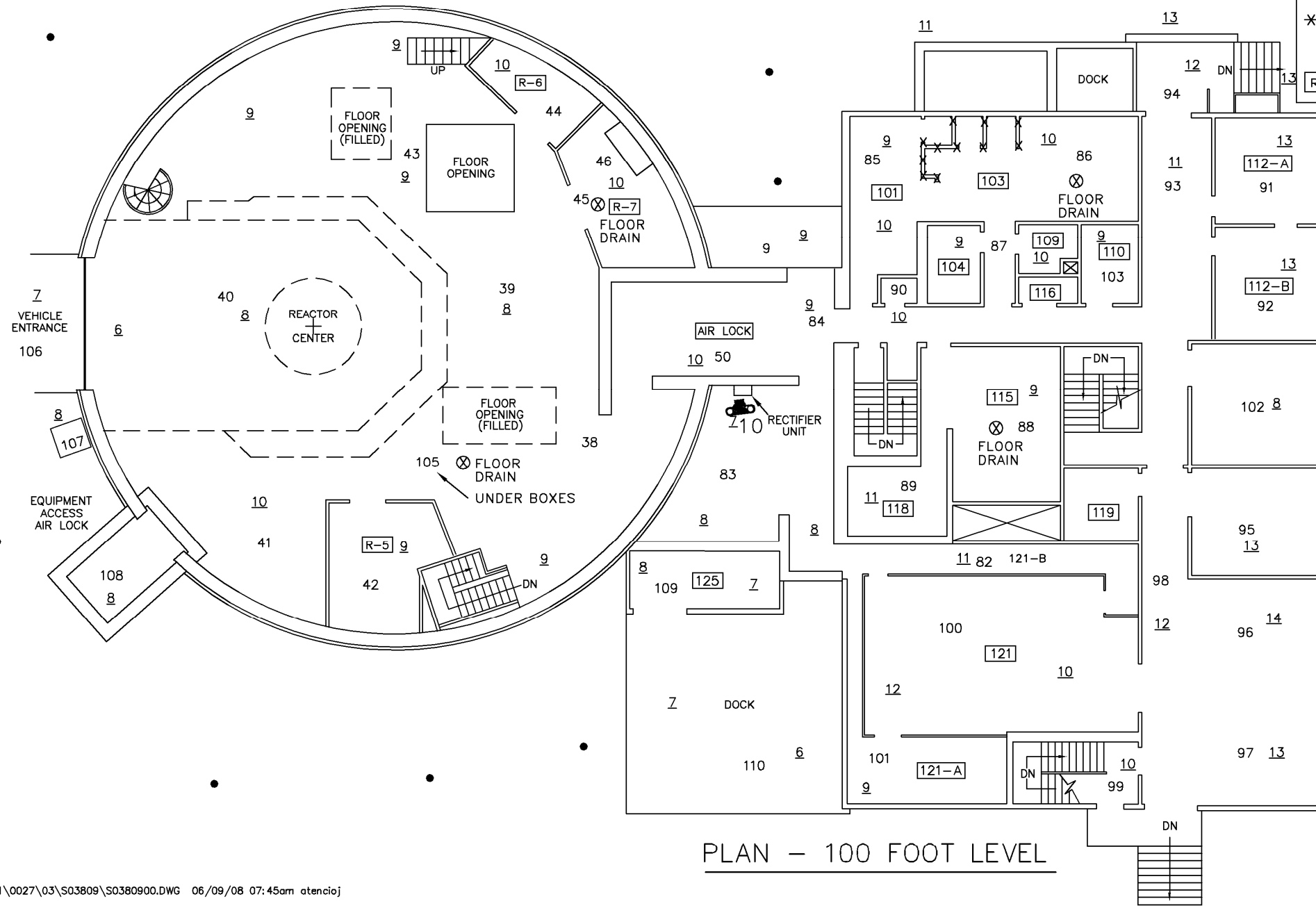
NOTE: ALL 2008 GAMMA CONTACT AND GENERAL AREA READINGS WERE  $\leq$  BKGD ON THE 83-FOOT LEVEL.

ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900

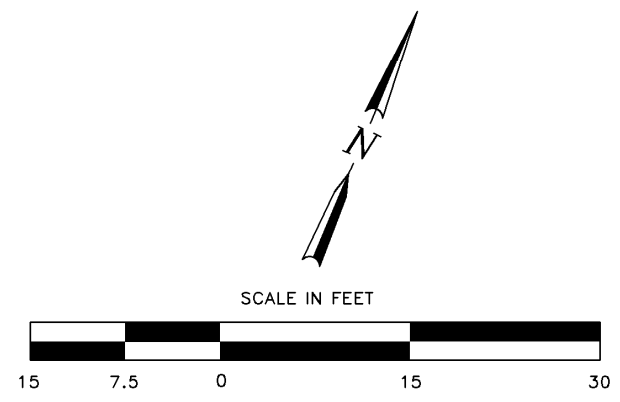


INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY:	SURVEYED BY: DATE: ROY L. MOWEN 4/24/08		REVIEWED BY: DATE:
NO. = GENERAL AREA EXPOSURE RATE ( $\mu$ rem/hr)			
<del>NO.</del> = CONTACT EXPOSURE RATE ( $\mu$ rem/hr)			
NO. = SMEAR/DIRECT LOCATION			
R-4 = ROOM NUMBER			



**EXPLANATION**

● GRAPHITE ANODES



ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

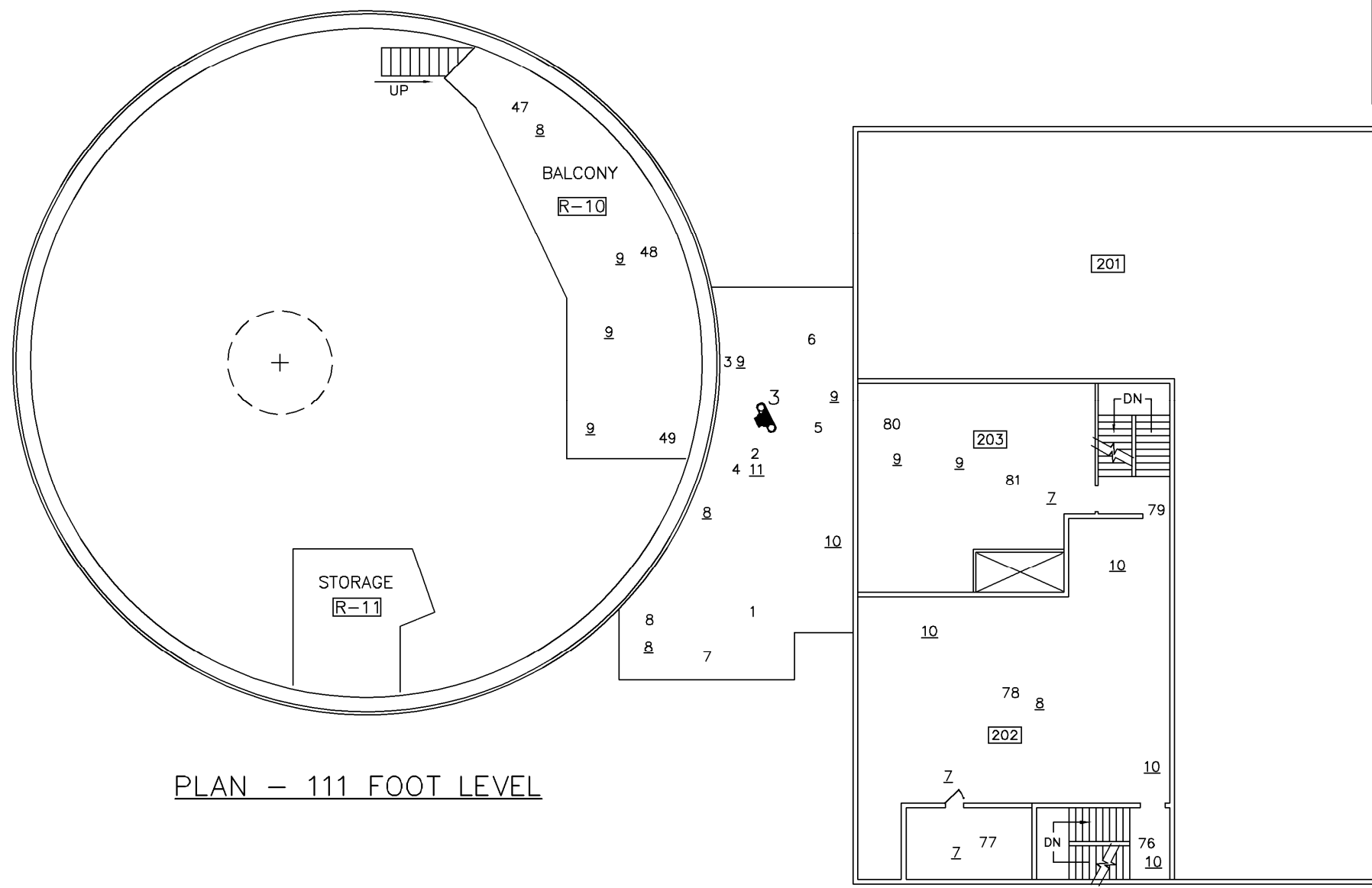
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
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2008 ANNUAL RADIOLOGICAL SURVEY RESULTS  
PIQUA DECOMMISSIONED REACTOR SITE  
PIQUA, OHIO

DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900
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**PLAN - 100 FOOT LEVEL**

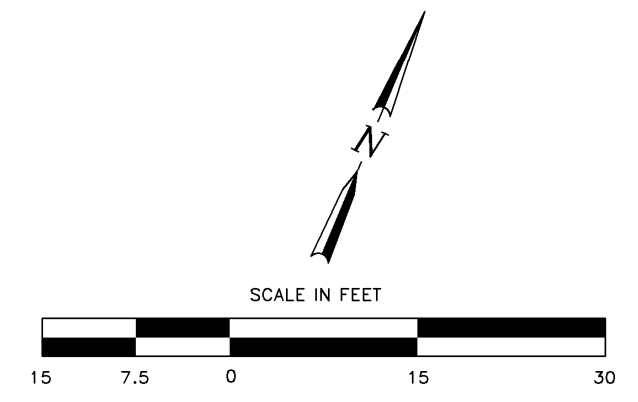
INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY:	SURVEYED BY: DATE: ROY L. MOWEN 4/24/08		REVIEWED BY: DATE:
$\underline{NO.}$ = GENERAL AREA EXPOSURE RATE ( $\mu$ rem/hr)			
$\times \underline{NO.}$ = CONTACT EXPOSURE RATE ( $\mu$ rem/hr)			
$\underline{NO.}$ = SMEAR/DIRECT LOCATION			
$\boxed{R-4}$ = ROOM NUMBER			



PLAN - 111 FOOT LEVEL

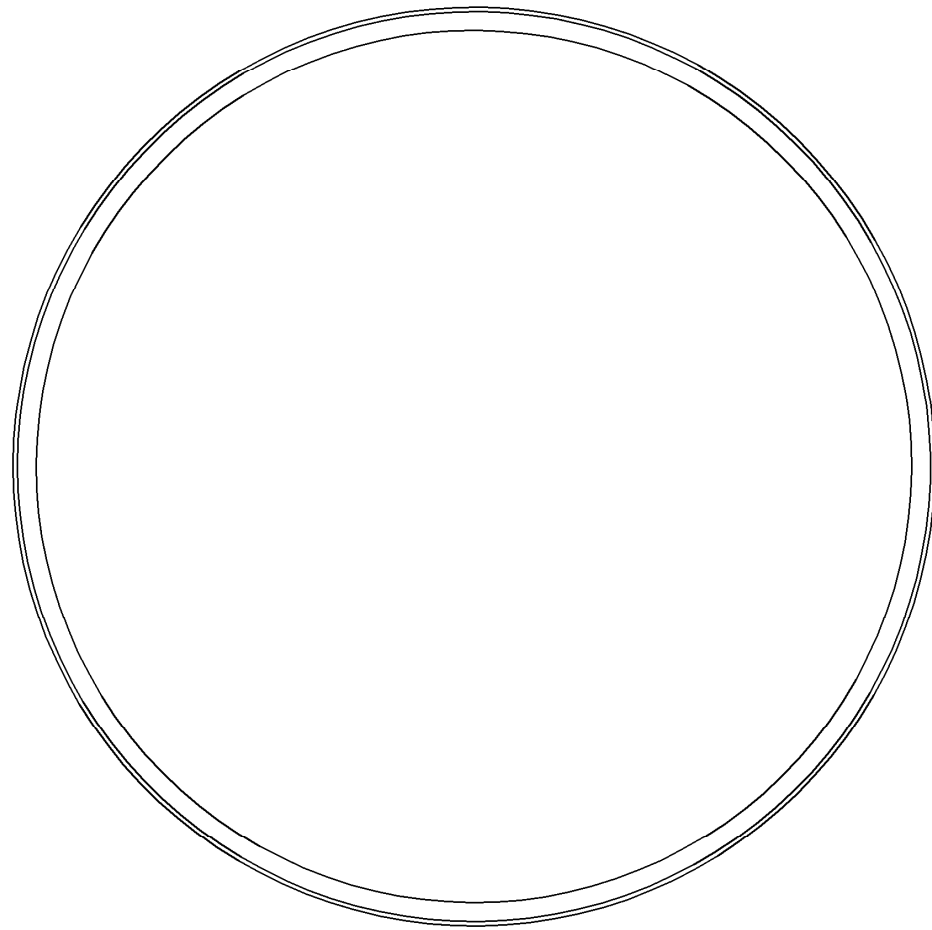
NOTE: SAMPLES 1-5 WERE DELETED BECAUSE HVAC EQUIPMENT HAS BEEN REMOVED FROM THE ROOF.

NOTE: ALL 2008 GAMMA CONTACT AND GENERAL AREA READINGS WERE  $\leq$  BKGD ON THE 111-FOOT LEVEL.

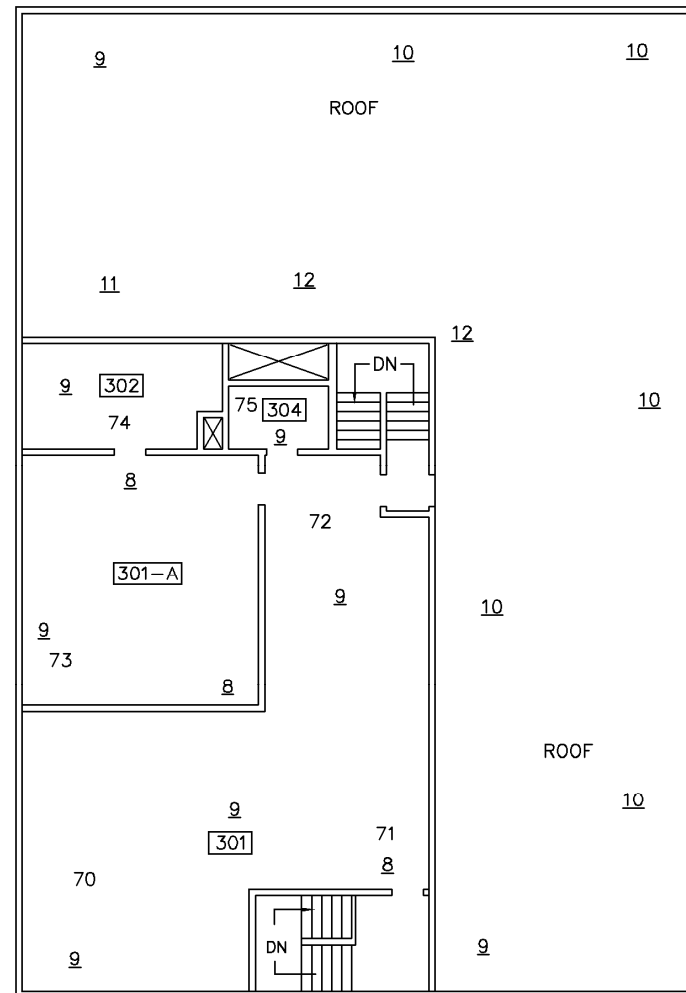


ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

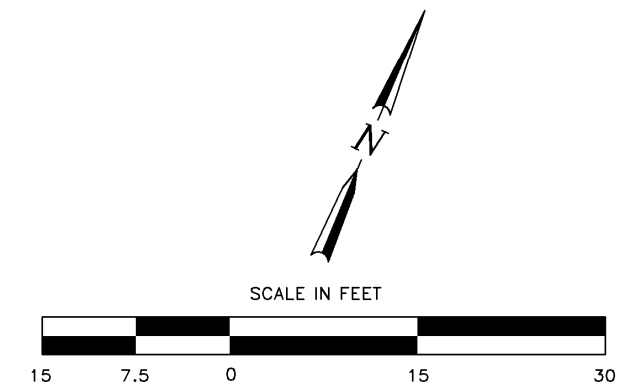
U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900



PLAN - 121 FOOT LEVEL



INSTRUMENT	LUDLUM 2360	LUDLUM 3030	Eberline FH40G-L
SERIAL #	5751/5785	5903	13664
CAL. DUE	5-11-08	5-14-08	5-30-08
CORRECTION FACTORS	$\alpha$ 8 $\beta$ 4	$\alpha$ EFF. 37.5 $\beta$ EFF. 29.3	N/A
BACKGROUND	$\alpha$ 3 $\beta$ 153	$\alpha$ 0.0 CPM $\beta$ 29.0 CPM	11 $\mu$ rem/hr
KEY: NO. = GENERAL AREA EXPOSURE RATE ( $\mu$ rem/hr) *NO. = CONTACT EXPOSURE RATE ( $\mu$ rem/hr) NO. = SMEAR/DIRECT LOCATION R-4 = ROOM NUMBER		SURVEYED BY: DATE: ROY L. MOWEN 4/24/08 REVIEWED BY: DATE:	



ANNUAL INSPECTION CONDUCTED  
APRIL 24, 2008

U.S. DEPARTMENT OF ENERGY GRAND JUNCTION, COLORADO	Work Performed by S.M. Stoller Corporation Under DOE Contract No. DE-AC01-07LM00060
2008 ANNUAL RADIOLOGICAL SURVEY RESULTS PIQUA DECOMMISSIONED REACTOR SITE PIQUA, OHIO	
DATE PREPARED: JUNE 3, 2008	FILENAME: S0380900