MAINE YANKEE
FINAL STATUS SURVEY RELEASE RECORD
FA-0600 PRIMARY AUXILARY BUILDING
SURVEY UNIT 1

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A. SURVEY UNIT DESCRIPTION

FA0600 is the survey area that consists of the basement level of the Primary Auxiliary Building (PAB) at coordinates 407650N & 623850E using the Maine State Coordinate System (West Zone) NAD 1927, as shown on Map ID# FA0600-SITE in Attachment 1.

The PAB contained the liquid and gaseous storage and cleanup systems for reactor operations. The basement construction was reinforced concrete floors and walls, and was located entirely within the Restricted Area (RA). During plant operation, most cubicles in the basement of the PAB were posted as radiation areas, and operational surveys confirmed the presence of contamination.

Survey Unit 1 of FA0600 consists of the concrete walls, doorways of the filter cubicles, and penetrations of the Pipe Tunnel from the 17 foot elevation to the 11 foot elevation. Survey Unit 1 is shown on the maps in Attachment 1. The area of Survey Unit 1 is approximately 315 m^2.

B. SURVEY UNIT DESIGN INFORMATION

Based on the site historical information, as confirmed by site characterization, the area was designated as Class 1 survey unit per the LTP. The survey unit design parameters are shown in Table 1. Given a relative shift of 2.3, it was determined that 15 direct measurements were required for the Sign Test. Measurement locations were generated using a random start, fixed-grid and are shown on maps FA 0600-01 DP REF (Attachment 1). Once the direct readings were completed, removable contamination samples were obtained at each measurement location.

A 100% scan coverage of the area was required[1], and was accomplished by dividing the area into 432 grids. (Several scan grids were much less than 1m^2 area giving a total scan area of 315 m^2). The location of the scan grids is shown on maps FA 0600-01A through J (Attachment 1). Instrument scan setpoints were conservatively set below the $DCGL_{EMC}$, as shown in Table 2-2 (Attachment 2).

To accommodate measurement geometry requirements for surfaces of non-uniform smoothness, the SHP-360 probe was used to augment the 43-68 or 43-37 scan survey. First, a 43-68 or 43-37 detector scan was performed on all surfaces, including those that were unlikely to meet geometry requirements for that model of probe, then a repeat scan, using the SHP-360 was performed on areas with surface irregularities that required a smaller probe size. The SHP-360 was also used to scan concrete and steel penetrations. Ninety-degree surface junctures (i.e., wall-wall junctures) were scanned using the 43-68 probe with a reduced efficiency.

[1] LTP Rev. 3, Table 5-3

Background values were established, for each particular instrument probe application (except SHP-360 for penetrations) based on ambient background values in the survey area and previously established material backgrounds. Ambient background for the SHP-360 used to survey penetrations utilized previously established backgrounds from a similar survey unit. These background values, listed in Table 1, were used to establish net activity for direct measurements, scan alarm setpoints, and to confirm the scan MDCs used were appropriate.

The instruments used in this survey are listed by model and serial number in Attachment 2 (Table 2-1). Scan MDCs are also listed in Attachment 2 (Table 2-2) and are compared to the DCGL, the investigation level, and the $DCGL_{EMC}$. As shown in this table, the scan MDC is less than the scan investigation level in all cases, thus providing high confidence (95% or higher) that an elevated area would be detected in the scanning process. Actual background measurements were consistent with design backgrounds used to determine the instrument scan MDC values (listed in LTP Table 5-6). Further, since the investigation level for the primary scan probes (i.e., 43-68 and 43-67), at the alarm setpoint, was always less than the design $DCGL_{EMC}$, no EMC sample size adjustment was necessary.

TABLE 1

SURVEY UNIT DESIGN PARAMETERS: FA-0600-01

Survey Unit 1	Design Criteria	Basis
Area	315 m^2	
Number of Direct Measurements Required	15	Based on an LBGR of 9000 dpm/100cm^2, sigma[2] of 3811 dpm/100cm^2, and relative shift of 2.3. Type I =Type II=0.05
Sample Area	21 m^2	315 m^2/15 samples
Sample Grid Spacing	4.5 m	$(21\ m^2)^{1/2}$
Scan Grid Area	1 m^2 (approx.)	
Area Factor	2.3	50 m^2/21 m^2 per LTP, Rev.3[3]
Scan Survey Area	315 m^2	100%
Background		
43-68 Direct and Scan (flat surfaces)	2961 dpm/100 cm^2	Ambient and Material
43-68 Scans (Junctures)	5916 dpm/100 cm^2	Ambient and Material
43-37 Scans (Flat Surfaces)	1737 dpm/100 cm^2	Ambient
SHP-360 Scans (Penetrations–Steel)	2295 dpm/100 cm^2	Ambient
SHP-360 Scans (Penetrations–Concrete)	12,384 dpm/100 cm^2	Ambient and Material
SHP-360 Scans (Surfaces Irregularities)	8662 dpm/100 cm^2	Ambient and Material
Scan Investigation Level	See Table 2-2	See Table 2-2 (Attach 2)
DCGL	18,000 dpm/100 cm^2	LTP, Rev.3
Design $DCGL_{EMC}$	41,400 dpm/100 cm^2	LTP, Rev.3

[2] Basis for sigma from PAB-El.11ft A0600, LTP Table 5-1A

[3] "LTP, Rev. 3" refers to the LTP submitted in October 2002 (Reference 1) as amended by the MY's addenda of November 2002 (Reference 2). LTP, Rev. 3 was approved by the NRC in February 2003 (Reference 3).

C. SURVEY RESULTS

Sixteen direct measurements were made in Survey Unit 1. All direct concrete measurements were below the DCGL. The direct measurement data are presented in Table 2.

Scanning resulted in multiple verified alarms. Thirty-nine verified alarms occurred during the 43-37 surface scans of which three grids also alarmed during duplicate surveys with the 43-68 probe. Two verified alarms occurred during the juncture scans using the 43-68 probe. Six verified alarms occurred during the augmented surface scans and penetration surveys using the SHP-360. The subsequent investigation work is discussed in the following section.

D. SURVEY UNIT INVESTIGATIONS PERFORMED AND RESULTS

The surface scan identified 47 locations of potentially elevated activity. An investigation of each area was conducted via survey investigation package XA0600-01. Investigation results are summarized in Attachment 3 (Table 3-1).

TABLE 2
DIRECT MEASUREMENTS: FA0600 SURVEY UNIT 1

Sample Number	Gross Activity dpm/100cm2	Net Activity (Table 1 Background Subtracted) dpm/100cm2
FA0600011C001BD0000	3101	140
FA0600011C002BD0000	3315	354
FA0600011C003BD0000	3187	226
FA0600011C004BD0000	3046	85
FA0600011C005BD0000	3309	348
FA0600011C006BD0000	3443	482
FA0600011C007BD0000	3034	73
FA0600011C008BD0000	4188	1227
FA0600011C009BD0000	3529	568
FA0600011C010BD0000	3150	189
FA0600011C011BD0000	3248	287
FA0600011C012BD0000	3480	519
FA0600011C013BD0000	3223	263
FA0600011C014BD0000	3059	98
FA0600011C015BD0000	5067	2106
FA0600011C016BD0000	3236	275
Sample Mean	**3413**	**453**
Median	**3242**	**281**
Standard Deviation	**522**	**522**
Sample Range	**3034-5067**	**73 - 2106**

E. SURVEY UNIT DATA ASSESSMENT

An analysis of the direct sample measurement results, including the mean, median, standard deviation, and sample result range, are provided in Table 2. All of the 16 direct concrete measurements were below the DCGL value of 18,000 dpm/100 cm^2. The maximum direct sample result, not corrected for background, was equivalent to 5,067 dpm/100 cm^2. When adjusted for background, the mean residual contamination level is 453 dpm/100 cm^2. This would be equivalent to an annual dose of 0.008 mrem.[4]

Forty-seven verified alarms were investigated, as shown in Table 3-1 of Attachment 3, and determined to be approximately 3.1% of the Elevated Measurement Comparison unity limit, thereby satisfying the EMC criterion.

F. ADDITIONAL DATA EVALUATION

Attachment 4 provides additional data evaluation associated with Survey Unit 1, including relevant statistical information. Based on survey unit direct measurement data, this attachment provides the Sign Test Summary, Quantile Plot, Histogram, and Retrospective Power Curve.

1. The Sign Test Summary provides an overall summary of design input (Table 1) and resulting calculated values used to determine the required number (N) of direct measurements (per LTP Section 5.4.2). The Sign Test Summary is a separate statistical analysis that also calculates the mean, median, and standard deviation of the direct measurements.

   The critical value and the result of the Sign Test are provided in the Sign Test Summary table, as well as a listing of the key release criteria. As is shown in the table, all of the key release criteria were clearly satisfied for the FSS of this survey unit.

2. The Quantile Plot was generated from direct measurement data listed in Table 2. The data set and plot are consistent with expectations for a Class 1 survey unit. All of the measurements are well below the DCGL of 18,000 dpm/100 cm^2.

3. A Histogram Plot was also developed based on the direct measurement values. This plot shows that the direct data were essentially a log-normal distribution.

4. A Retrospective Power Curve was constructed, based on FSS results. The curve shows that this survey unit having a mean residual activity at a small fraction of the DCGL, has a high probability ("power") of meeting the release criteria. Thus, it can be concluded that the direct measurement data support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and that the data quality objectives were met.

As mentioned in Section B, removable contamination samples were obtained at each (direct) measurement location. In that this survey unit involved a (backfilled) basement and not a standing building, the removable contamination measurements were not applicable to release decisions for the survey unit. However, the samples were obtained and evaluated, indicating alpha activity less than the MDA values (i.e., < 3.2 dpm/100 cm^2) and beta activity less than the MDA values (i.e., < 3.5 dpm/100 cm^2). Thus, in comparison with the mean survey unit net activity (Table 2), the removable contamination sampling effort indicated that the majority of activity is fixed.

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[4] This annual dose equivalent is based on LTP Table 6-11 which shows the contaminated concrete dose contribution (for surfaces contaminated at the DCGL) to be 0.301 mrem/y.

G. CHANGES IN INITIAL SURVEY UNIT ASSUMPTIONS ON EXTENT OF RESIDUAL ACTIVITY

The survey was designed as a Class 1 area; the FSS results were consistent with that classification. The post-remediation direct measurement sample standard deviation was less than the design sigma. Thus, a sufficient number of sample measurements were taken.

H. LTP CHANGES SUBSEQUENT TO SURVEY UNIT FSS

The FSS of Survey Unit 1 was designed and performed using the criteria of the approved LTP (Revision 3 Addenda). The only subsequent LTP changes (with potential impact to this FSS) were provided in the proposed license amendment related to modifications of the activated concrete remediation plan submitted September 11, 2003 (Reference 4). Changes represented in this later proposed license amendment have been evaluated and have no impact on the design, conduct, or assessment of the final status survey of Survey Unit 1.

I. CONCLUSION

The FSS of this survey unit was designed based on the LTP designation as a Class 1 area. The survey design parameters are presented in Table 1. The required number of direct measurements was determined for the Sign Test in accordance with the LTP. As presented in Table 2, all beta direct measurements were less than the DCGL of 18,000 dpm/100 cm^2.

A Sign Test Summary analysis demonstrated that the Sign Test criteria were satisfied. The direct measurement sigma was determined to be less than that used for design, thus indicating that a sufficient number of samples were taken.

The Retrospective Power Curve shown in Attachment 4 confirmed that sufficient samples were taken to support rejection of the null hypothesis, providing high confidence that the survey unit satisfied the release criteria and the data quality objectives were met. Attachment 4 also revealed that direct measurement data represented essentially a log-normal distribution, with variance consistent with expectations for a Class 1 survey unit.

The scan survey design for this survey unit was developed in accordance with the LTP with significant aspects of the design discussed in Section B and Table 1. Scanning resulted in multiple verified alarms for evaluation. Attachment 3 shows the areas identified by verified alarms and provides the results of the investigation actions. The areas under investigation were evaluated using the appropriate area factor. The survey unit was determined to satisfy the elevated measurement comparison unity rule per LTP methodology.

In addition, while not part of the release decision criteria, removable contamination sampling confirmed that the majority of remaining activity in this basement survey unit was fixed.

It is concluded that FA0600 Survey Unit 1 meets the release criteria of 10CFR20.1402 and the State of Maine enhanced criteria.

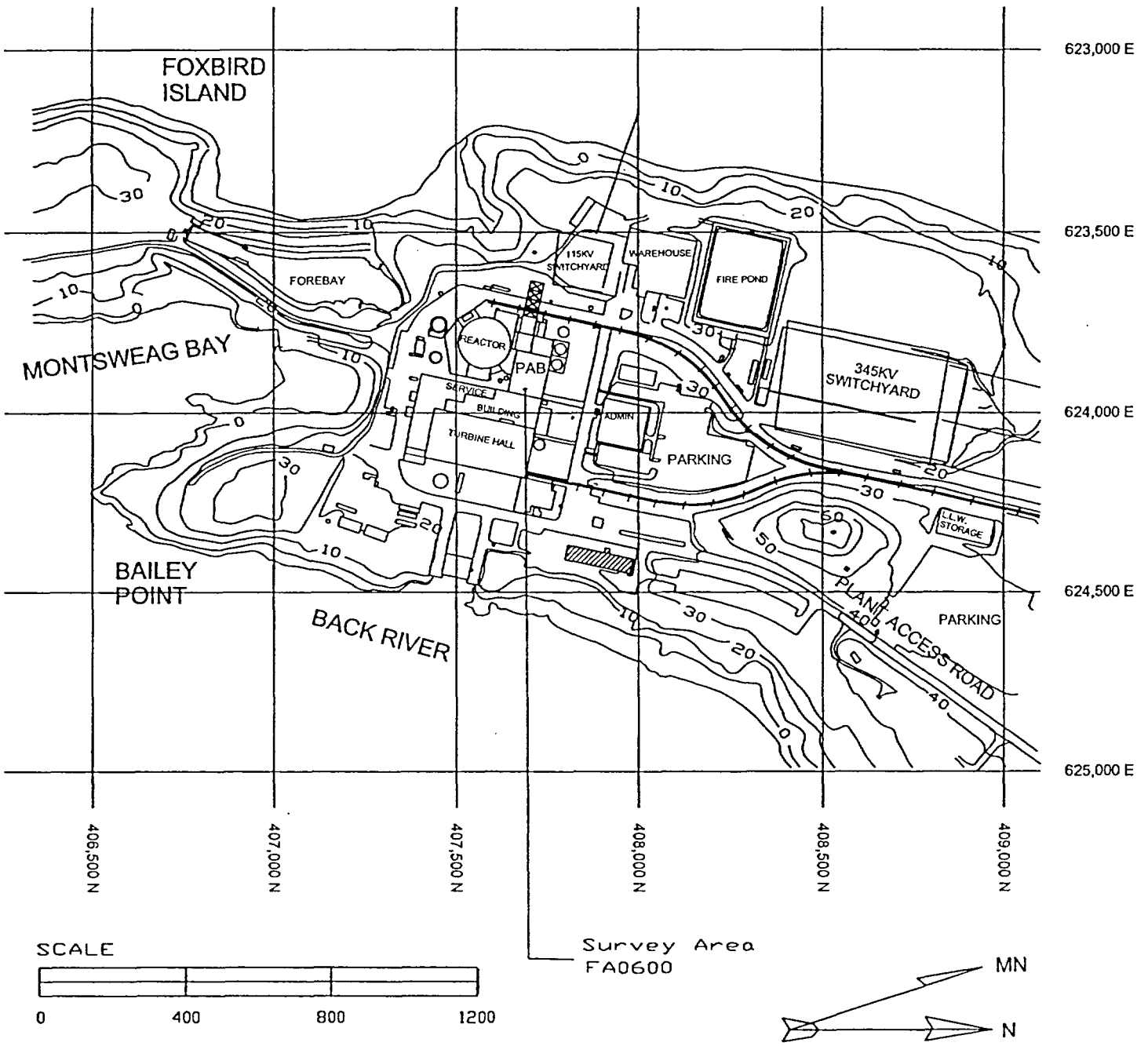
J. REFERENCES

1. Maine Yankee License Termination Plan, Revision 3, October 15, 2002
2. Maine Yankee letter to the NRC, MN-02-061, dated November 26, 2002
3. NRC letter to Maine Yankee, dated February 28, 2003
4. Maine Yankee letter to the NRC, MN-03-049, dated September 11, 2003.

Attachment 1

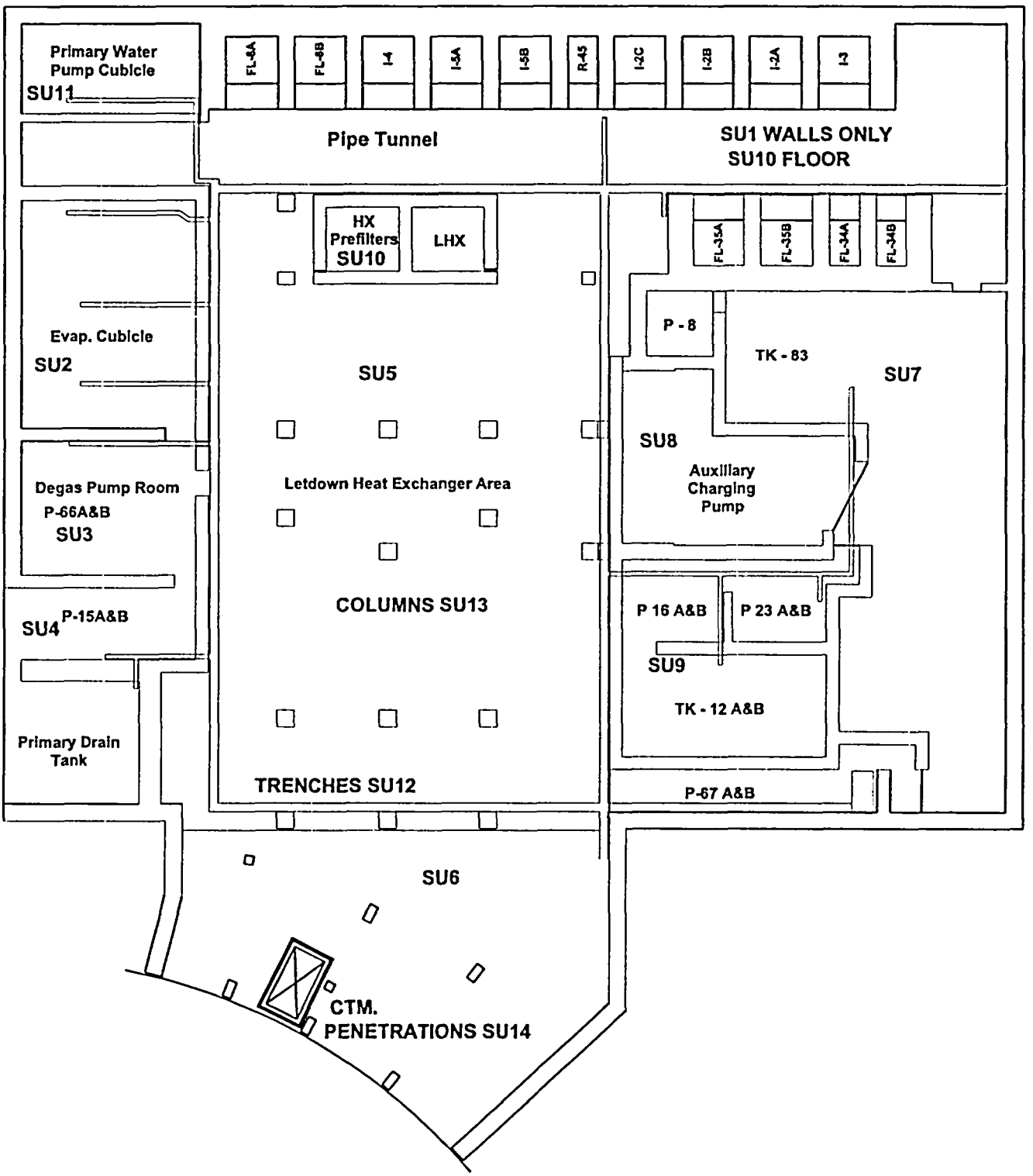
Survey Unit Maps

Maine Yankee Decommissioning Team	*Maine Yankee Decommissioning Project Survey Form*	Map ID #: FA0600-SITE
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	PAB	



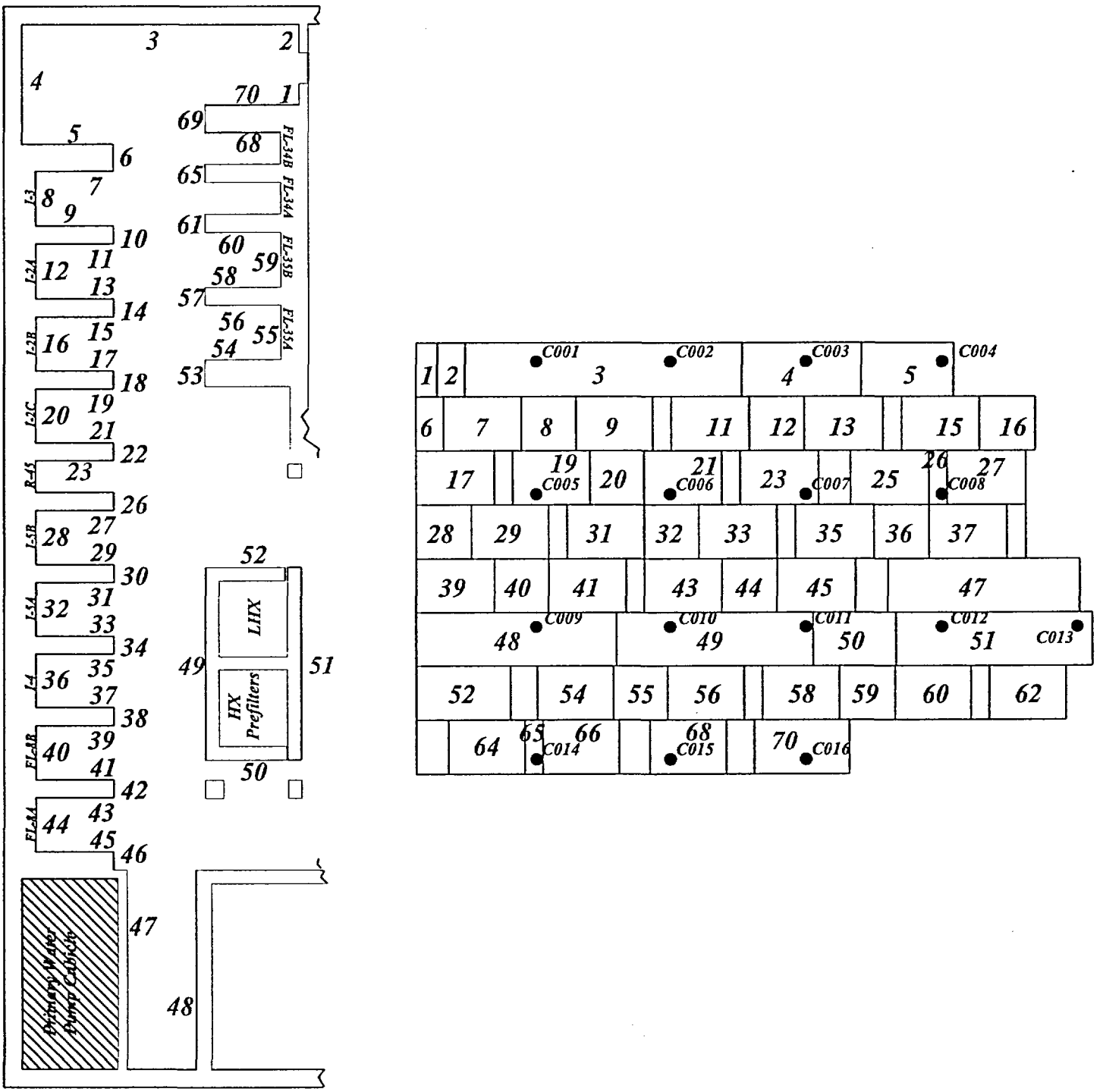
Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form	Map ID #: FA0600 GA
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB General Area	

PAB 11'



Maine Yankee Decommissioning Team	*Maine Yankee Decommissioning Project Survey Form*	Map ID #: FA 0600-01 DP REF Revised: 11-20-03
Survey Type: ☐ Characterization ☐ Turnover ☒ Final Status Survey	Survey Area Name: Primary Auxiliary Building	

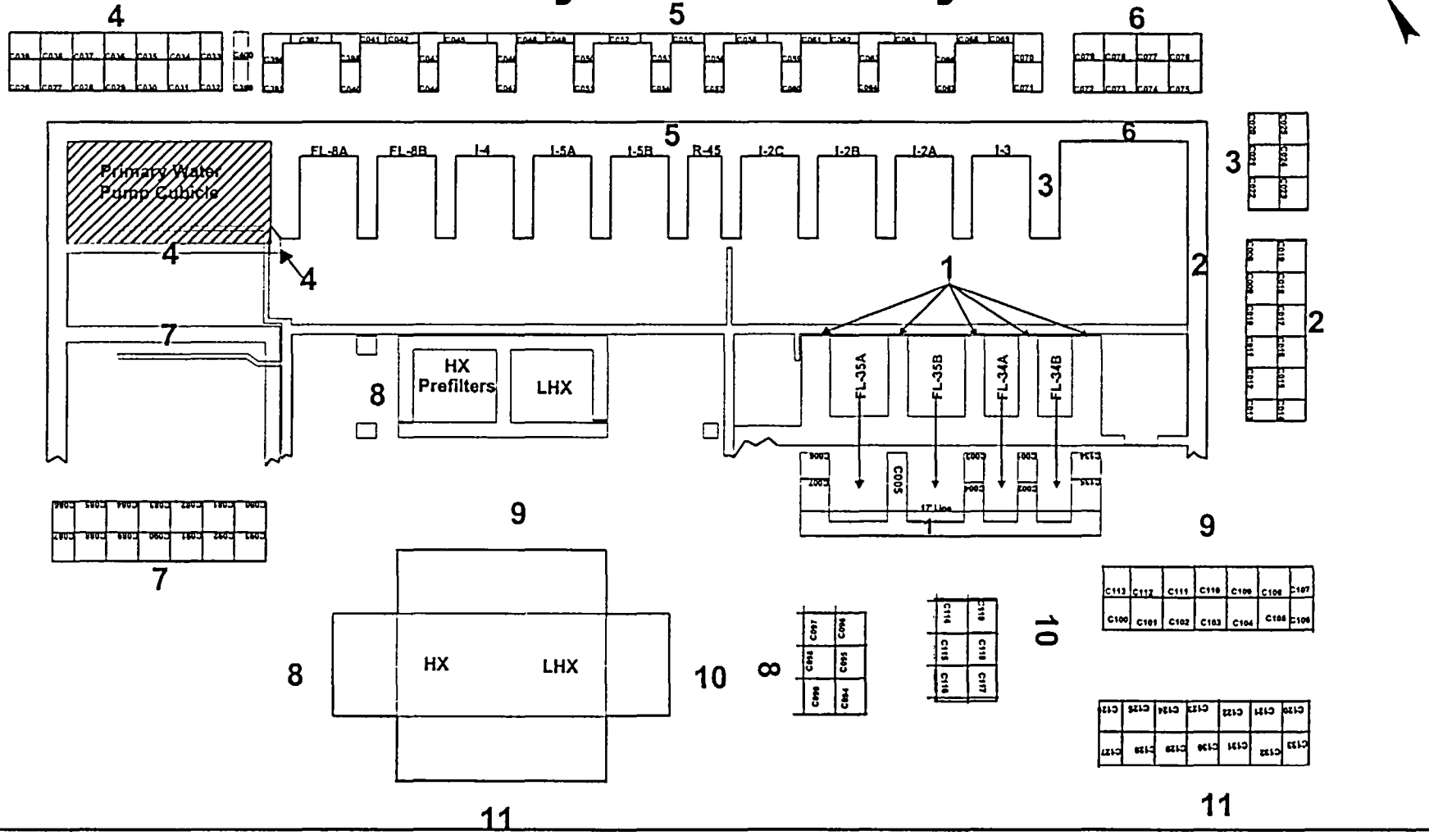
PAB: Survey Unit 1
Direct Points C001-C016
Wall Reference Map



Total Area = 315 sq-m L= 4.5 m N= 15

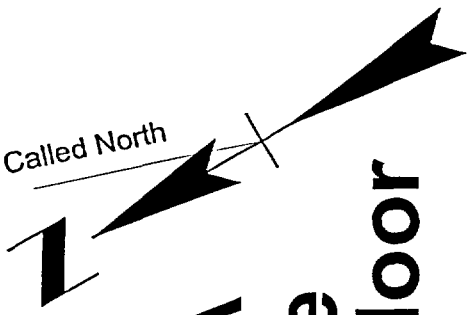
FA0600 - FSS Survey Unit 1

Pipe Tunnel Wall Surfaces & Exterior Walls HT. Exchanger Cubicle Floor area surveyed as Survey Unit 10

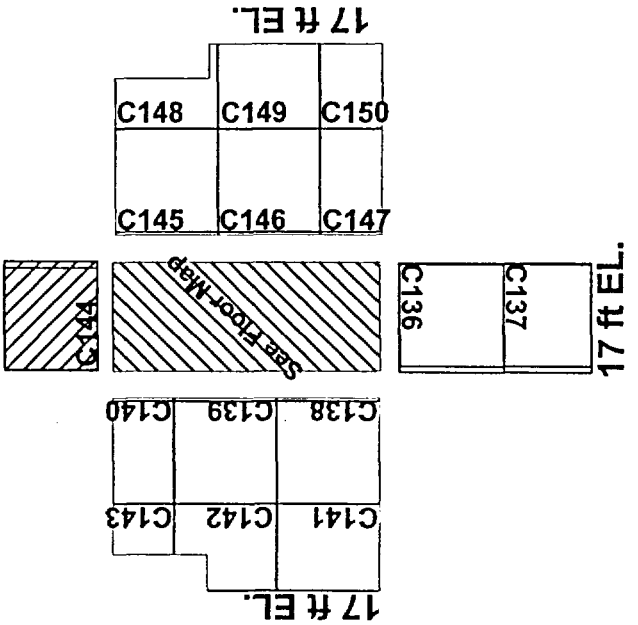


Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form		Map ID #: FA0600-01A
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB 11' Survey Unit 01 Walls	Revised 9/8/04	

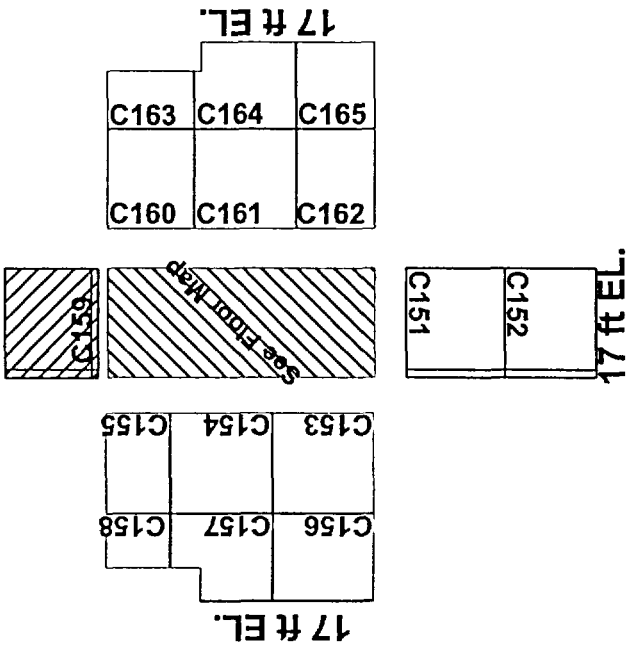
Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form	Map ID #: FA0600-01B
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB 11' Survey Unit 01 Walls Revised 9/8/04	



FL-34A Cubicle Walls & Floor



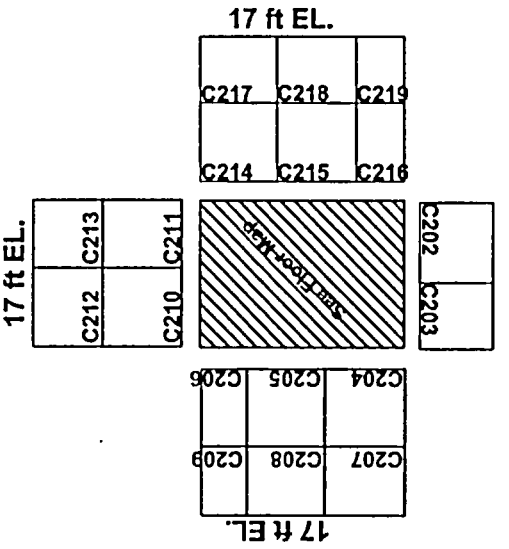
FL-34B Cubicle Walls & Floor



C144,C159 do not exist, above 17'.

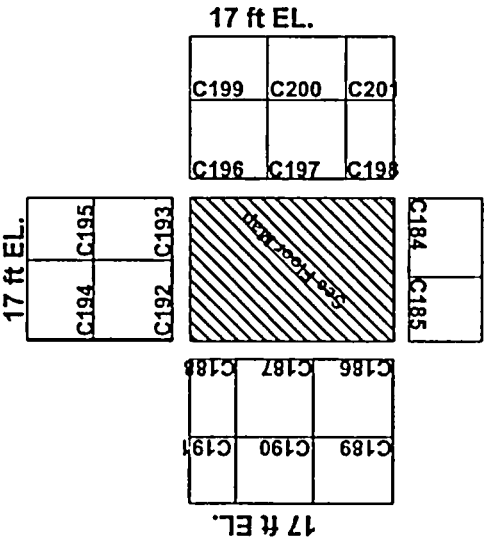
Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form	Map ID #: FA0600-01C
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB 11' Survey Unit 01 Walls Revised 11-17-03	

I-4 Cubicle Walls & Floor

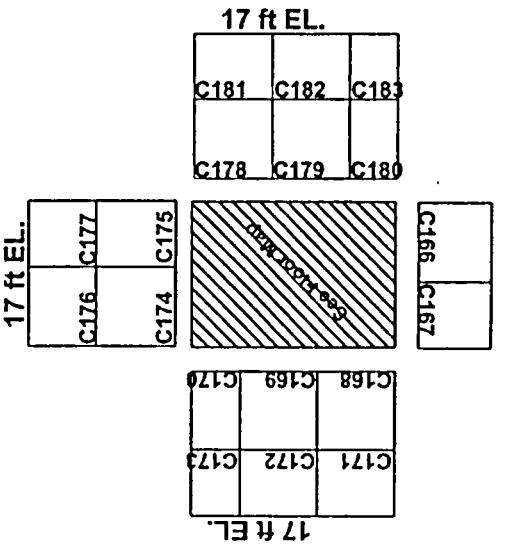


Called North

FL-8B Cubicle Walls & Floor



FL-8A Cubicle Walls & Floor



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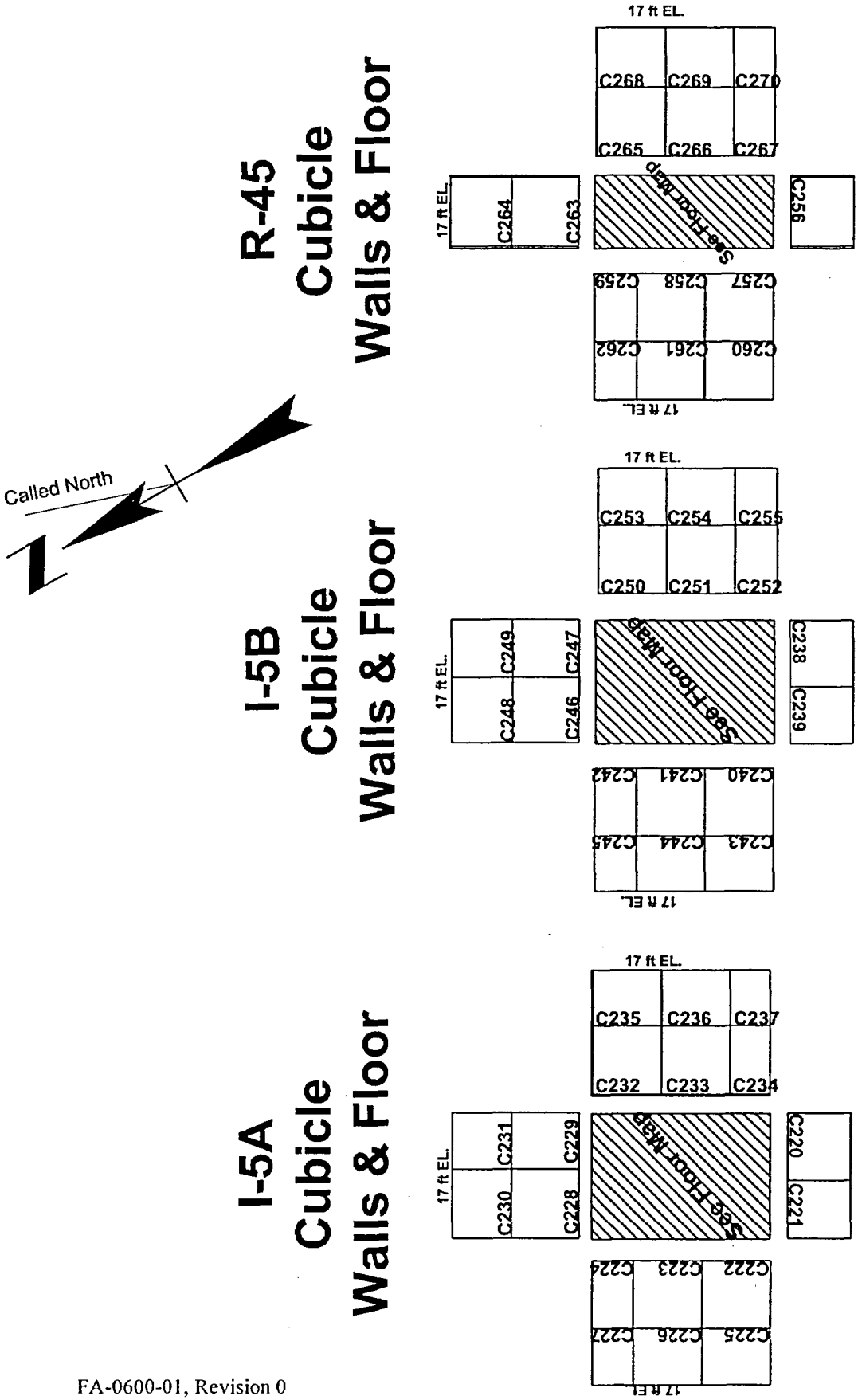
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB 11' Survey Unit 01 Walls Revised 11-17-03	



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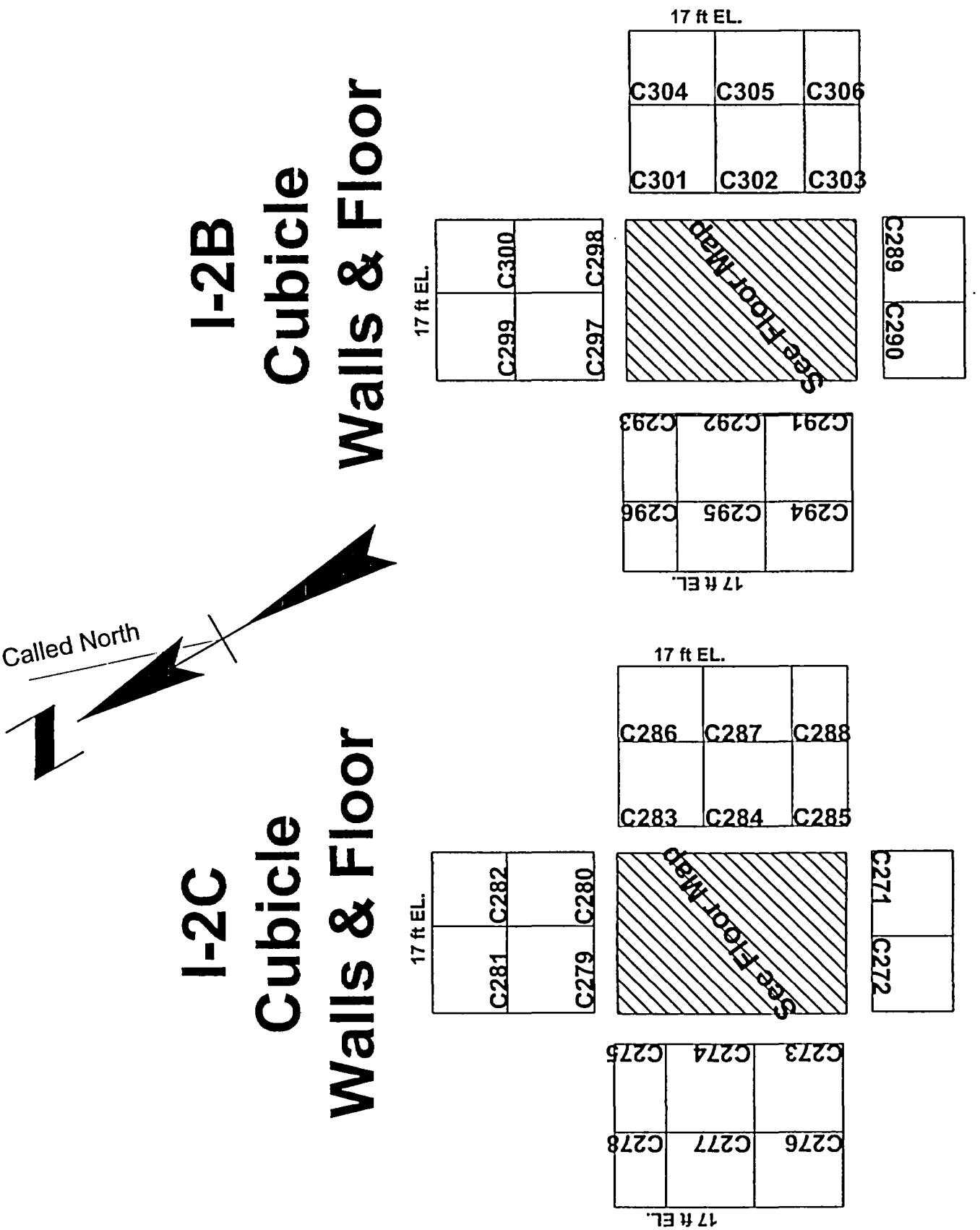

Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form	Map ID #: FA0600-01F
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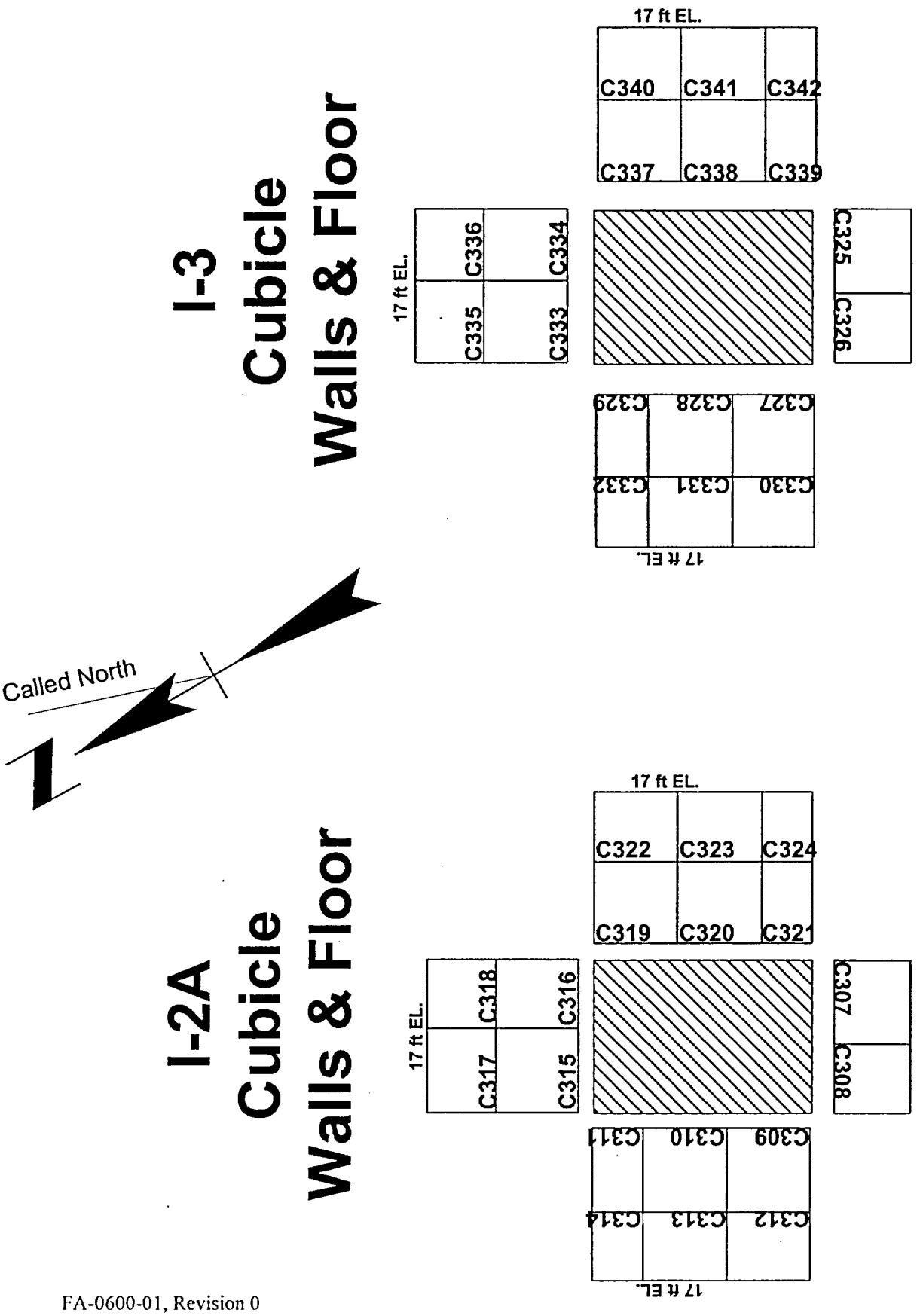
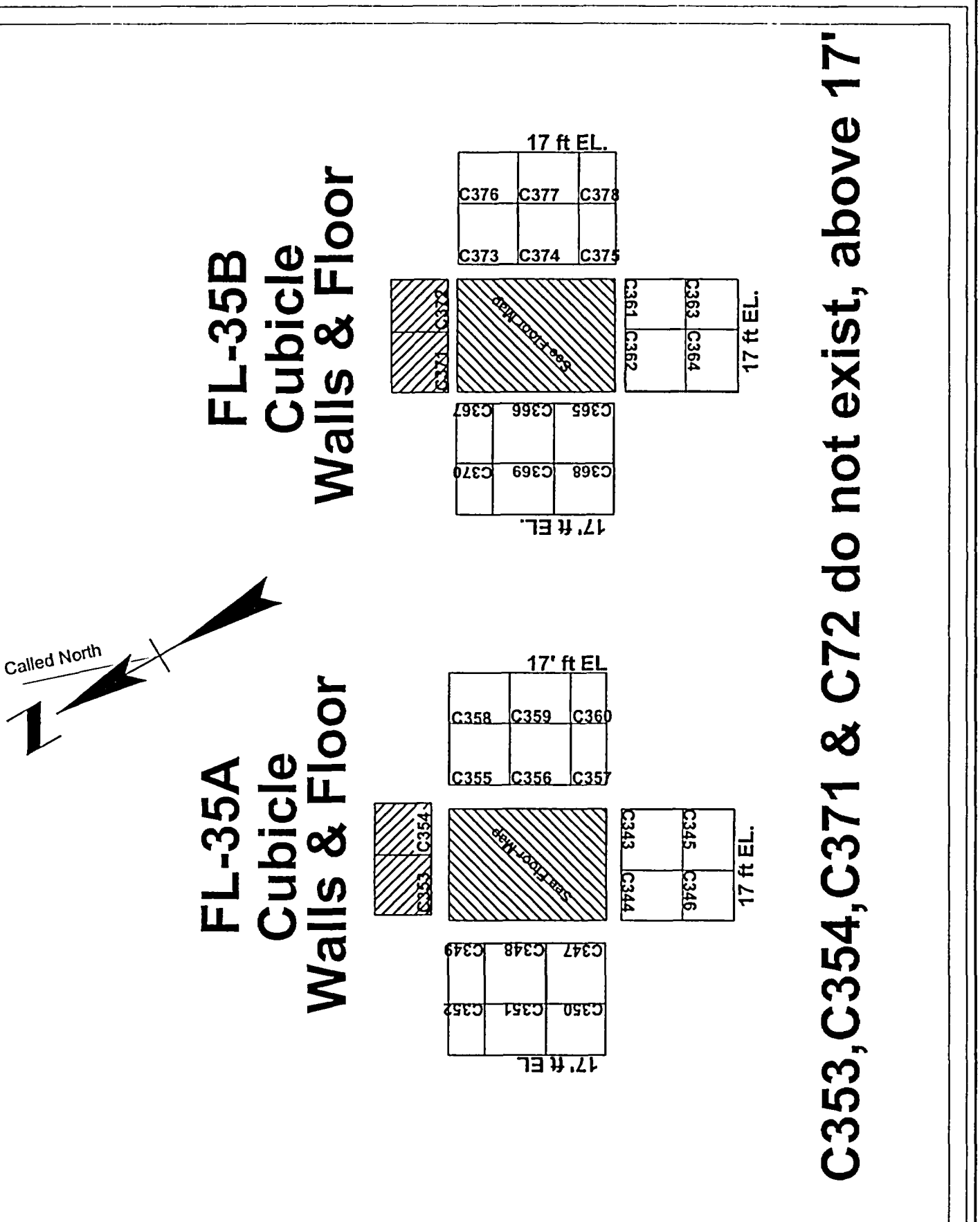
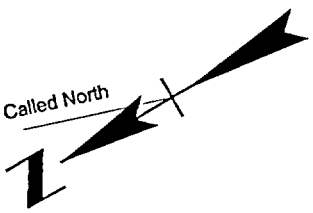
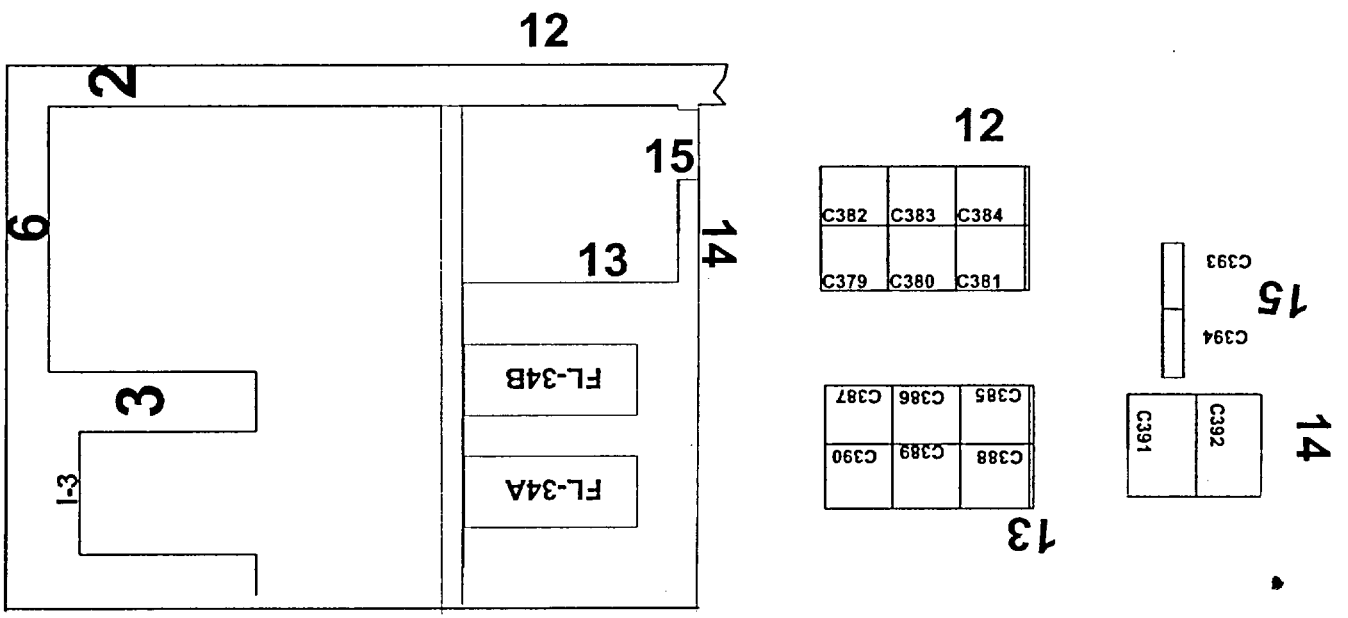


Maine Yankee Decommissioning Team	Maine Yankee Decommissioning Project Survey Form	Map ID #: FA0600-01G Revised 9/8/04
Survey Type: ☐ Characterization ☐ Turnover ■ Final Status Survey	Survey Area Name: PAB 11' Survey Unit 01	

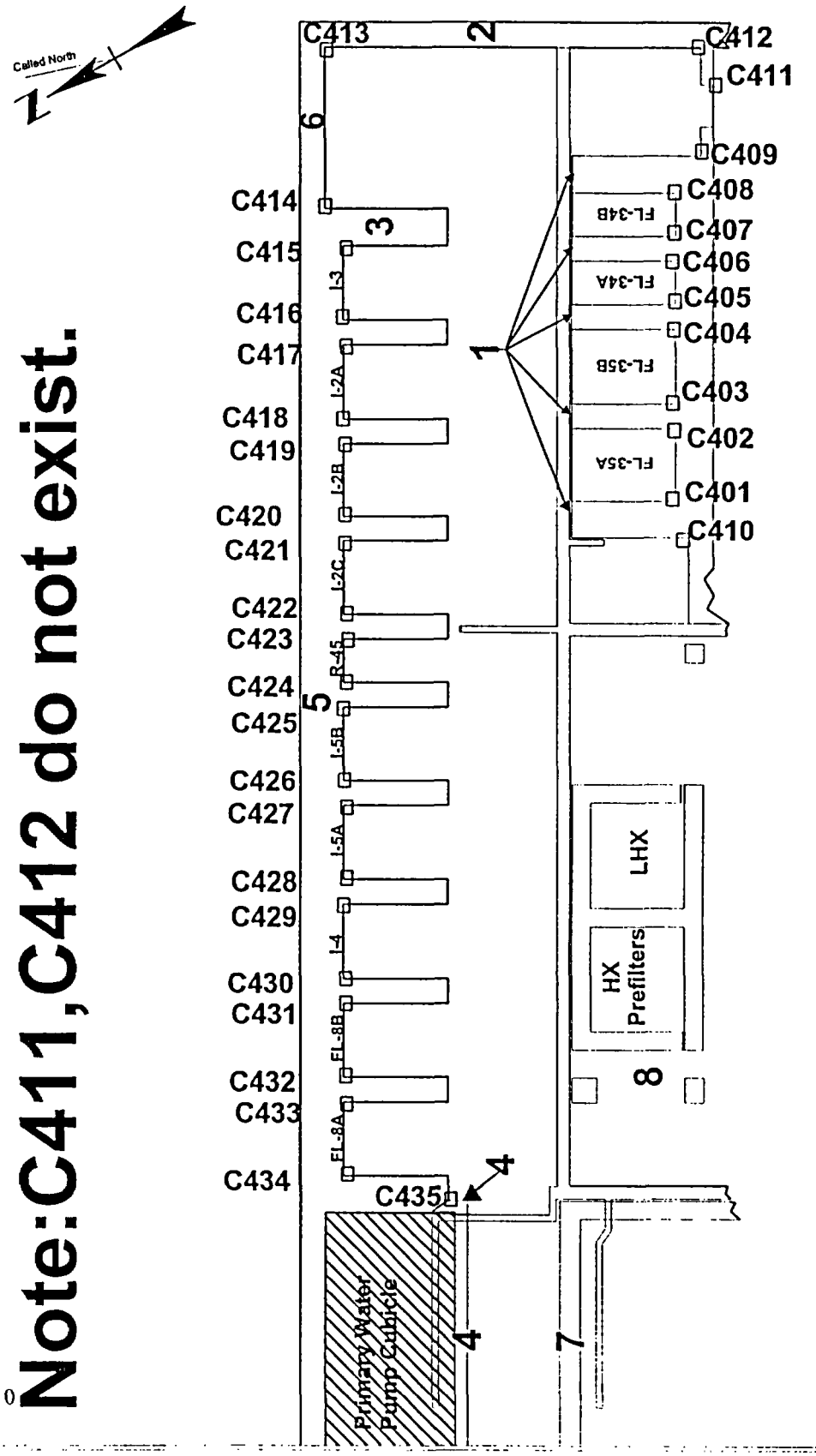


Wall Surfaces (12-15) NE Corner

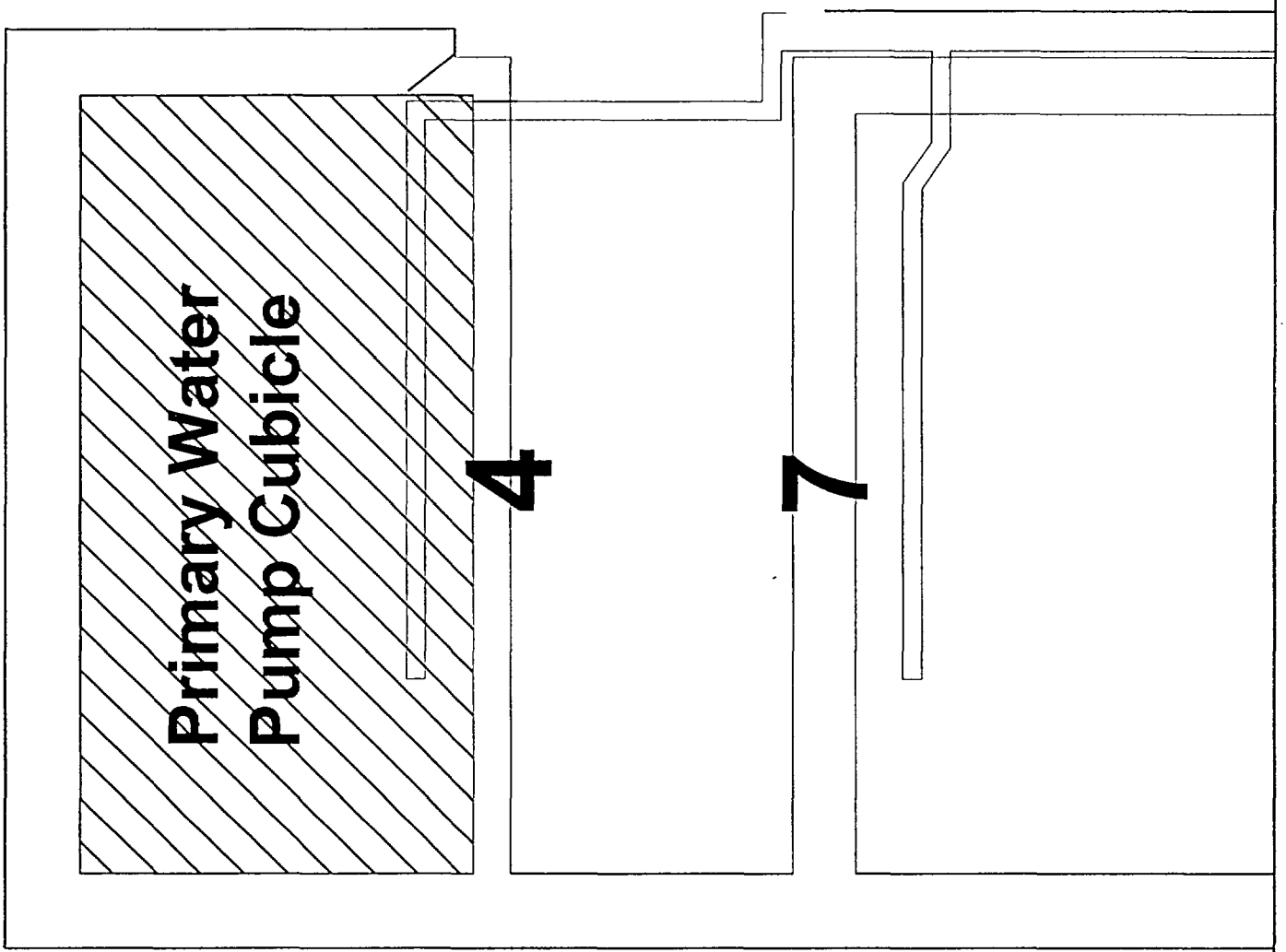




FA0600 - FSS Survey Unit 1
Pipe Tunnel Wall Junctures
Note:C411,C412 do not exist.



Survey Unit 1 Penetrations



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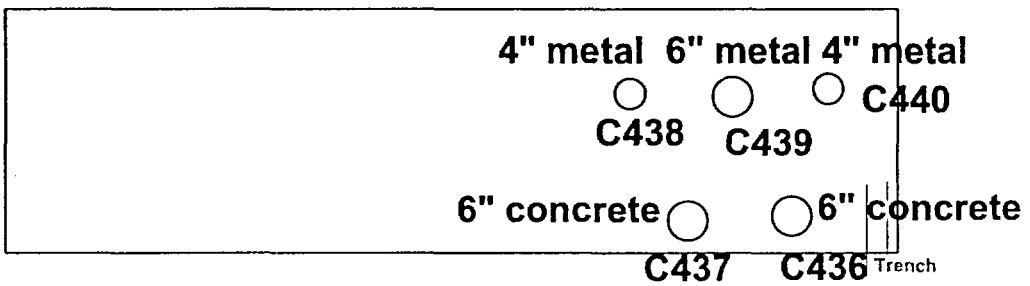


Attachment 2

Survey Unit Instrumentation

TABLE 2-1

Instrument Information

E-600 S/N	Probe S/N (type)
1933	149069 (43-68)
2619	149069 (43-68)
2489	148934 (43-68)
1622	148932 (43-68)
1929	149073 (43-68)
2488	148932 (43-68)
1933	149073 (43-68)
1622	168748 (43-37)
1933	168748 (43-37)
1929	463 (SHP-360)
2617	459 (SHP-360)
2620	453 (SHP-360)
2620	454 (SHP-360)
1933	463 (SHP-360)

TABLE 2-2
Instrument Scan MDC and Comparison with DCGL, and Design $DCGL_{EMC}$

Detector	43-68 Flat	43-68 Junctures	43-37 Flat	SHP-360 Penetrations (Steel)	SHP-360 Penetrations (Concrete)	SHP-360 Surface Irregularities
Scan MDC ($dpm/100\ cm^2$)	1,832 LTP Table 5-6	4,330 (Note 1)	3,663 LTP Table 5-6	4,876 (Note 3)	18,501 (Note 4)	10,484 LTP Table 5-6
DCGL ($dpm/100\ cm^2$)	18,000	18,000	18,000	18,000	18,000	18,000
Investigation Level (Alarm setpoint) ($dpm/100\ cm^2$)	20,940 (~DCGL + Background) (Note 6)	23,882 (~DCGL + Background) (Note 6)	19,737 (~DCGL + Background) (Notes 5 and 6)	31,875 (Note 2)	65,015 (Note 2)	46,053 (Note 2)
Design $DCGL_{EMC}$ ($dpm/100\ cm^2$) (from Release Record Table 1)	41,400	41,400	41,400	41,400	41,400	41,400

Notes:

1. Scan MDC for 43-68 from LTP Rev 3 was adjusted to account for reduced efficiency when applied to juncture geometry.
2. The SHP-360 scans were performed on grid areas of 1 m^2 or less. Elevated areas for investigation detected by SHP-360 are typically of 1 or 2 probe area size (15-30 cm^2) and therefore add little to the EMC fraction. The specific alarm setpoints were established below the 1 m^2 $DCGL_{EMC}$ of 900,000 $dpm/100cm^2$.
3. MDC Scan for SHP-360 from LTP Rev3 was adjusted to account for pipe curvature and bare metal efficiency.
4. MDC Scan for SHP-360 on concrete penetrations is estimated from the LTP SHP-360 adjusted for penetration curvature.
5. Investigation level calculated for only 100 cm^2 of detection surface area.
6. Alarm setpoints were typically rounded to the nearest 5 c/m.

Attachment 3

Investigation Table

TABLE 3-1

Investigation Table

Scan Alarm			Scan Investigation		DCGL$_{EMC}$ Comparison			
Elevated Area Grid No. (Instrument Used) ***	Alarm Setpoint (cpm)	Alarm Value (cpm)	Scaler (cpm)	Area (cm^2)	AF[5]	DCGL$_{EMC}$ ($dpm/100cm^2$)	Elevated Area Activity[6] ($dpm/100cm^2$)	DCGL$_{EMC}$ Comparison Fraction
C021 (43-37)	3,880	3,890	1602	N/A	N/A	N/A	<DCGL	0
C029 (43-37)	3,880	13,250	5,460	200	2500	4.5E7	33,333	7.4E-4
C030 (43-37)	3,880	4,070	1,684	N/A	N/A	N/A	<DCGL	0
C031 (43-37)	3,880	4,090	1,456	N/A	N/A	N/A	<DCGL	0
C073 (43-37)	3,880	4,000	1,498	N/A	N/A	N/A	<DCGL	0
C074 (43-37)	3,880	4,300	1,596	N/A	N/A	N/A	<DCGL	0
C080 (43-37)	3,880	5,160	2,440	N/A	N/A	N/A	<DCGL	0
C081 (43-37)	3,880	5,540	2,340	N/A	N/A	N/A	<DCGL	0
C084 (43-37)	3,880	4,230	1,241	N/A	N/A	N/A	<DCGL	0

[5] For investigation purposes, consistent with LTP dose modeling for basement concrete surfaces and LTP Section 6.8.1, a conservative area factor was determined by the formula of AF = 50 m^2 / actual size of the elevated area.

[6] As an additional conservatism, the background and the Survey Unit mean activity have not been subtracted in calculating the elevated area activity.

Scan Alarm			Scan Investigation		$DCGL_{EMC}$ Comparison			
Elevated Area Grid No. (Instrument Used) ***	Alarm Setpoint (cpm)	Alarm Value (cpm)	Scaler (cpm)	Area (cm^2)	AF[5]	$DCGL_{EMC}$ ($dpm/100cm^2$)	Elevated Area Activity[6] ($dpm/100cm^2$)	$DCGL_{EMC}$ Comparison Fraction
C180 (43-37)	3,880	4,310	1,703	N/A	N/A	N/A	<DCGL	0
C196 (43-37)	3,880	4,250	1,043	N/A	N/A	N/A	<DCGL	0
C202 (43-37)	3,880	4,630	1,713	N/A	N/A	N/A	<DCGL	0
C223 (43-37)	3,880	4,620	1,286	N/A	N/A	N/A	<DCGL	0
C228 (43-37)	3,880	5,040	1,707	N/A	N/A	N/A	<DCGL	0
C229 (43-37)	3,880	3,880	932	N/A	N/A	N/A	<DCGL	0
C232 (43-37)	3,880	4,270	1,701	N/A	N/A	N/A	<DCGL	0
C241 (43-37)	3,880	5,080	1,790	N/A	N/A	N/A	<DCGL	0
C242[7] (43-37)	3,880	6,280	4,670	100	5000	9.0E7	28,510	3.2E-4
C246 (43-37)	3,880	4,090	1,537	N/A	N/A	N/A	<DCGL	0
C258 (43-37)	3,880	3,890	1,266	N/A	N/A	N/A	<DCGL	0

[7] This grid also alarmed during initial surveys with the 43-68 probe.

Scan Alarm			Scan Investigation		$DCGL_{EMC}$ Comparison			
Elevated Area Grid No. (Instrument Used) ***	Alarm Setpoint (cpm)	Alarm Value (cpm)	Scaler (cpm)	Area (cm^2)	AF[5]	$DCGL_{EMC}$ ($dpm/100cm^2$)	Elevated Area Activity[6] ($dpm/100cm^2$)	$DCGL_{EMC}$ Comparison Fraction
C274 (43-37)	3,880	5,330	1,540	N/A	N/A	N/A	<DCGL	0
C275 (43-37)	3,880	4,100	1,329	N/A	N/A	N/A	<DCGL	0
C277 (43-37)	3,880	7,830	4,810	100	5000	9.0E7	29,365	3.3E-4
C278 (43-37)	3,880	4,670	1,525	N/A	N/A	N/A	<DCGL	0
C279 (43-37)	3,880	5,590	1,033	N/A	N/A	N/A	<DCGL	0
C280 (43-37)	3,880	4,560	1,317	N/A	N/A	N/A	<DCGL	0
C284 (43-37)	3,880	4,380	499	N/A	N/A	N/A	<DCGL	0
C291 (43-37)	3,880	4,540	2,370	N/A	N/A	N/A	<DCGL	0
C292' (43-37)	3,880	6,060	4,620	100	5000	9.0E7	28,205	3.1E-4
C293 (43-37)	3,880	7,120	2,260	N/A	N/A	N/A	<DCGL	0
C295' (43-37)	3,880	9,140	4,730	100	5000	9.0E7	28,877	3.2E-4
C297 (43-37)	3,880	6,390	879	N/A	N/A	N/A	<DCGL	0

Scan Alarm			Scan Investigation		$DCGL_{EMC}$ Comparison			
Elevated Area Grid No. (Instrument Used) ***	Alarm Setpoint (cpm)	Alarm Value (cpm)	Scaler (cpm)	Area (cm^2)	AF[5]	$DCGL_{EMC}$ ($dpm/100cm^2$)	Elevated Area Activity[6] ($dpm/100cm^2$)	$DCGL_{EMC}$ Comparison Fraction
C298 (43-37)	3,880	6,190	2,800	N/A	N/A	N/A	<DCGL	0
C314 (43-37)	3,880	3,950	1,556	N/A	N/A	N/A	<DCGL	0
C315 (43-37)	3,880	4,880	1,963	N/A	N/A	N/A	<DCGL	0
C320 (43-37)	3,880	4,060	549	N/A	N/A	N/A	<DCGL	0
C333 (43-37)	3,880	3,970	1,190	N/A	N/A	N/A	<DCGL	0
C338 (43-37)	3,880	4,080	1,619	N/A	N/A	N/A	<DCGL	0
C399 (43-37)	3,880	5,780	2,170	N/A	N/A	N/A	<DCGL	0
C408 (43-68) Juncture	1,655	1,745	1,549	100	5000	9.0E7	22,352	2.5E-4
C420 (43-68) Juncture	1,655	1,869	1,540	100	5,000	9.0E7	22,222	2.5E-4
C081 (SHP-360)	420	553	647	100	5,000	9.0E7	70,943	7.9E-4
C165 (SHP-360)	420	477	276	20	25,000	4.5E8	30,263	6.7E-5

Scan Alarm			Scan Investigation		$DCGL_{EMC}$ Comparison			
Elevated Area Grid No. (Instrument Used) ***	Alarm Setpoint (cpm)	Alarm Value (cpm)	Scaler (cpm)	Area (cm^2)	AF[5]	$DCGL_{EMC}$ ($dpm/100cm^2$)	Elevated Area Activity[6] ($dpm/100cm^2$)	$DCGL_{EMC}$ Comparison Fraction
C292 (SHP-360)	420	508	761	20	25,000	4.5E8	83,443	1.9E-4
C293 (SHP-360)	420	646	1,087	120	4166	7.5E7	119,189	1.59E-3
C436 (SHP-360) Pen	336	360	151	20	25,000	4.5E8	29,218	6.5E-5
C437 (SHP-360) Pen	336	415	462	100	5,000	9.0E7	89,396	9.93E-4
Survey Unit Remainder	N/A	N/A	N/A	N/A	N/A	$DCGL_W$ = 18,000	Survey Unit Mean = 453	0.0252
							Total	**0.031**

*** **All alarms occurring with the 43-37 were evaluated with the 43-68.**

Attachment 4

Statistical Data

Survey Package FA-0600 Unit 1 Surface Sign Test Summary

Evaluation Input Values		Comments
Survey Package:	FA-0600	Primary Auxiliary Building
Survey Unit:	01	
Evaluator:	GP	
$DCGL_w$:	18,000	
$DCGL_{emc}$:	41,400	
LBGR:	9,000	
Sigma:	3,811	
Type I error:	0.05	
Type II error:	0.05	
Total Instrument Efficiency:	13.0%	
Detector Area (cm^2):	126	
Material Type:	Concrete Unpainted	Choosing 'N/A' sets material background to "0"
Calculated Values		**Comments**
$Z_{1-\alpha}$:	1.645	
$Z_{1-\beta}$:	1.645	
Sign p:	0.97725	
Calculated Relative Shift:	2.3	
Relative Shift Used:	2.3	Uses 3.0 if Relative Shift >3
N-Value:	12	
N-Value+20%:	15	
Static Data Values		**Comments**
Number of Samples:	16	
Median:	282	
Mean:	454	
Net Static Data Standard Deviation:	522	
Total Standard Deviation:	551	SRSS
Maximum:	2,107	
Sign Test Results		**Comments**
Adjusted N Value:	16	
S+ Value:	16	
Critical Value:	11	
Criteria Satisfaction		**Comments**
Sufficient samples collected:	Pass	
Maximum value <$DCGL_w$:	Pass	
Median value <$DCGL_w$:	Pass	
Mean value <$DCGL_w$:	Pass	
Maximum value <$DCGL_{emc}$:	Pass	
Total Standard Deviation <=Sigma:	Pass	
Sign test results:	Pass	
Final Status		**Comments**
The survey unit passes all conditions:	Pass	

Page/Date/Time	2 8/9/04 8:50:10 AM
Database	C:\Program Files\NCSS97\FA0600SU1.S0
Variable	C2

Plots Section

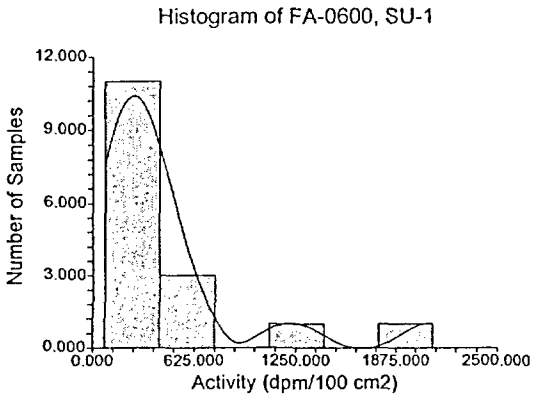
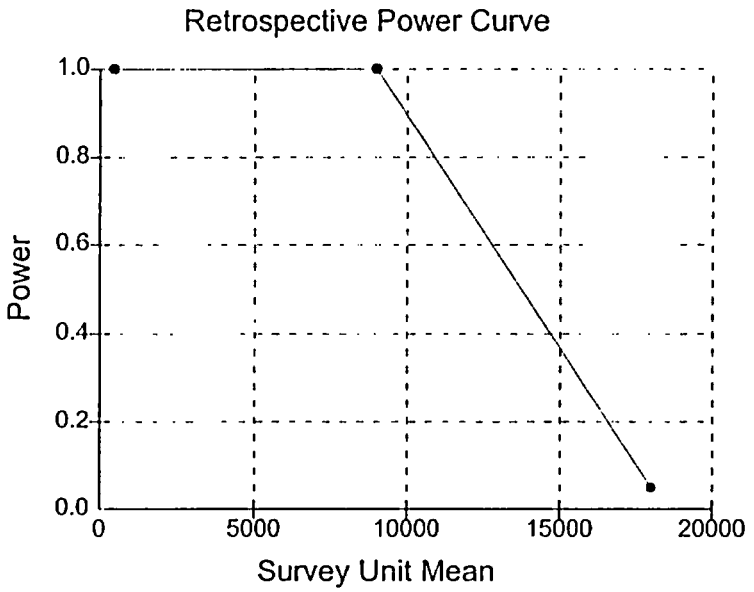
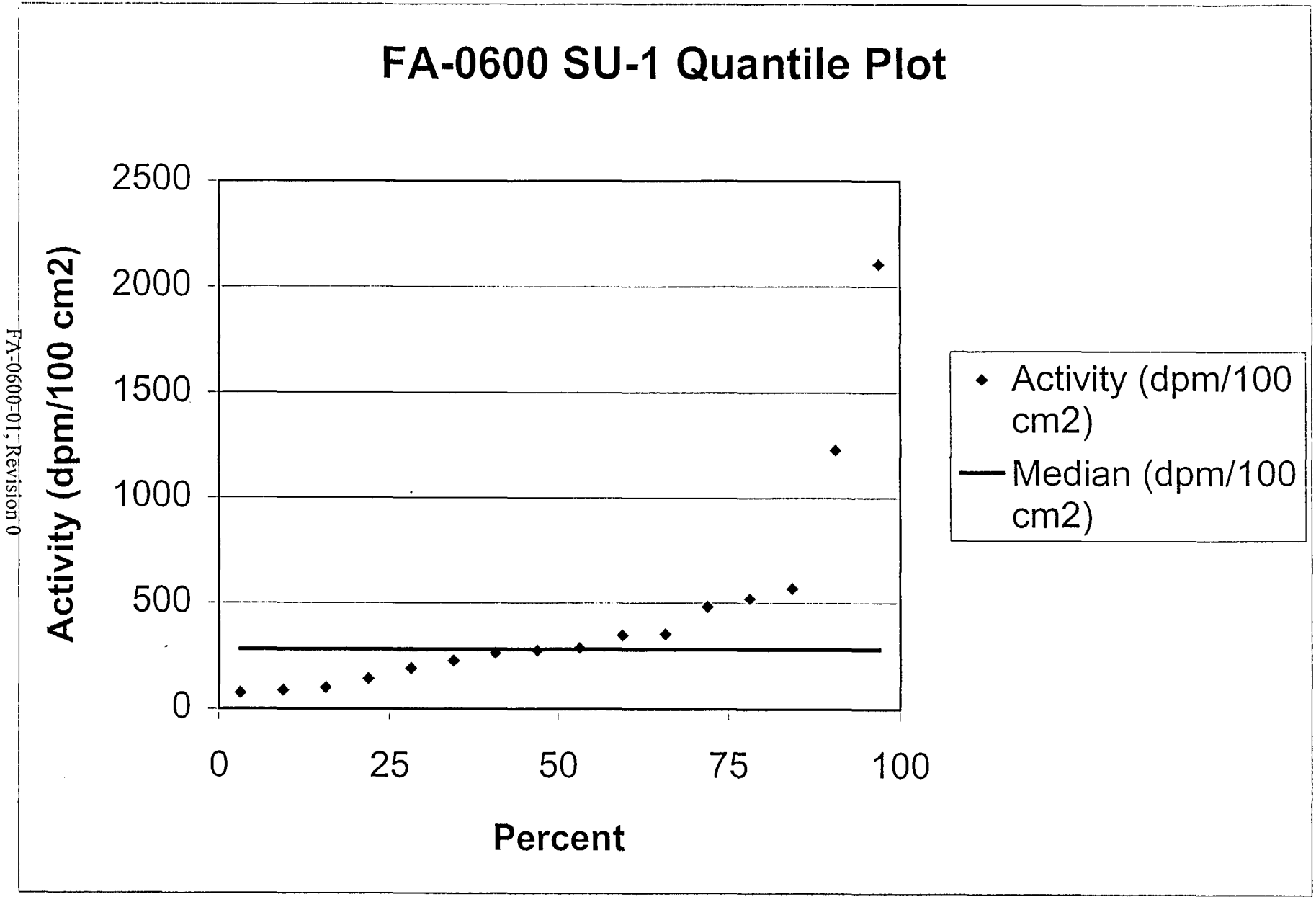


Chart Section




FA-0600 SU-1 Quantile Plot
Activity (dpm/100 cm2)
2500
2000
1500
1000
500
0
0
25
50
75
100
Percent
Activity (dpm/100 cm2)
Median (dpm/100 cm2)