



Tritium Laboratory  
2 January 2014

SWAB REPORT # 713

SWAB DATE: 11 December 2013

*R/V Oceanus* & West Coast Van Pool Vans

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James D. Happell  
Associate Research Professor

Distribution:  
SWAB Committee  
David O'Gorman

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m<sup>2</sup>. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m<sup>2</sup>. An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	$^3\text{H}$ (dpm/m <sup>2</sup> )	$^{14}\text{C}$ (dpm/m <sup>2</sup> )	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above 1000 dpm/m <sup>2</sup> should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

$^{14}\text{C}$ : Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing  $^{14}\text{CO}_2$ ). Follow up with wash as if for  $^3\text{H}$ .

Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D dispose in radiation waste system.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 713

LOCATION: Newport, OR  
VESSEL: *R/V Oceanus and vans*

DATE: 11 December 2013  
TECHNICIAN: Cecilia Roig

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>			<sup>14</sup> C dpm/m <sup>2</sup>		
		activity	±	error	activity	±	error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank C.O. #1	39	±	51	0	±	0
	<u>Main Lab (Figure 1)</u>						
3	Deck in front of winch controls	0	±	0	0	±	0
4	Deck between computer benches	0	±	0	14	±	45
5	Deck near aft entrance	0	±	0	36	±	38
6	Stbd. benchtop	0	±	0	21	±	37
7	Refrigerator	0	±	0	7	±	41
8	Deck in front of sink	0	±	0	13	±	36
9	Deck in front of port benchtop	0	±	0	27	±	37
10	Sink area	0	±	0	16	±	39
	<u>Wet Lab (Figure 1)</u>						
11	Fume hood	3	±	10	28	±	35
12	Deck in front of hood	0	±	0	9	±	42
13	Deck near aft door	0	±	0	13	±	38
14	Deck near port door	0	±	0	0	±	0
	<u>Upper Lab (Figure 1)</u>						
16	Deck in front of port computer	0	±	0	18	±	37
17	Deck in front of aft computer	13	±	119	0	±	0
	<u>Mess Deck (Figure 1)</u>						
15	Deck	2	±	4	38	±	36
18	Intermediate bucket blank C.O. #1	2	±	0	0	±	0
	<u>Radiation Van 625-1-04 (Figure 2)</u>						
19	Refrigerator	22	±	37	18	±	33
20	Freezer	202	±	63	0	±	-1
21	Benchtop above refrigerator	151	±	59	11	±	20
22	Benchtop above freezer	77	±	53	3	±	15
23	Sink area	216	±	61	15	±	20
24	Fume hood	40	±	47	9	±	28
25	Benchtop next to LSC	33	±	49	3	±	21

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>			$^{14}\text{C}$ dpm/m <sup>2</sup>		
		activity		error	activity		error
26	Deck at entrance near sink	264	±	62	39	±	27
27	Center deck	*604	±	81	24	±	15
28	Deck entrance near escape hatch	*940	±	0	*50	±	19
29	Intermediate bucket blank C.O. #1	93	±	0	11	±	43
<u>Polar Programs Rad. Van 2408.01 (Figure 3)</u>							
30	Sink area	32	±	57	0	±	0
31	Refrigerator	88	±	48	25	±	30
32	Freezer	118	±	59	0	±	0
33	Benchtop above refrigerator	7	±	38	4	±	32
34	Benchtop above freezer	0	±	0	17	±	36
35	Fume hood	15	±	57	0	±	0
36	Benchtop next to LSC	4	±	29	6	±	33
37	Deck at entrance next to fume hood	84	±	51	18	±	28
38	Benchtop across sink	0	±	0	38		37
39	Center deck	39	±	47	9	±	28
40	Deck at entrance near sink	64	±	45	28	±	32
41	Final bucket blank C.O. #1	0	±	0	11	±	38
42	Initial bucket blank C.O. #2	0	±	0	4	±	38
<u>OSU Rad Van 625.1.01.2 (Figure 4)</u>							
43	Freezer	20	±	86	0	±	0
44	Refrigerator	309	±	66	17	±	18
45	Benchtop above refrigerator	45	±	44	18	±	31
46	Fume hood	**19,007	±	388	*302	±	16
47	Benchtop across from refrigerator	51	±	48	11	±	28
48	Benchtop across from freezer	159	±	56	21	±	25
49	Deck at entrance near fume hood	147	±	56	21	±	26
50	Center deck	249	±	62	34	±	26
51	Deck at entrance near sink	130	±	60	13	±	23
52	Sink area	265	±	65	15	±	18
53	Intermediate bucket blank C.O. #2	3	±	0	0	±	0
<u>TEX U Van 2256095 (Figure 5)</u>							
54	Freezer	28	±	40	15	±	32
55	Refrigerator	107	±	48	42	±	32
56	Benchtop above freezer	96	±	62	0	±	0
57	Benchtop above refrigerator	167	±	58	11	±	19
58	Sink area	69	±	42	43	±	33
59	Benchtop across refrigerator	78	±	50	15	±	27
60	Fume hood	*711	±	63	*1,146	±	65

Sample #	Sample Identification	$^3\text{H}$ dpm/m <sup>2</sup>			$^{14}\text{C}$ dpm/m <sup>2</sup>		
		activity		error	activity		error
61	Deck by escape hatch	296	±	66	13	±	16
62	Center deck	194	±	58	24	±	25
63	Deck by sink and LSC	292	±	66	20	±	20
64	Intermediate bucket blank C.O. #2	0	±	0	4	±	50
<u>Van 2408-05 (Figure 6)</u>							
65	Refrigerator	0	±	0	5	±	48
66	Freezer	0	±	0	8	±	35
67	Benchtop above refrigerator	0	±	0	0	±	0
68	Benchtop above freezer	0	±	0	3	±	58
69	Fume hood	0	±	0	0	±	0
70	Benchtop across freezer	0	±	0	9	±	44
71	Benchtop across hood	0	±	0	0	±	0
72	Benchtop across sink	0	±	0	0	±	0
73	Deck at entrance by hood	0	±	0	12	±	36
74	Deck at entrance by sink	0	±	0	0	±	0
75	Center deck	0	±	0	0	±	0
76	Intermediate bucket blank C.O. #2	11	±	29	16	±	33
<u>UNOLSVan 625203 (Figure 7)</u>							
77	Benchtop across sink	0	±	0	0	±	0
78	Sink area	0	±	0	0	±	0
79	Inside hood	0	±	0	0	±	0
80	Benchtop across hood	20	±	59	0	±	0
81	Deck in front of hood	10	±	51	0	±	0
82	Deck in vestibule	0	±	0	0	±	0
83	Intermediate bucket blank C.O. #2	0	±	0	8	±	50
<u>UNOLS Share Use Cold Van 2001 29-2 (Figure 8)</u>							
84	Sink area	0	±	0	14	±	36
85	Fume hood	3	±	49	0	±	0
86	Benchtop across fume hood	0	±	0	12	±	40
87	Benchtop across sink	0	±	0	0	±	0
88	Center deck	0	±	0	6	±	38
89	Deck in vestibule	0	±	0	0	±	0
90	Final bucket blank	0	±	0	4	±	44

### Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.

All areas tested on the ship, Polar Programs Van 2408.01, Van 2408-05, UNOLS Van 625-203 and

UNOLS Share Use Cold Van 2001 29-2 were free of  $^3\text{H}$  and  $^{14}\text{C}$  contamination that requires cleaning. Minor  $^{14}\text{C}$  and  $^3\text{H}$  contamination was found in Radiation Van 625-1-04 but no cleaning is required. Minor  $^{14}\text{C}$  and moderate  $^3\text{H}$  contamination was found in OSU Rad Van 645.1.01.2 fume hood. Cleaning is required before any additional use. Minor  $^{14}\text{C}$  and  $^3\text{H}$  contamination was found in TEX U Van 2256095 fume hood. Cleaning is required before any natural tracer work.

# R/V Oceanus

Figure 1  
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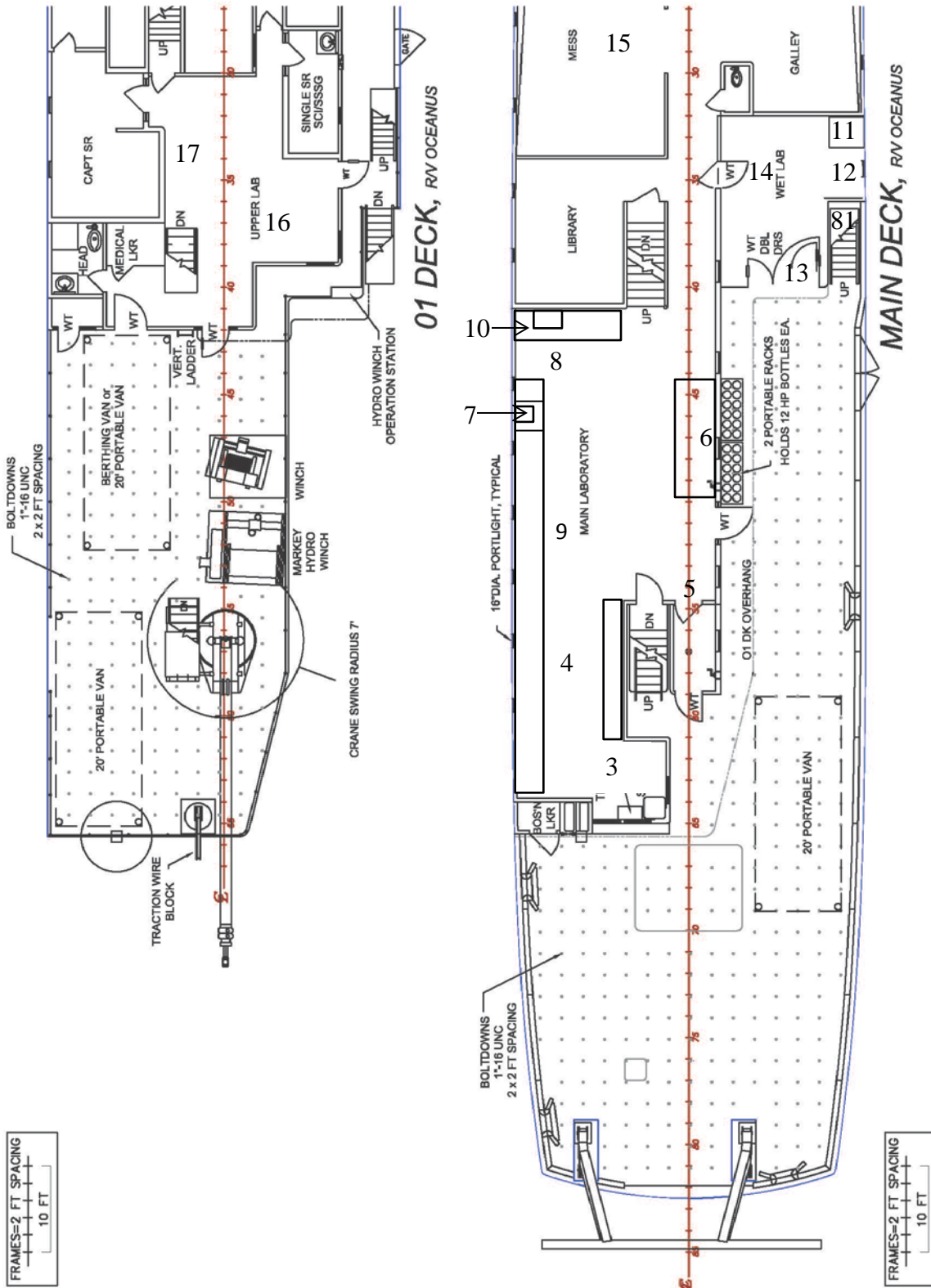


Figure 2  
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### UNOLS Radiation Van 625-1-04

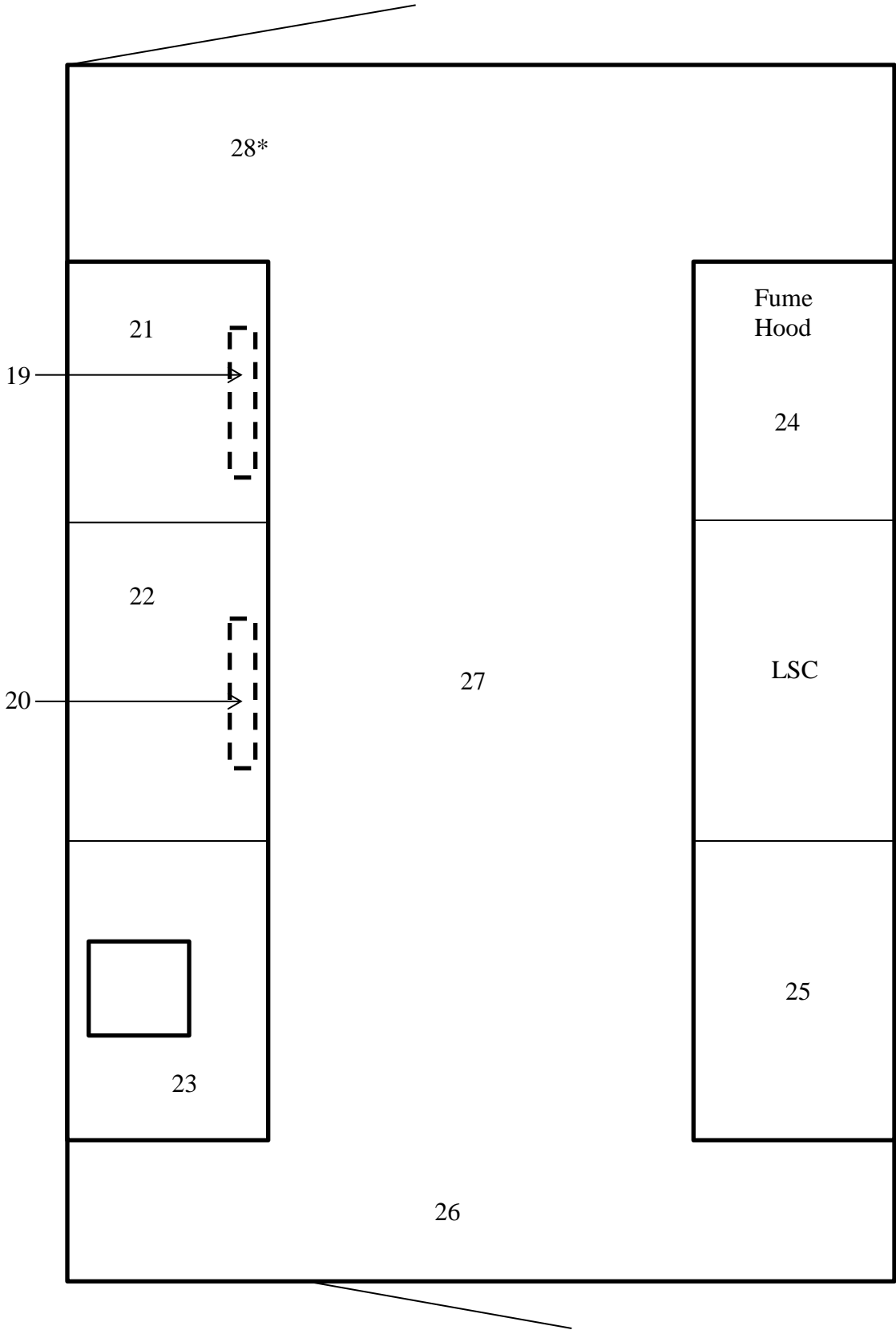




Figure 3  
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# POLAR PROGRAMS VAN 2408.01

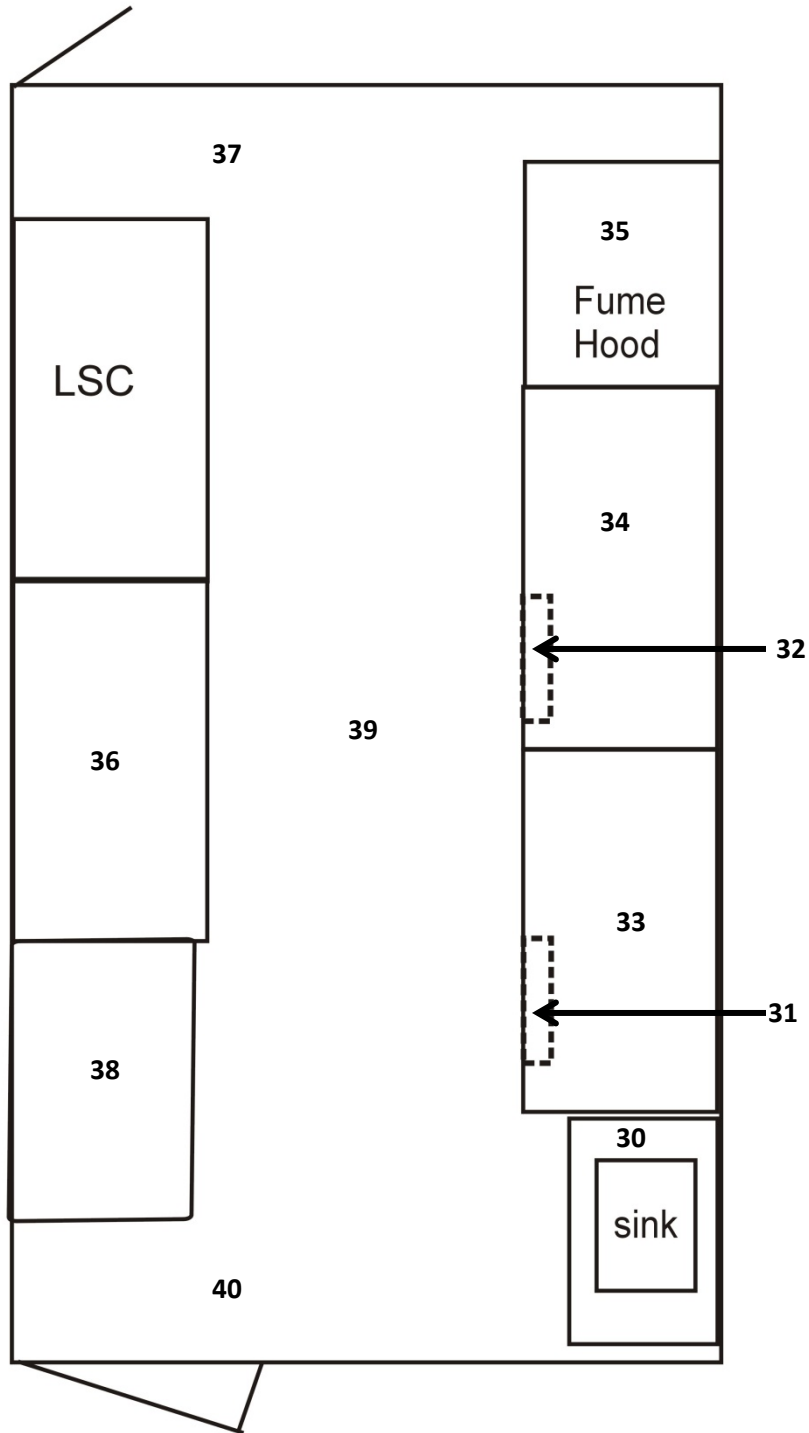


Figure 4  
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RADIOISOTOPE VAN # 645.1.01.2

OREGON STATE UNIVERSITY

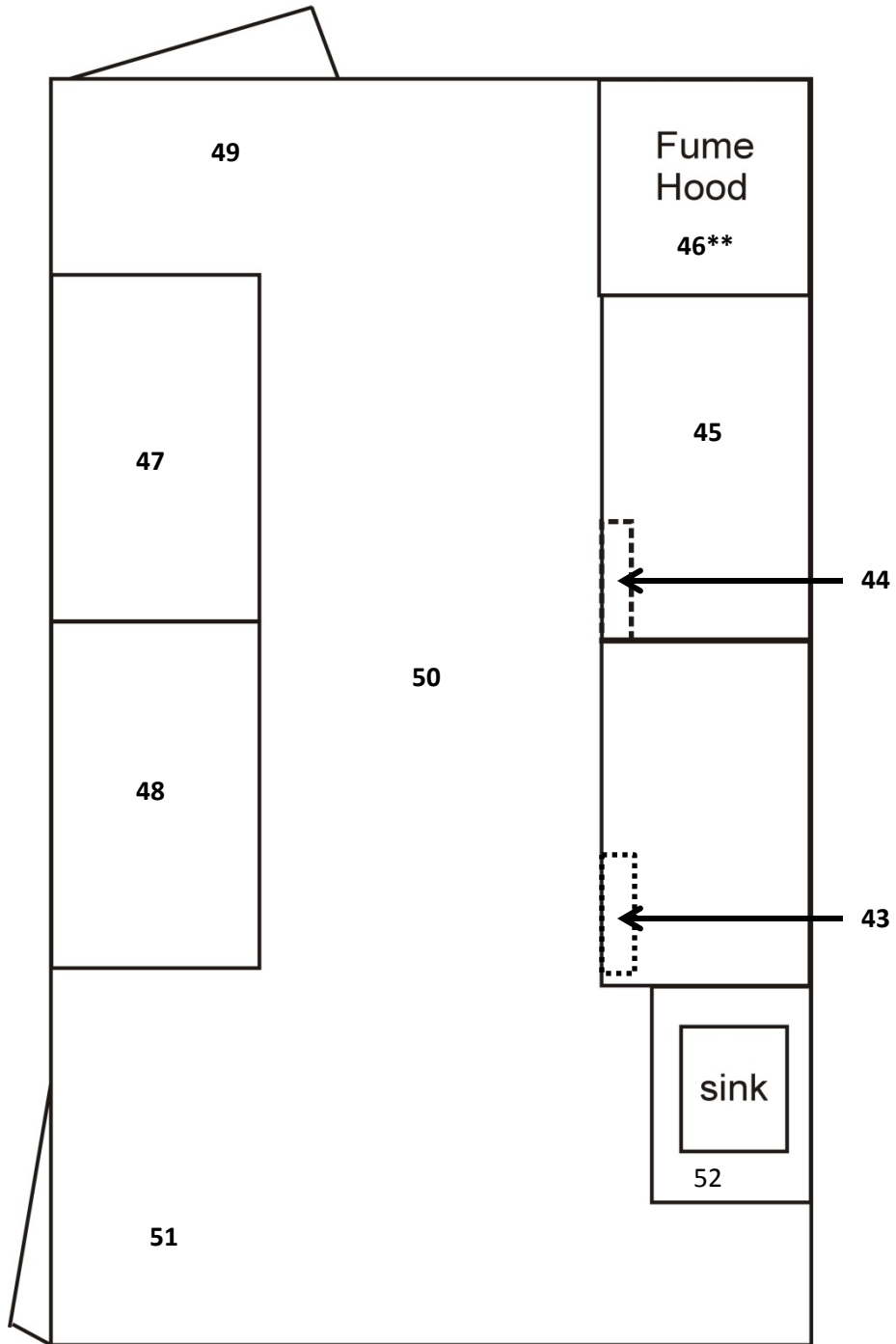
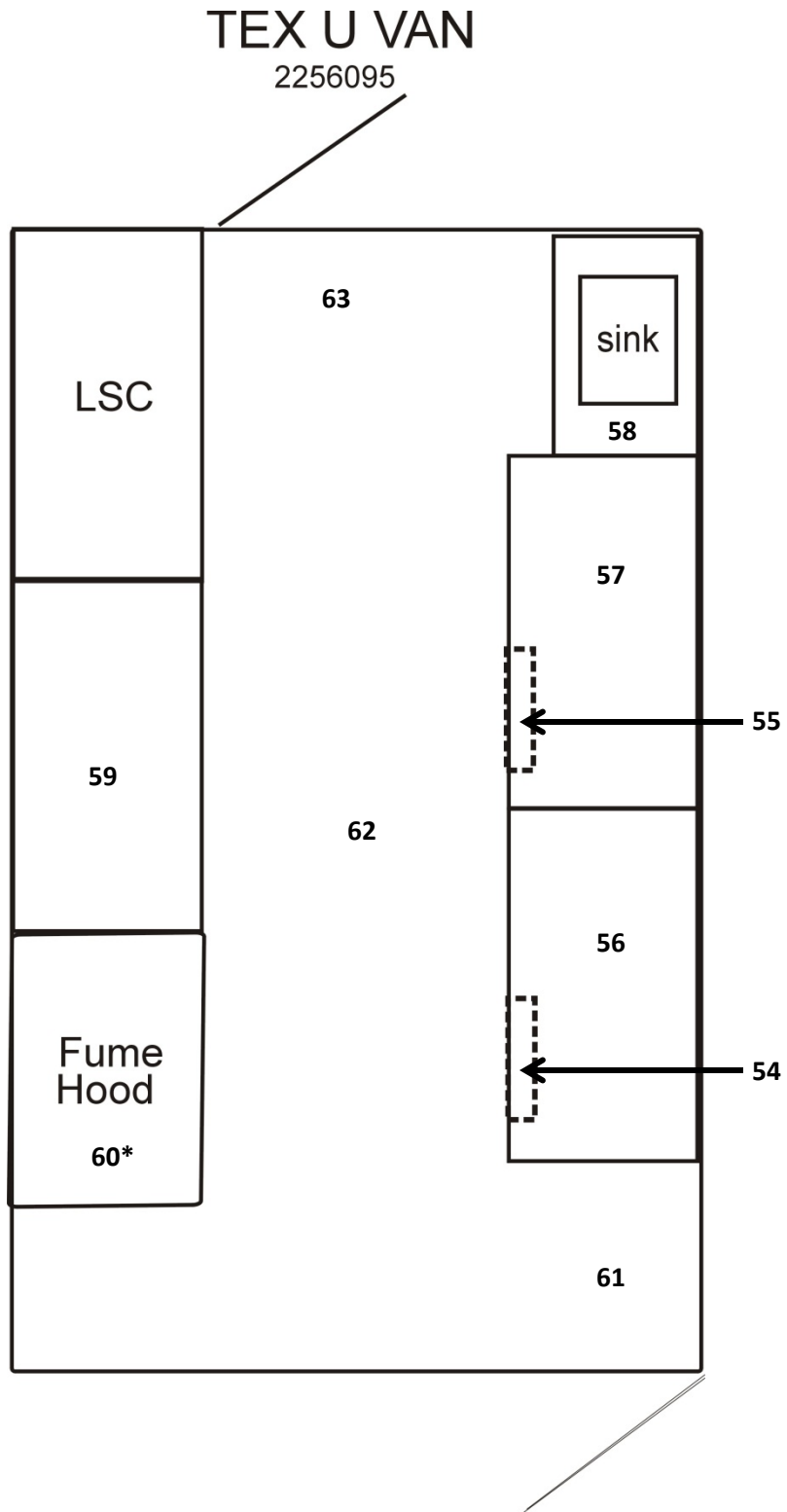


Figure 5  
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UNOLS Van 2408-05

Figure 6  
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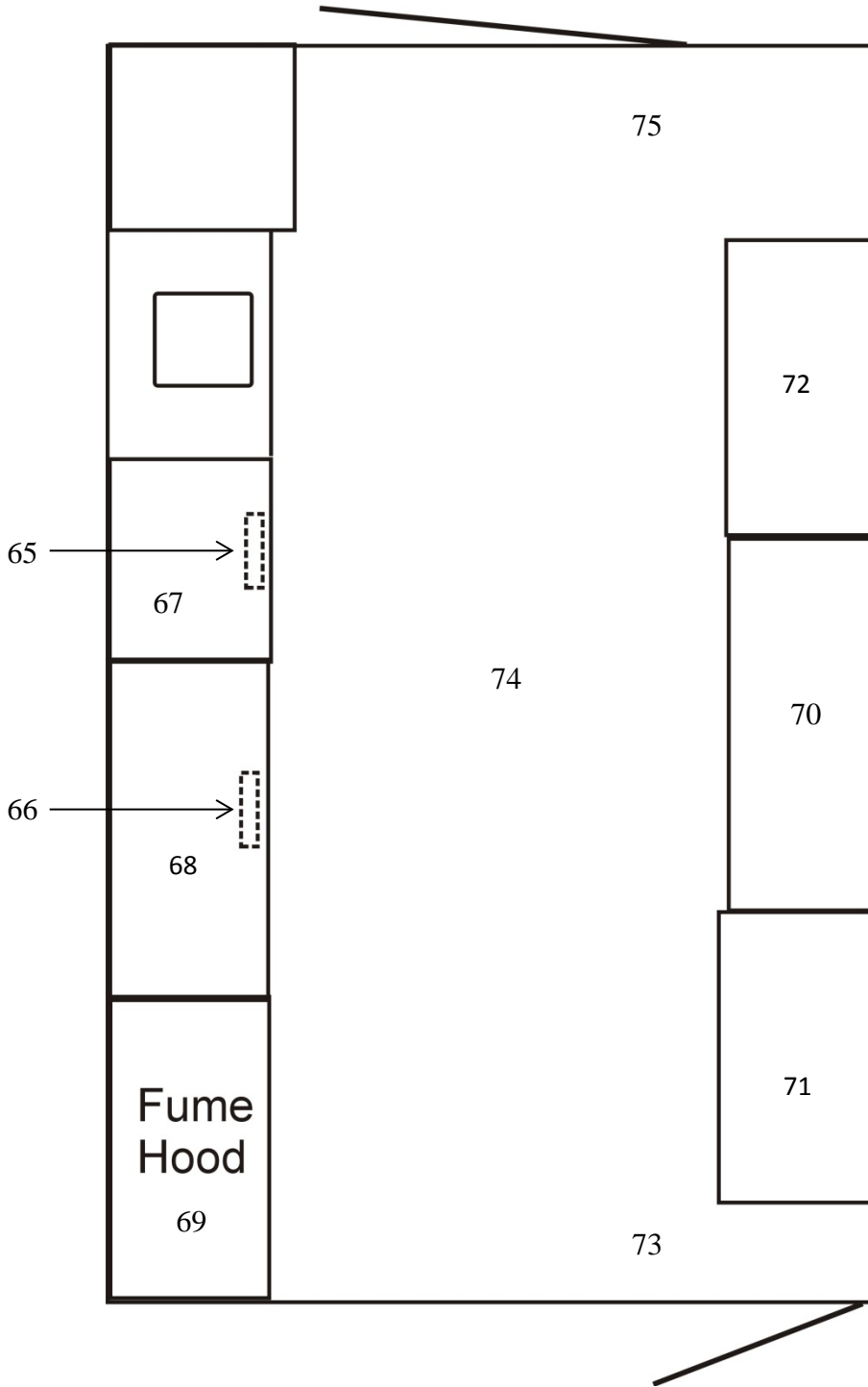


Figure 7

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# UNOLS VAN 625 203

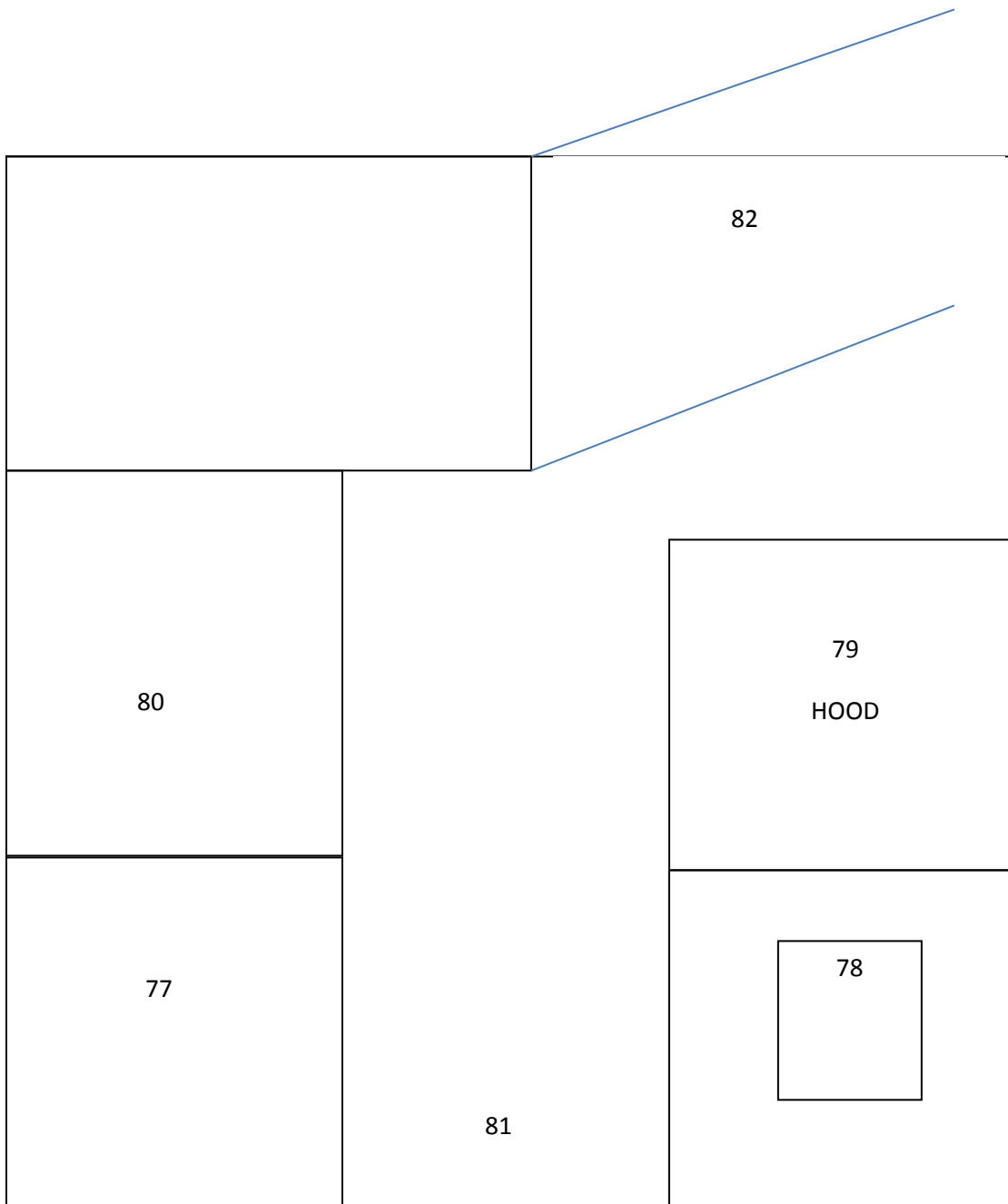


Figure 8  
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# UNOLS SHARE-USE

## COLD LAB VAN 2001 29-2

