GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week #	1	Dates:	12/30/2018-1/5/2019	Counted On	1/4/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.89E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	31	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	27	**********	*********	
7.	ELEVATOR ENTRANCE	32	M	M	
8.	FENCED GATE	30	M	M	
9.	EAST FLOOR	29	M	M	
10.	NORTH BENCH TOP	33	M	M	
11.	WEST LAB FLOOR	39	1.35E-05	1.35E-07	
12.	WORK PLATFORM	29	M	M	
13.	CALORIMETER	30	M	M	
14.	COMPUTERS	32	M	M	
15.	DSC/TGA	36	M	M	
16.	SOUTH BENCH TOP	32	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50116	**********	**********	
	101.05%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Heine
SIGN/DATE: Madison Heine 1/4/2019	SIGN/DATE: [signature] 1/7/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190104_1425
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190104_1425\20190104_1425.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1/4/2019	2:26:52 PM	1	5.00	21	7	28	272.22	
1	1/4/2019	2:33:00 PM	2	5.00	23	6	29	311.75	
1	1/4/2019	2:39:18 PM	3	5.00	26	6	31	224.31	
1	1/4/2019	2:45:27 PM	4	5.00	24	4	29	212.23	
1	1/4/2019	2:51:43 PM	5	5.00	26	6	32	231.96	
1	1/4/2019	2:57:59 PM	6	5.00	22	5	27	237.45	
1	1/4/2019	3:04:18 PM	7	5.00	23	9	32	368.46	
1	1/4/2019	3:10:31 PM	8	5.00	24	6	30	237.05	
1	1/4/2019	3:16:50 PM	9	5.00	25	5	29	191.57	
1	1/4/2019	3:23:03 PM	10	5.00	26	7	33	260.37	
1	1/4/2019	3:29:26 PM	11	5.00	32	7	39	135.63	
1	1/4/2019	3:35:40 PM	12	5.00	24	5	29	238.10	

1	1/4/2019	3:42:02 PM	13	5.00	22	8	30	247.32
1	1/4/2019	3:48:16 PM	14	5.00	25	6	32	206.88
1	1/4/2019	3:54:25 PM	15	5.00	29	7	36	241.26
1	1/4/2019	4:00:39 PM	16	5.00	26	7	32	279.11
1	1/4/2019	4:06:18 PM	17	5.00	14477	35639	50116	999.10

LABORATORY SURVEY

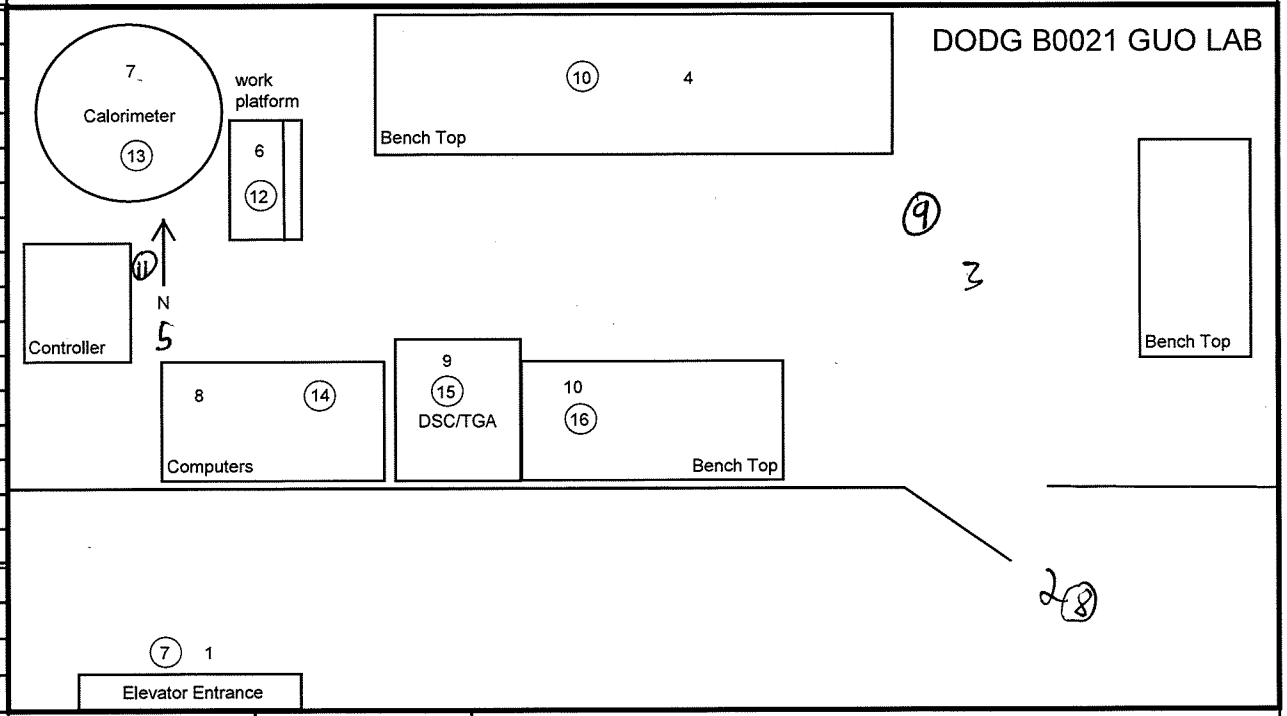
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	1/4/19	0910	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 1/4/2019

Survey #	Location	CPM
1	Elevator Entrance	100
2	South Floor	100
3	East Floor	180
4	North Bench Top	100
5	West Floor	110
6	Work Platform	110
7	Calorimeter	90
8	Computers	90
9	DSC/TGA	90
10	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: CMH	Date: 1/4/2019	Notes Reactor operation at 10 Watts for maintenance
Swiped By: CS	Date: 1/4/2019	
Reviewed By:	Date:	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week #	1	Dates:	1/6/2019-1/12/2019	Counted On	1/8/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	9.03E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	34	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	34	**********	*********	
7.	ELEVATOR ENTRANCE	30	M	M	
8.	FENCED GATE	31	M	M	
9.	EAST FLOOR	33	M	M	
10.	NORTH BENCH TOP	31	M	M	
11.	WEST LAB FLOOR	31	M	M	
12.	WORK PLATFORM	32	M	M	
13.	CALORIMETER	29	M	M	
14.	COMPUTERS	31	M	M	
15.	DSC/TGA	34	M	M	
16.	SOUTH BENCH TOP	30	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50121	**********	*********	
	101.06%	CALIBRATION CHECK OK?		YES

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: a. Himes
SIGN/DATE: Madeline Heine 1/10/19	SIGN/DATE: 1/11/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190108_1343
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190108_1343\20190108_1343.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1/8/2019	1:44:46 PM	1	5.00	26	5	31	178.38	
1	1/8/2019	1:51:03 PM	2	5.00	23	5	29	267.42	
1	1/8/2019	1:57:19 PM	3	5.00	29	5	34	235.54	
1	1/8/2019	2:03:34 PM	4	5.00	22	7	29	299.34	
1	1/8/2019	2:09:43 PM	5	5.00	25	5	30	226.86	
1	1/8/2019	2:15:52 PM	6	5.00	28	6	34	225.94	
1	1/8/2019	2:22:10 PM	7	5.00	23	6	30	192.95	
1	1/8/2019	2:28:24 PM	8	5.00	25	6	31	190.68	
1	1/8/2019	2:34:42 PM	9	5.00	27	5	33	206.91	
1	1/8/2019	2:40:50 PM	10	5.00	27	4	31	144.31	
1	1/8/2019	2:47:07 PM	11	5.00	27	4	31	164.83	
1	1/8/2019	2:53:23 PM	12	5.00	25	7	32	236.84	

1	1/8/2019	2:59:43 PM	13	5.00	23	6	29	194.64
1	1/8/2019	3:05:57 PM	14	5.00	26	5	31	193.33
1	1/8/2019	3:12:08 PM	15	5.00	29	5	34	189.27
1	1/8/2019	3:18:22 PM	16	5.00	23	7	30	303.42
1	1/8/2019	3:24:01 PM	17	5.00	14479	35642	50121	1007.29

LABORATORY SURVEY

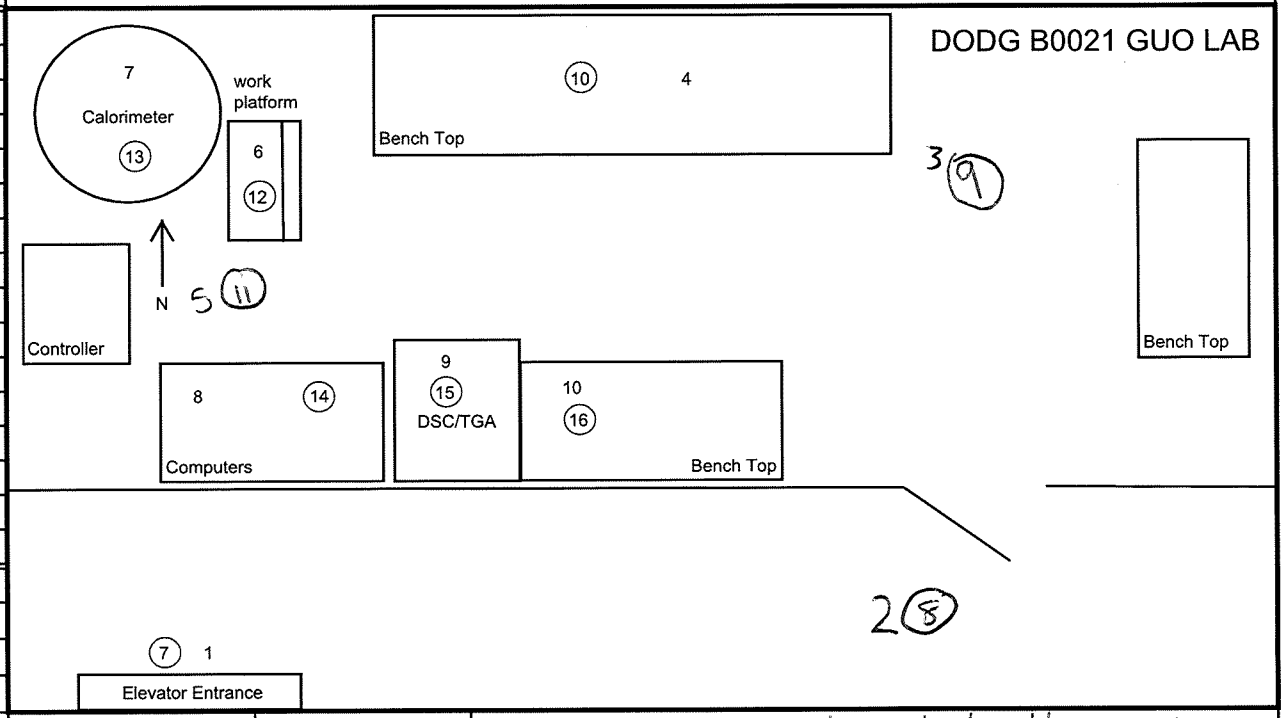
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 1/8/19	Time: 1316	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 1/8/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Floor	1000
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	200
10	South Bench Top	150

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG / RW	Date: 1/8/2019
Swiped By: RW	Date: 1/8/~~2018~~ 2019 RW
Reviewed By: [signature]	Date: 1/11/2019

Notes: High survey reading at location 3 because of radioactive material safe

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week #	3	Dates:	1/13/2019-1/19/2019	Counted On	1/17/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.95E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	32	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	26	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	34	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	32	M	M	
9.	B021 EAST FLOOR	31	M	M	
10.	B021 NORTH BENCH TOP	27	M	M	
11.	B021 WEST LAB FLOOR	30	M	M	
12.	B021 WORK PLATFORM	29	M	M	
13.	B021 CALORIMETER	32	M	M	
14.	B021 COMPUTERS	33	M	M	
15.	B021 DSC/TGA	34	M	M	
16.	B021 SOUTH BENCH TOP	35	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50145	**********	**********	
	101.11%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Ebner
SIGN/DATE: Madison Heine 1/17/2019	SIGN/DATE: 1/18/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190117_1454
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190117_1454\20190117_1454.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1/17/2019	2:55:22 PM	1	5.00	25	6	32	298.01	
1	1/17/2019	3:01:31 PM	2	5.00	23	6	29	254.06	
1	1/17/2019	3:07:48 PM	3	5.00	20	7	26	330.76	
1	1/17/2019	3:13:58 PM	4	5.00	24	6	30	225.66	
1	1/17/2019	3:20:12 PM	5	5.00	26	7	34	261.80	
1	1/17/2019	3:26:29 PM	6	5.00	24	5	30	195.18	
1	1/17/2019	3:32:48 PM	7	5.00	23	5	28	198.02	
1	1/17/2019	3:39:02 PM	8	5.00	25	7	32	257.42	
1	1/17/2019	3:45:19 PM	9	5.00	25	6	31	162.63	
1	1/17/2019	3:51:32 PM	10	5.00	19	8	27	284.03	
1	1/17/2019	3:57:49 PM	11	5.00	24	6	30	186.11	
1	1/17/2019	4:04:04 PM	12	5.00	22	7	29	181.36	

1	1/17/2019	4:10:22 PM	13	5.00	23	9	32	280.15
1	1/17/2019	4:16:40 PM	14	5.00	26	7	33	227.88
1	1/17/2019	4:22:57 PM	15	5.00	28	6	34	140.81
1	1/17/2019	4:29:12 PM	16	5.00	27	7	35	206.46
1	1/17/2019	4:34:52 PM	17	5.00	14542	35603	50145	1007.54

LABORATORY SURVEY

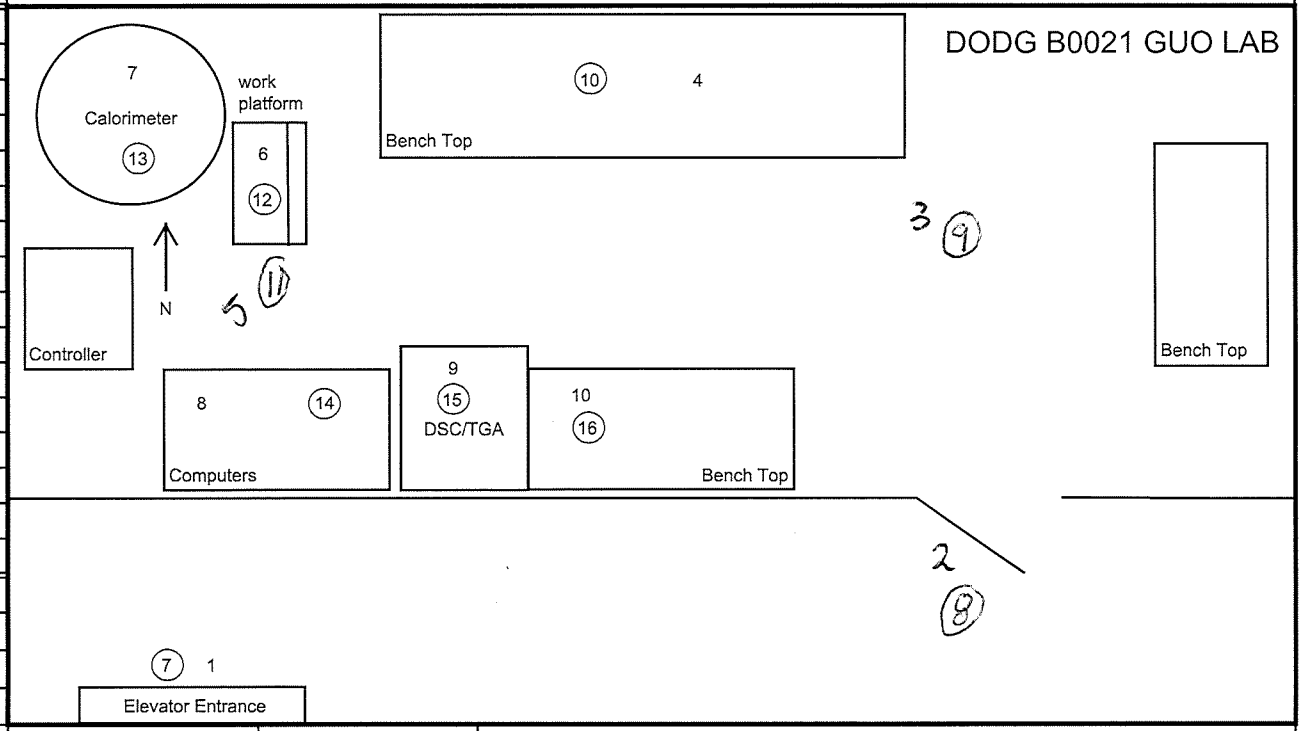
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	1/17/2019	1431	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date:

Survey #	Location	CPM
1	Elevator Entrance	140
2	South Floor	<100
3	East Floor	200
4	North Bench Top	<100
5	West Floor	<100
6	Work Platform	<100
7	Calorimeter	<100
8	Computers	<100
9	DSC/TGA	<100
10	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: SW	Date: 1/17/19	Notes
Swiped By: BT	Date: 1/17/19	
Reviewed By: [signature]	Date: 1/18/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week #	4	Dates:	1/20/2019-1/27/2019	Counted On	1/22/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.80E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	29	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	23	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	34	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 EAST FLOOR	27	M	M	
10.	B021 NORTH BENCH TOP	31	M	M	
11.	B021 WEST LAB FLOOR	34	M	M	
12.	B021 WORK PLATFORM	30	M	M	
13.	B021 CALORIMETER	26	M	M	
14.	B021 COMPUTERS	23	M	M	
15.	B021 DSC/TGA	30	M	M	
16.	B021 SOUTH BENCH TOP	26	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50210	**********	*********	
	101.24%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madelian Heine 1/23/19	SIGN/DATE: [signature] 1/23/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190122_1819
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190122_1819\20190122_1819.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1/22/2019	6:20:55 PM	1	5.00	23	6	29	204.52	
1	1/22/2019	6:27:05 PM	2	5.00	22	5	27	185.38	
1	1/22/2019	6:33:20 PM	3	5.00	20	3	23	114.51	
1	1/22/2019	6:39:33 PM	4	5.00	21	5	26	212.34	
1	1/22/2019	6:45:41 PM	5	5.00	24	6	30	296.60	
1	1/22/2019	6:51:49 PM	6	5.00	29	5	34	188.19	
1	1/22/2019	6:58:03 PM	7	5.00	23	6	29	247.91	
1	1/22/2019	7:04:16 PM	8	5.00	26	4	30	154.92	
1	1/22/2019	7:10:34 PM	9	5.00	22	4	27	148.45	
1	1/22/2019	7:16:43 PM	10	5.00	26	5	31	202.85	
1	1/22/2019	7:22:59 PM	11	5.00	29	5	34	168.26	
1	1/22/2019	7:29:09 PM	12	5.00	24	6	30	187.95	

1	1/22/2019	7:35:27 PM	13	5.00	21	5	26	214.66
1	1/22/2019	7:41:36 PM	14	5.00	19	5	23	195.50
1	1/22/2019	7:47:51 PM	15	5.00	25	6	30	207.67
1	1/22/2019	7:54:04 PM	16	5.00	21	5	26	272.36
1	1/22/2019	7:59:43 PM	17	5.00	14472	35739	50210	1009.26

LABORATORY SURVEY

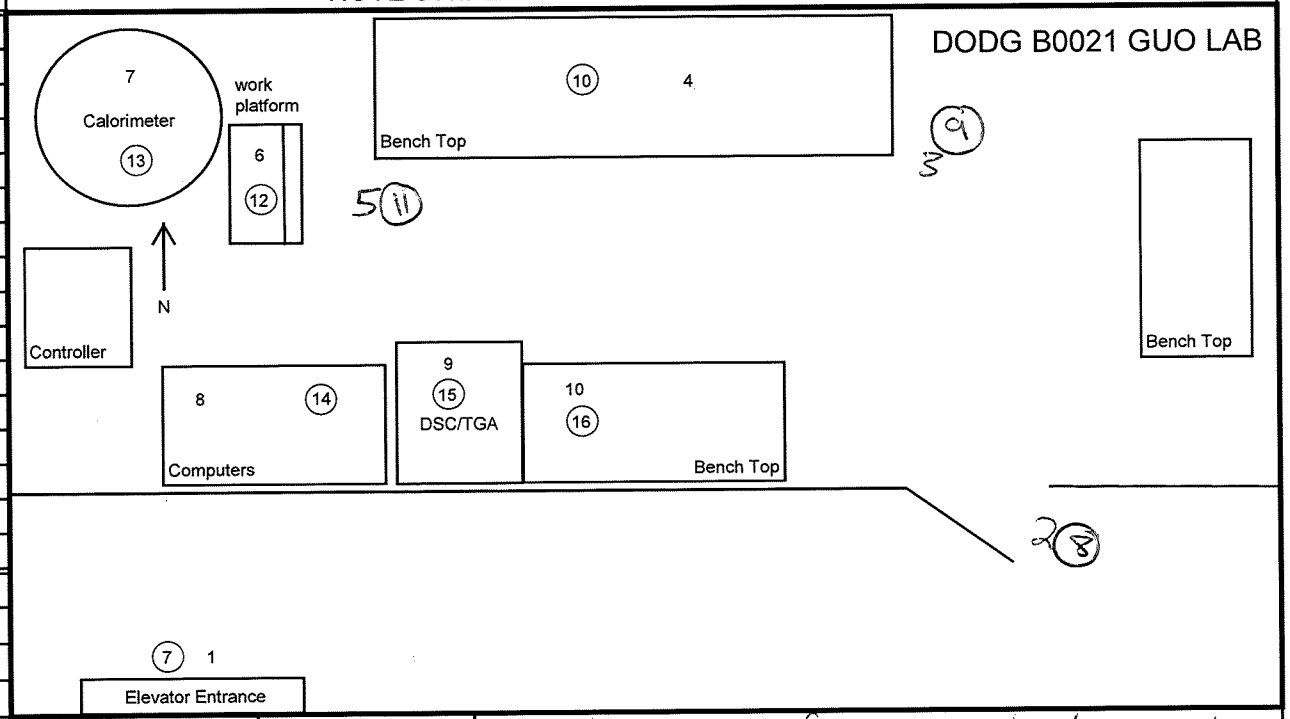
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 1/22/19	Time: 1216	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 1/22/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Floor	500
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	and Locations		
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AL	Date: 1/22/19	Notes: High CPM for survey location 3 due to radioactive material safe.
Swiped By: RW	Date: 1/22/19	
Reviewed By: [signature]	Date: 1/23/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week # 5	Dates: 1/27/2019-2/02/2019	Counted On 1/29/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR: 1.40E-06	
CHANNEL ENERGY RANGE (keV)	CH A: 4-200 CH B: 200-2000 CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)= 9.16E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK	

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	34	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	36	**********	*********	
6.	BACKGROUND 6	41	**********	*********	
7.	B021 ELEVATOR ENTRANCE	36	M	M	
8.	B021 FENCED GATE	23	M	M	
9.	B021 EAST FLOOR	31	M	M	
10.	B021 NORTH BENCH TOP	28	M	M	
11.	B021 WEST LAB FLOOR	34	M	M	
12.	B021 WORK PLATFORM	33	M	M	
13.	B021 CALORIMETER	30	M	M	
14.	B021 COMPUTERS	27	M	M	
15.	B021 DSC/TGA	37	M	M	
16.	B021 SOUTH BENCH TOP	29	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50228	**********	**********	
	101.27%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Heine
SIGN/DATE: Madeleine Heine 1/30/19	SIGN/DATE: 1/30/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190129_1458
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190129_1458\20190129_1458.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1/29/2019	2:59:27 PM	1	5.00	27	7	34	275.64	
1	1/29/2019	3:05:42 PM	2	5.00	23	7	30	340.82	
1	1/29/2019	3:11:58 PM	3	5.00	23	5	28	266.33	
1	1/29/2019	3:18:12 PM	4	5.00	23	7	30	294.57	
1	1/29/2019	3:24:21 PM	5	5.00	30	6	36	244.42	
1	1/29/2019	3:30:30 PM	6	5.00	33	8	41	264.59	
1	1/29/2019	3:36:44 PM	7	5.00	27	9	36	335.45	
1	1/29/2019	3:42:58 PM	8	5.00	18	5	23	261.14	
1	1/29/2019	3:49:15 PM	9	5.00	25	6	31	253.40	
1	1/29/2019	3:55:23 PM	10	5.00	24	4	28	181.01	
1	1/29/2019	4:01:40 PM	11	5.00	27	7	34	222.14	
1	1/29/2019	4:07:52 PM	12	5.00	26	8	33	249.16	

1	1/29/2019	4:14:12 PM	13	5.00	25	5	30	233.83
1	1/29/2019	4:20:30 PM	14	5.00	21	6	27	217.17
1	1/29/2019	4:26:43 PM	15	5.00	27	10	37	328.37
1	1/29/2019	4:32:57 PM	16	5.00	23	6	29	262.26
1	1/29/2019	4:38:37 PM	17	5.00	14462	35766	50228	1012.51

LABORATORY SURVEY

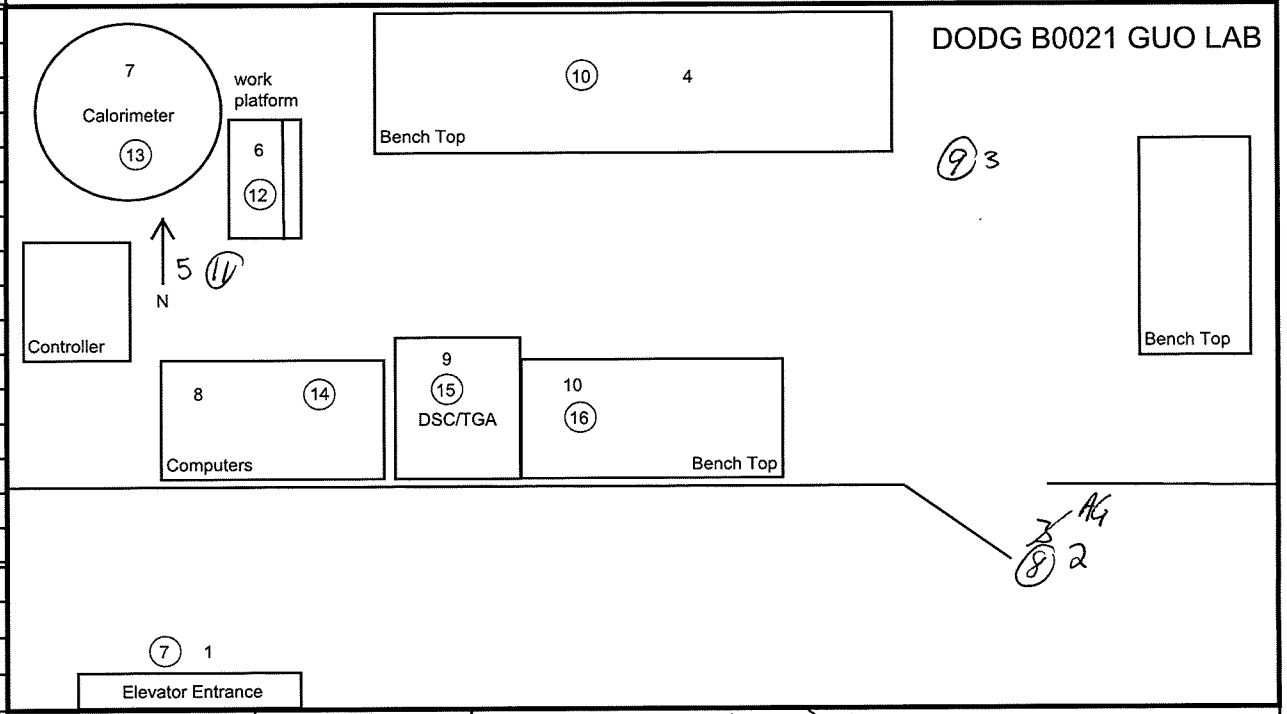
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	1/29/19	1424	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 1/29/2019

Survey #	Location	CPM
1	Elevator Entrance	≤ 100
2	South Floor	≤ 100
3	East Floor	700
4	North Bench Top	≤ 100
5	West Floor	150
6	Work Platform	≤ 100
7	Calorimeter	≤ 100
8	Computers	≤ 100
9	DSC/TGA	≤ 100
10	South Bench Top	≤ 100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG/MJ	Date: 1/29/19
Swiped By: AG	Date: 1/29/19
Reviewed By: [signature]	Date: 1/30/2019

Notes: At location 3 (survey) there was a ~~3. MJ~~ High CPM due to radioactive material in safe

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week # 6	Dates: 2/03/2019-2/09/2019	Counted On 2/5/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.10E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	32	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	34	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	29	**********	*********	
6.	BACKGROUND 6	35	**********	*********	
7.	B021 ELEVATOR ENTRANCE	34	M	M	
8.	B021 FENCED GATE	36	M	M	
9.	B021 EAST FLOOR	37	M	M	
10.	B021 NORTH BENCH TOP	36	M	M	
11.	B021 WEST LAB FLOOR	35	M	M	
12.	B021 WORK PLATFORM	32	M	M	
13.	B021 CALORIMETER	26	M	M	
14.	B021 COMPUTERS	26	M	M	
15.	B021 DSC/TGA	29	M	M	
16.	B021 SOUTH BENCH TOP	38	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50106	**********	*********	
	101.03%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: 2/5/19	SIGN/DATE:

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190205_1441
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190205_1441\20190205_1441.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	2/5/2019	2:42:18 PM	1	5.00	23	9	32	323.30	
1	2/5/2019	2:48:36 PM	2	5.00	26	5	31	223.82	
1	2/5/2019	2:54:52 PM	3	5.00	27	7	34	261.73	
1	2/5/2019	3:01:06 PM	4	5.00	25	6	32	269.14	
1	2/5/2019	3:07:15 PM	5	5.00	24	5	29	204.58	
1	2/5/2019	3:13:23 PM	6	5.00	28	7	35	279.37	
1	2/5/2019	3:19:39 PM	7	5.00	25	9	34	270.80	
1	2/5/2019	3:25:53 PM	8	5.00	28	8	36	273.19	
1	2/5/2019	3:32:11 PM	9	5.00	31	6	37	193.06	
1	2/5/2019	3:38:20 PM	10	5.00	29	7	36	183.74	
1	2/5/2019	3:44:38 PM	11	5.00	30	5	35	198.38	
1	2/5/2019	3:50:51 PM	12	5.00	25	7	32	217.27	

1	2/5/2019	3:57:13 PM	13	5.00	20	6	26	197.88
1	2/5/2019	4:03:22 PM	14	5.00	19	7	26	236.68
1	2/5/2019	4:09:37 PM	15	5.00	22	8	29	268.98
1	2/5/2019	4:15:50 PM	16	5.00	26	12	38	343.69
1	2/5/2019	4:21:29 PM	17	5.00	14445	35660	50106	1014.64

LABORATORY SURVEY

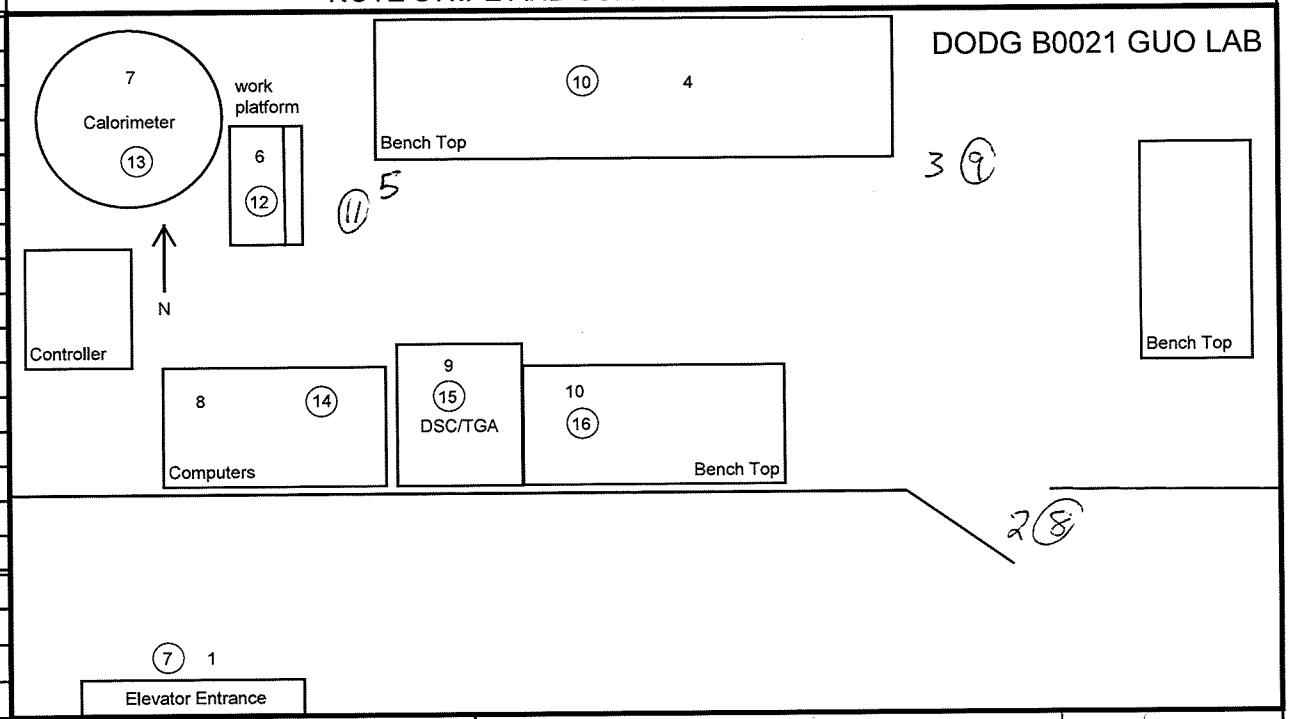
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building: Dodgen Research Facility	Room: B0021 - GUO	Lab Class: D	Survey Instrument: GM Detector Model 3	Serial No.: 58680	Radiation Detected: Gamma
Authorized User: Xiaofeng Guo	Date: 2/5/2019	Time: 1412	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 2/5/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Floor	700
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG	Date: 2/5/2019
Swiped By: AG	Date: 2/5/2019
Reviewed By: [signature]	Date: 2/8/2019

Notes 1) Survey #3 high CPM reading due to radioactive material safe

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week # 7	Dates: 2/10/2019-2/16/2019	Counted On 2/15/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.93E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	31	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 EAST FLOOR	29	M	M	
10.	B021 NORTH BENCH TOP	27	M	M	
11.	B021 WEST LAB FLOOR	26	M	M	
12.	B021 WORK PLATFORM	30	M	M	
13.	B021 CALORIMETER	30	M	M	
14.	B021 COMPUTERS	26	M	M	
15.	B021 DSC/TGA	28	M	M	
16.	B021 SOUTH BENCH TOP	43	1.84E-05	1.84E-07	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50217	**********	**********	
	101.25%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B.Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 2/15/2019	SIGN/DATE: 2/15/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190215_0802
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190215_0802\20190215_0802.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	2/15/2019	8:03:08 AM	1	5.00	24	4	28	152.57	
1	2/15/2019	8:09:17 AM	2	5.00	24	7	31	250.75	
1	2/15/2019	8:15:32 AM	3	5.00	26	5	31	269.96	
1	2/15/2019	8:21:39 AM	4	5.00	23	5	27	260.38	
1	2/15/2019	8:27:54 AM	5	5.00	24	6	30	242.14	
1	2/15/2019	8:34:08 AM	6	5.00	27	5	32	233.22	
1	2/15/2019	8:40:27 AM	7	5.00	25	4	29	168.06	
1	2/15/2019	8:46:42 AM	8	5.00	23	7	30	245.71	
1	2/15/2019	8:53:00 AM	9	5.00	25	4	29	177.74	
1	2/15/2019	8:59:12 AM	10	5.00	22	5	27	258.67	
1	2/15/2019	9:05:26 AM	11	5.00	21	5	26	210.54	
1	2/15/2019	9:11:39 AM	12	5.00	24	7	30	336.70	

1	2/15/2019	9:17:56 AM	13	5.00	24	6	30	298.41
1	2/15/2019	9:24:12 AM	14	5.00	19	7	26	351.72
1	2/15/2019	9:30:26 AM	15	5.00	23	5	28	252.10
1	2/15/2019	9:36:40 AM	16	5.00	32	11	43	309.37
1	2/15/2019	9:42:20 AM	17	5.00	14317	35900	50217	1016.07

LABORATORY SURVEY

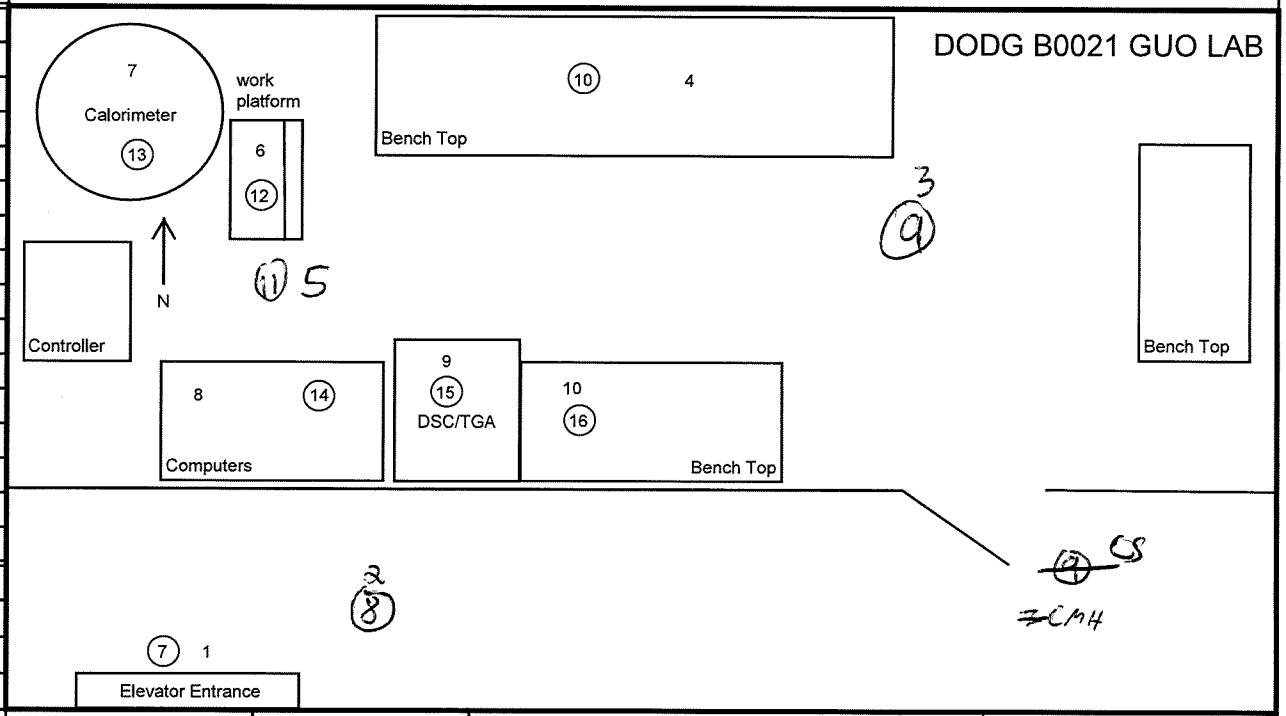
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 2/14/19	Time: 1435	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 2/15/2019

Survey #	Location	CPM
1	Elevator Entrance	170
2	South Floor	180
3	East Floor	~~170~~ CMH 800
4	North Bench Top	160
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	350
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: CMH/AG/CS	Date: 2/14/19
Swiped By: CS/AG	Date: 2/14/19
Reviewed By: [signature]	Date: 2/15/2019

Notes: Survey location 3 has high CPM due to radioactive material safe.

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 10/4/2018

Week #	8	Dates:	2/17/2019-2/23/2019	Counted On	2/19/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	9.59E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	40	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	36	**********	*********	
4.	BACKGROUND 4	33	**********	*********	
5.	BACKGROUND 5	77	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	35	M	M	
9.	B021 EAST FLOOR	35	M	M	
10.	B021 NORTH BENCH TOP	30	M	M	
11.	B021 WEST LAB FLOOR	32	M	M	
12.	B021 WORK PLATFORM	30	M	M	
13.	B021 CALORIMETER	32	M	M	
14.	B021 COMPUTERS	29	M	M	
15.	B021 DSC/TGA	33	M	M	
16.	B021 SOUTH BENCH TOP	37	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50543	**********	*********	
	101.91%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M.Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madelyn Heine 2/19/19	SIGN/DATE:

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190219_1253
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190219_1253\20190219_1253.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	2/19/2019	12:54:26 PM	1	5.00	34	7	40	213.54	
1	2/19/2019	1:00:35 PM	2	5.00	24	6	30	271.18	
1	2/19/2019	1:06:50 PM	3	5.00	31	5	36	278.18	
1	2/19/2019	1:12:58 PM	4	5.00	27	6	33	275.24	
1	2/19/2019	1:19:14 PM	5	5.00	68	9	77	141.89	
1	2/19/2019	1:25:30 PM	6	5.00	25	5	30	248.58	
1	2/19/2019	1:31:48 PM	7	5.00	24	6	30	226.22	
1	2/19/2019	1:38:03 PM	8	5.00	26	10	35	270.38	
1	2/19/2019	1:44:23 PM	9	5.00	26	9	35	243.24	
1	2/19/2019	1:50:37 PM	10	5.00	22	7	30	245.70	
1	2/19/2019	1:56:55 PM	11	5.00	26	7	32	180.99	
1	2/19/2019	2:03:08 PM	12	5.00	24	6	30	272.32	

1	2/19/2019	2:09:29 PM	13	5.00	25	7	32	215.85
1	2/19/2019	2:15:48 PM	14	5.00	25	4	29	170.33
1	2/19/2019	2:22:04 PM	15	5.00	26	7	33	194.74
1	2/19/2019	2:28:26 PM	16	5.00	30	7	37	217.92
1	2/19/2019	2:34:06 PM	17	5.00	14641	35902	50543	1010.60

LABORATORY SURVEY

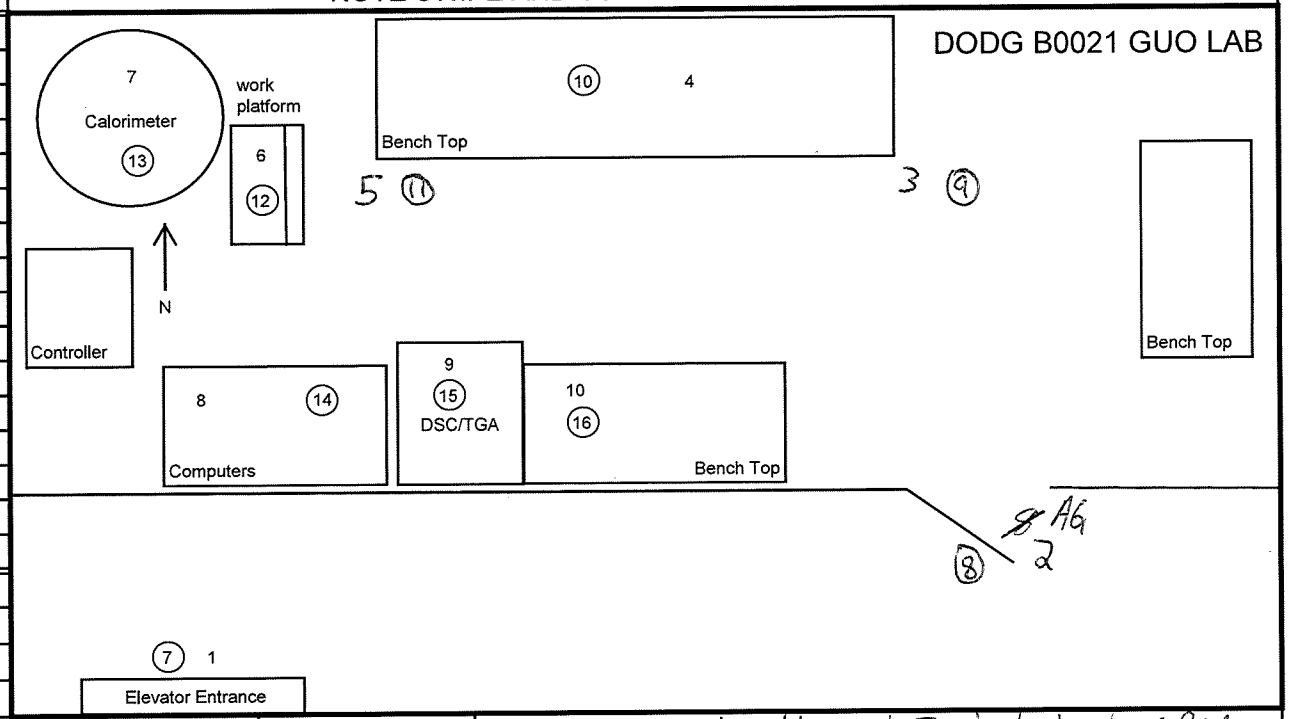
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	2/19/19	1218	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 2/19/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	700
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG/JS	Date: 2/19/19
Swiped By: JS/MS	Date: 2/19/19
Reviewed By: [signature]	Date: 2/19/2019

Notes: Survey location #3 had high CPM because radioactive materials safe

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	9	Dates:	2/24/2019-3/2/2019	Counted On	2/26/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.93E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	33	**********	*********	
2.	BACKGROUND 2	25	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	31	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	33	**********	*********	
7.	B021 ELEVATOR ENTRANCE	31	M	M	
8.	B021 FENCED GATE	28	M	M	
9.	B021 EAST FLOOR	26	M	M	
10.	B021 NORTH BENCH TOP	29	M	M	
11.	B021 WEST LAB FLOOR	26	M	M	
12.	B021 WORK PLATFORM	26	M	M	
13.	B021 CALORIMETER	32	M	M	
14.	B021 COMPUTERS	31	M	M	
15.	B021 DSC/TGA	36	M	M	
16.	B021 SOUTH BENCH TOP	28	M	M	
17.	121 DOORWAY	33	M	M	
18.	121 GLOVE BOX- FLOOR	29	M	M	
19.	121 GLOVE BOX	25	M	M	
20.	121 WEST BENCH TOP	25	M	M	
21.	121 CENTER OF LAB	32	M	M	
22.	121 EAST BENCH TOP	26	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50124	**********	**********	
	101.07%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B.Tanner	REVIEWED BY: C. Hmies
SIGN/DATE: 3/1/2019	SIGN/DATE: 3/1/209

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190226_1454
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190226_1454\20190226_1454.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	2/26/2019	2:55:51 PM	1	5.00	27	6	33	222.20	
1	2/26/2019	3:02:00 PM	2	5.00	19	6	25	344.60	
1	2/26/2019	3:08:16 PM	3	5.00	22	4	27	175.01	
1	2/26/2019	3:14:24 PM	4	5.00	26	5	31	216.35	
1	2/26/2019	3:20:36 PM	5	5.00	24	5	30	264.62	
1	2/26/2019	3:26:49 PM	6	5.00	27	6	33	259.75	
1	2/26/2019	3:33:06 PM	7	5.00	26	5	31	256.77	
1	2/26/2019	3:39:19 PM	8	5.00	22	5	28	267.12	
1	2/26/2019	3:45:34 PM	9	5.00	21	5	26	247.49	
1	2/26/2019	3:51:46 PM	10	5.00	23	7	29	303.24	
1	2/26/2019	3:58:01 PM	11	5.00	19	6	26	267.42	
1	2/26/2019	4:04:14 PM	12	5.00	21	5	26	216.95	

1	2/26/2019	4:10:32 PM	13	5.00	25	6	32	161.88
1	2/26/2019	4:16:47 PM	14	5.00	25	6	31	203.51
1	2/26/2019	4:23:00 PM	15	5.00	28	8	36	308.14
1	2/26/2019	4:29:09 PM	16	5.00	24	4	28	227.71
1	2/26/2019	4:35:22 PM	17	5.00	28	4	33	185.70
1	2/26/2019	4:41:32 PM	18	5.00	24	4	29	165.81
1	2/26/2019	4:47:48 PM	19	5.00	21	4	25	190.55
1	2/26/2019	4:54:01 PM	20	5.00	20	5	25	289.96
1	2/26/2019	5:03:33 PM	21	5.00	26	6	32	45.02
1	2/26/2019	5:09:46 PM	22	5.00	20	7	26	312.83
1	2/26/2019	5:15:26 PM	23	5.00	14342	35782	50124	1009.65

LABORATORY SURVEY

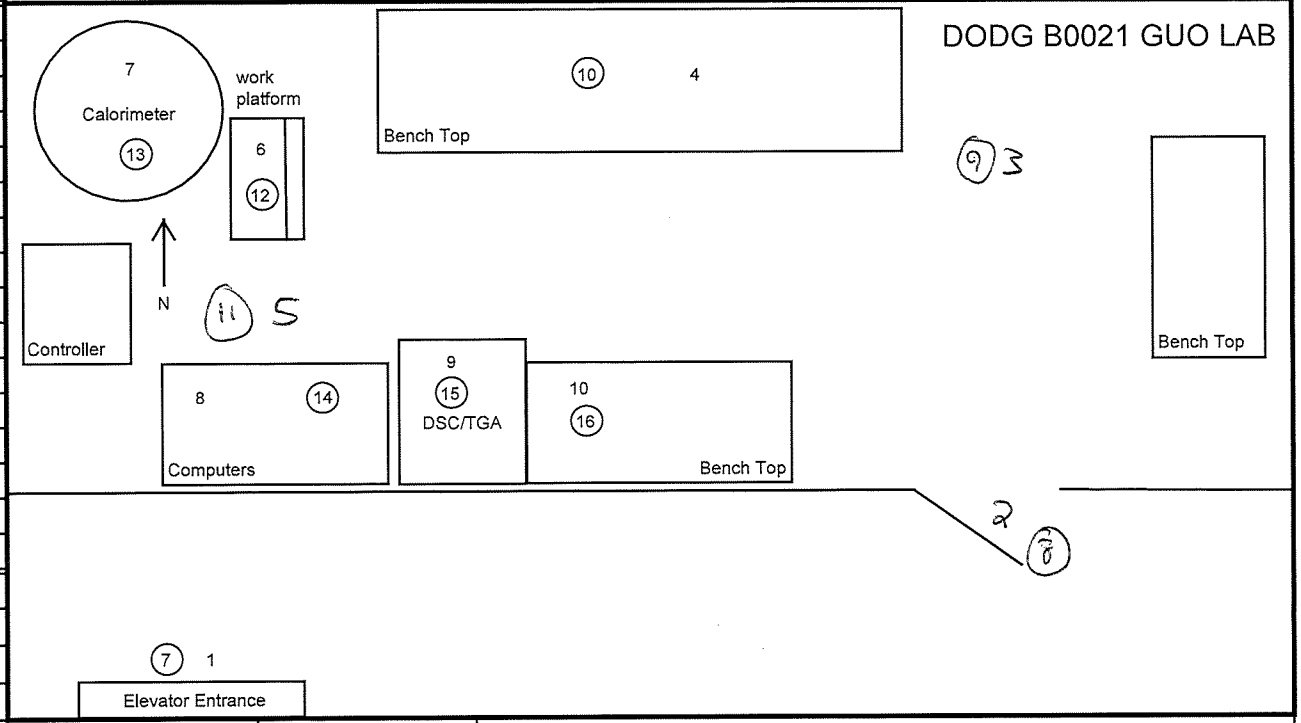
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	2/26/19	1254	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 2/26/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	≤100 AG 800
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG	Date: 2/26/19	Notes
Swiped By: MJ	Date: 2/26/19	
Reviewed By: [signature]	Date: 3/1/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

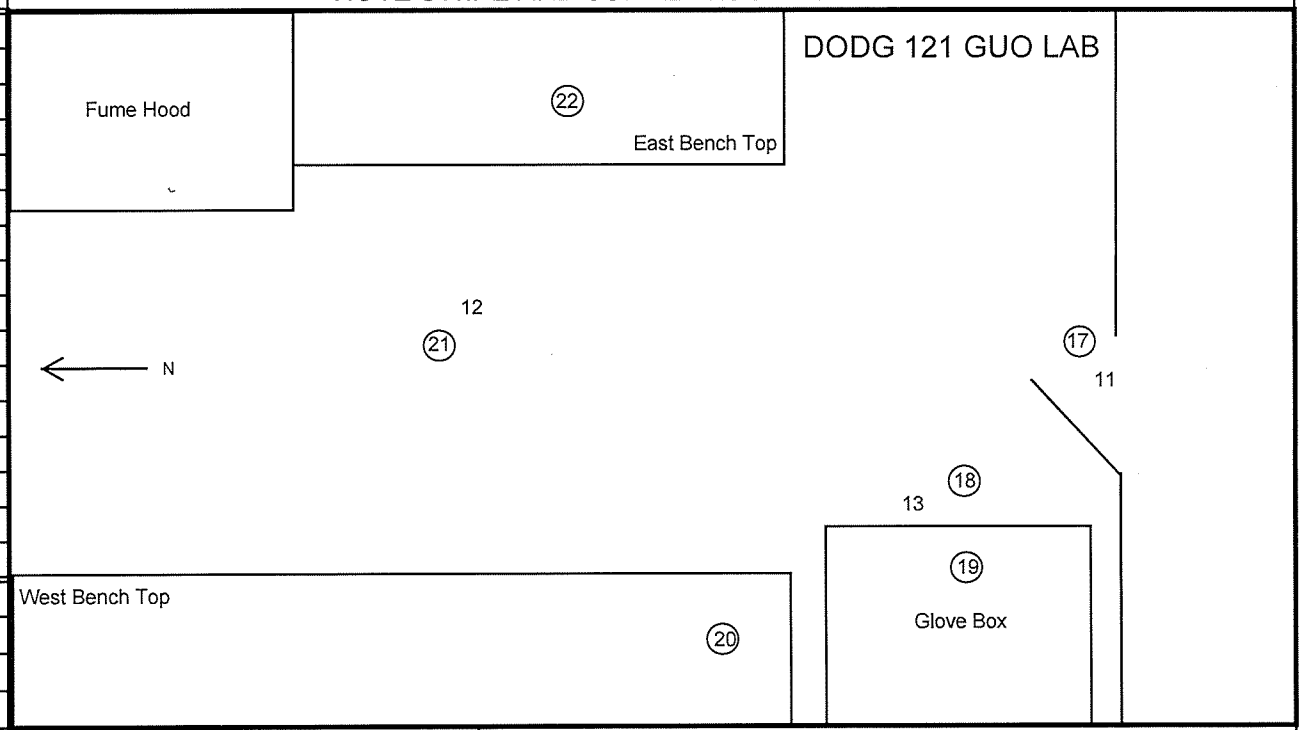
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	2/26/19	1221	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 2/26/2019

Survey #	Location	CPM
11	121 Doorway	≤100
12	121 Center of lab	≤100
13	121 Glove Box	600

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: AG Date: 2/26/19

Swiped By: MJ Date: 2/26/19

Reviewed By: Date: 3/1/2019

Notes: Survey # 13 highest reading came from inside left rubber arm

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	10	Dates:	3/3/2019-3/9/2019	Counted On	3/8/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.94E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	23	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	33	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	33	**********	*********	
6.	BACKGROUND 6	33	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 EAST FLOOR	30	M	M	
10.	B021 NORTH BENCH TOP	27	M	M	
11.	B021 WEST LAB FLOOR	32	M	M	
12.	B021 WORK PLATFORM	32	M	M	
13.	B021 CALORIMETER	26	M	M	
14.	B021 COMPUTERS	25	M	M	
15.	B021 DSC/TGA	34	M	M	
16.	B021 SOUTH BENCH TOP	49	2.66E-05	2.66E-07	
17.	121 DOORWAY	28	M	M	
18.	121 GLOVE BOX- FLOOR	32	M	M	
19.	121 GLOVE BOX	27	M	M	
20.	121 WEST BENCH TOP	30	M	M	
21.	121 CENTER OF LAB	26	M	M	
22.	121 EAST BENCH TOP	31	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50342	**********	**********	
	101.50%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B.Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 3/8/2019	SIGN/DATE: 3/13/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190308_0803
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190308_0803\20190308_0803.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	3/8/2019	8:04:16 AM	1	5.00	18	6	23	368.44	
1	3/8/2019	8:10:30 AM	2	5.00	26	4	31	195.25	
1	3/8/2019	8:16:39 AM	3	5.00	27	6	33	231.52	
1	3/8/2019	8:22:53 AM	4	5.00	22	5	27	206.58	
1	3/8/2019	8:29:01 AM	5	5.00	27	6	33	257.59	
1	3/8/2019	8:35:13 AM	6	5.00	26	7	33	236.36	
1	3/8/2019	8:41:28 AM	7	5.00	24	5	29	201.41	
1	3/8/2019	8:47:41 AM	8	5.00	24	8	31	251.22	
1	3/8/2019	8:53:56 AM	9	5.00	22	8	30	291.69	
1	3/8/2019	9:00:08 AM	10	5.00	22	5	27	180.32	
1	3/8/2019	9:06:20 AM	11	5.00	25	7	32	256.65	
1	3/8/2019	9:12:36 AM	12	5.00	25	7	32	214.81	

1	3/8/2019	9:18:53 AM	13	5.00	22	4	26	175.22
1	3/8/2019	9:25:10 AM	14	5.00	20	5	25	281.64
1	3/8/2019	9:31:23 AM	15	5.00	24	9	34	354.75
1	3/8/2019	9:37:31 AM	16	5.00	33	16	49	331.36
1	3/8/2019	9:43:44 AM	17	5.00	22	7	28	317.36
1	3/8/2019	9:49:52 AM	18	5.00	27	5	32	192.02
1	3/8/2019	9:56:10 AM	19	5.00	23	4	27	227.39
1	3/8/2019	10:02:23 AM	20	5.00	25	5	30	205.42
1	3/8/2019	10:08:39 AM	21	5.00	22	4	26	231.62
1	3/8/2019	10:14:54 AM	22	5.00	25	6	31	198.38
1	3/8/2019	10:20:34 AM	23	5.00	14544	35798	50342	1016.67

LABORATORY SURVEY

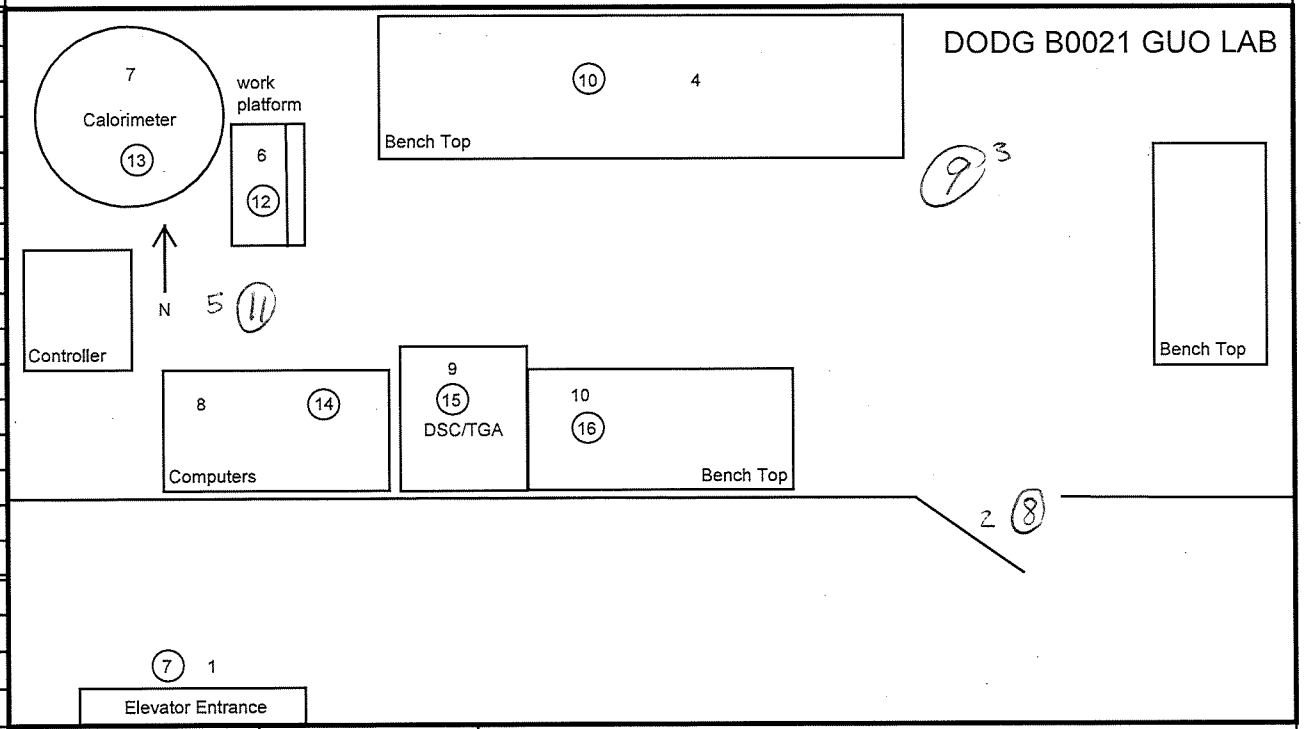
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 3/5/19	Time: 1319	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 3/8/2019

Survey #	Location	CPM
1	Elevator Entrance	≤ 100
2	South Floor	≤ 100
3	East Lab Floor	900
4	North Bench Top	≤ 100
5	West Floor	≤ 100
6	Work Platform	≤ 100
7	Calorimeter	≤ 100
8	Computers	≤ 100
9	DSC/TGA	≤ 100
10	South Bench Top	≤ 100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: MS	Date: 3/5/19	Notes
Swiped By: AG	Date: 3/5/19	
Reviewed By:	Date: 3/13/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

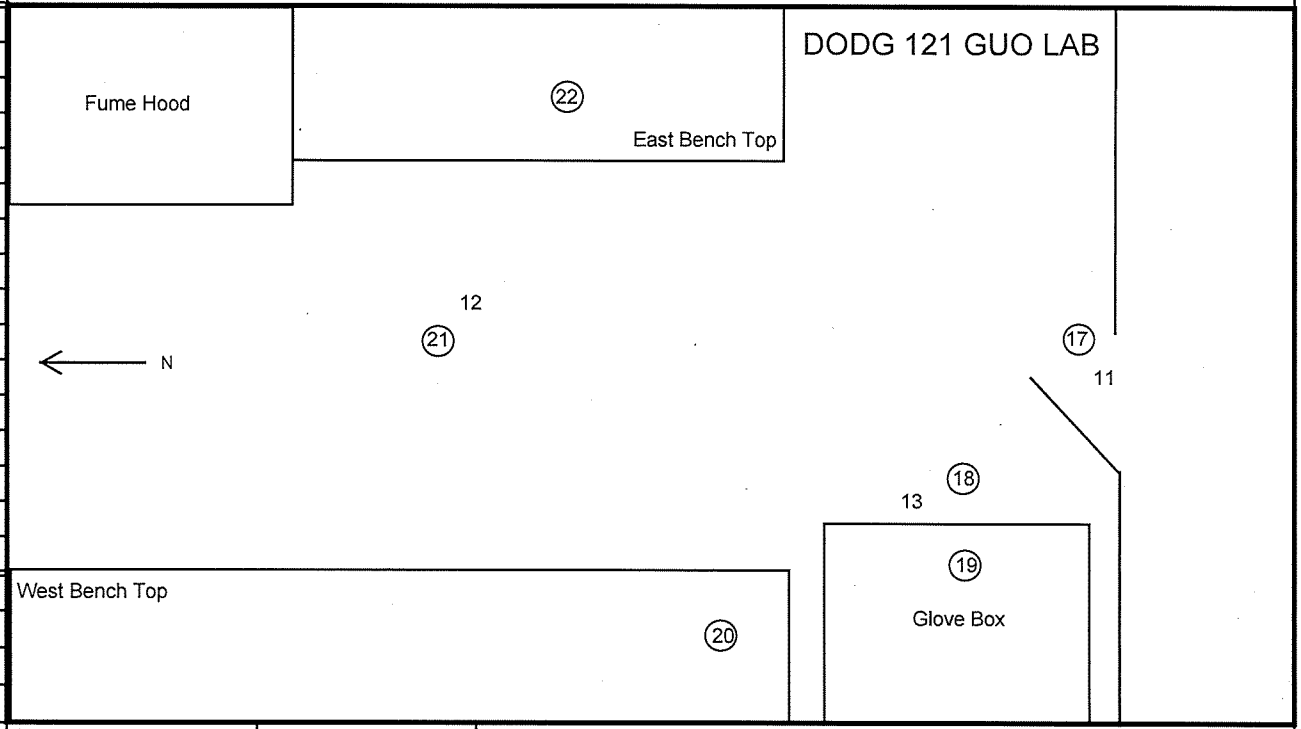
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	3/5/19	1314	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 3/8/2019

Survey #	Location	CPM
11	121 Doorway	≤100
12	121 Center of lab	≤100
13	121 Glove Box	700

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: AG	Date: 3/5/19	Notes
Swiped By: MJ	Date: 3/5/19	
Reviewed By: [signature]	Date: 3/13/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	11	Dates:	3/10/2019-3/16/2019	Counted On	3/12/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.96E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	29	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	33	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	29	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	29	M	M	
9.	B021 EAST FLOOR	28	M	M	
10.	B021 NORTH BENCH TOP	29	M	M	
11.	B021 WEST LAB FLOOR	28	M	M	
12.	B021 WORK PLATFORM	30	M	M	
13.	B021 CALORIMETER	29	M	M	
14.	B021 COMPUTERS	27	M	M	
15.	B021 DSC/TGA	31	M	M	
16.	B021 SOUTH BENCH TOP	29	M	M	
17.	121 DOORWAY	32	M	M	
18.	121 GLOVE BOX- FLOOR	29	M	M	
19.	121 GLOVE BOX	30	M	M	
20.	121 WEST BENCH TOP	29	M	M	
21.	121 CENTER OF LAB	30	M	M	
22.	121 EAST BENCH TOP	31	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50051	**********	*********	
	100.92%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M.Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madelson Heine / 3/13/19	SIGN/DATE: 3/13/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190312_0954
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190312_0954\20190312_0954.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	3/12/2019	9:55:17 AM	1	5.00	23	6	29	330.19	
1	3/12/2019	10:01:34 AM	2	5.00	23	7	30	304.28	
1	3/12/2019	10:07:47 AM	3	5.00	28	5	33	256.80	
1	3/12/2019	10:14:04 AM	4	5.00	22	6	29	273.18	
1	3/12/2019	10:20:18 AM	5	5.00	22	7	29	303.33	
1	3/12/2019	10:26:34 AM	6	5.00	25	6	31	292.25	
1	3/12/2019	10:32:50 AM	7	5.00	25	5	30	250.13	
1	3/12/2019	10:39:02 AM	8	5.00	23	5	29	232.00	
1	3/12/2019	10:45:21 AM	9	5.00	24	4	28	169.46	
1	3/12/2019	10:51:34 AM	10	5.00	24	5	29	220.72	
1	3/12/2019	10:57:50 AM	11	5.00	23	5	28	240.02	
1	3/12/2019	11:04:07 AM	12	5.00	25	5	30	222.67	

1	3/12/2019	11:10:26 AM	13	5.00	23	6	29	299.14
1	3/12/2019	11:16:44 AM	14	5.00	22	6	27	251.41
1	3/12/2019	11:23:00 AM	15	5.00	24	7	31	265.35
1	3/12/2019	11:29:10 AM	16	5.00	25	4	29	199.04
1	3/12/2019	11:35:23 AM	17	5.00	26	7	32	269.56
1	3/12/2019	11:41:34 AM	18	5.00	23	6	29	242.99
1	3/12/2019	11:47:55 AM	19	5.00	25	5	30	222.68
1	3/12/2019	11:54:10 AM	20	5.00	23	7	29	265.86
1	3/12/2019	12:00:26 PM	21	5.00	26	4	30	191.11
1	3/12/2019	12:06:44 PM	22	5.00	25	6	31	235.85
1	3/12/2019	12:12:24 PM	23	5.00	14495	35556	50051	1016.62

LABORATORY SURVEY

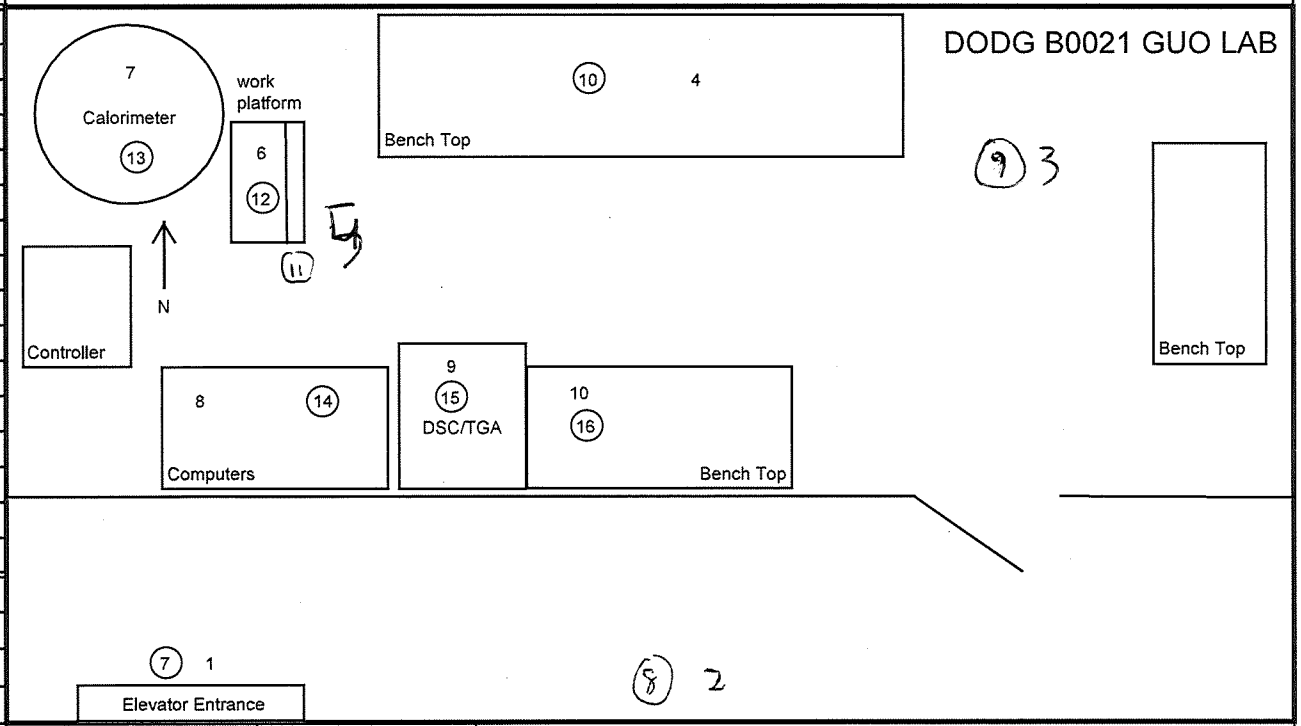
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	3/12/19	1026	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 3/12/2019

Survey #	Location	CPM
1	Elevator Entrance	<100
2	South Floor	<100
3	East Lab Floor	600
4	North Bench Top	<100
5	West Floor	<100
6	Work Platform	<100
7	Calorimeter	<100
8	Computers	<100
9	DSC/TGA	<100
10	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: LD	Date: 3/12/19
Swiped By: MJ	Date: 3/12/19
Reviewed By: [signature]	Date: 3/13/2019

Notes: Survey location # 3 had high CPM because RAM safe.

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

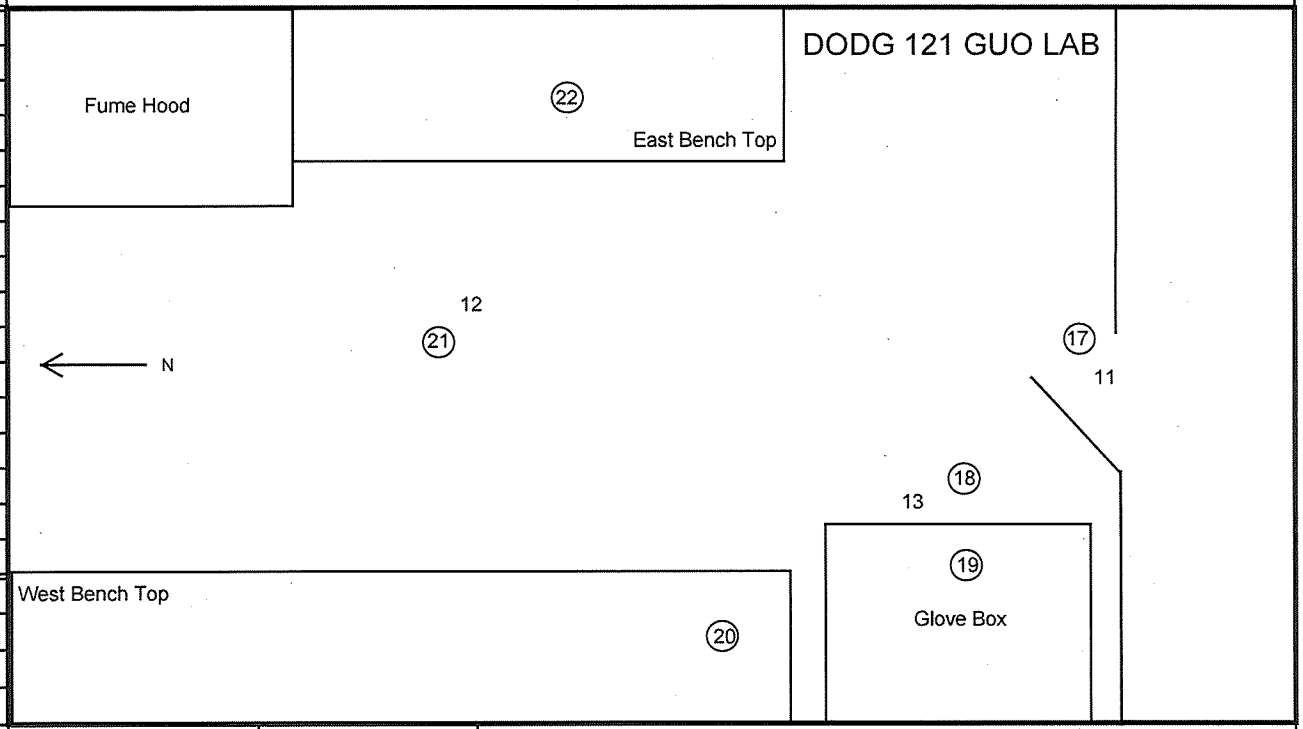
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	3/12/19	1048	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 3/12/2019

Survey #	Location	CPM
11	121 Doorway	<100
12	121 Center of lab	<100
13	121 Glove Box	<100

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
LD	3/12/19	
Swiped By: MJ	Date: 3/12/19	
Reviewed By:	Date: 3/13/209	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	12	Dates:	3/17/2019-3/23/2019	Counted On	3/21/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.75E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	26	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	30	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	28	**********	*********	
6.	BACKGROUND 6	25	**********	*********	
7.	B021 ELEVATOR ENTRANCE	24	M	M	
8.	B021 FENCED GATE	28	M	M	
9.	B021 EAST FLOOR	26	M	M	
10.	B021 NORTH BENCH TOP	25	M	M	
11.	B021 WEST LAB FLOOR	28	M	M	
12.	B021 WORK PLATFORM	29	M	M	
13.	B021 CALORIMETER	29	M	M	
14.	B021 COMPUTERS	27	M	M	
15.	B021 DSC/TGA	30	M	M	
16.	B021 SOUTH BENCH TOP	43	2.17E-05	2.17E-07	
17.	121 DOORWAY	31	M	M	
18.	121 GLOVE BOX- FLOOR	23	M	M	
19.	121 GLOVE BOX	20	M	M	
20.	121 WEST BENCH TOP	29	M	M	
21.	121 CENTER OF LAB	28	M	M	
22.	121 EAST BENCH TOP	26	M	M	

Notes: NONE

^{36}Cl SOURCE 09/14/1971	50202	**********	**********	
	101.22%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 3/22/19	SIGN/DATE: 3/22/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190321_0713
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190321_0713\20190321_0713.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	3/21/2019	7:14:09 AM	1	5.00	20	6	26	309.63	
1	3/21/2019	7:20:23 AM	2	5.00	24	7	30	320.06	
1	3/21/2019	7:26:34 AM	3	5.00	24	6	30	221.81	
1	3/21/2019	7:32:45 AM	4	5.00	21	5	26	216.45	
1	3/21/2019	7:38:56 AM	5	5.00	24	5	28	205.90	
1	3/21/2019	7:45:05 AM	6	5.00	20	5	25	247.61	
1	3/21/2019	7:51:19 AM	7	5.00	18	6	24	214.71	
1	3/21/2019	7:57:31 AM	8	5.00	24	4	28	230.45	
1	3/21/2019	8:03:47 AM	9	5.00	21	6	26	254.66	
1	3/21/2019	8:09:57 AM	10	5.00	21	4	25	289.45	
1	3/21/2019	8:16:08 AM	11	5.00	22	6	28	270.83	
1	3/21/2019	8:22:23 AM	12	5.00	27	3	29	175.52	

1	3/21/2019	8:28:39 AM	13	5.00	23	5	29	229.36
1	3/21/2019	8:34:52 AM	14	5.00	23	5	27	204.64
1	3/21/2019	8:41:04 AM	15	5.00	24	5	30	248.21
1	3/21/2019	8:47:19 AM	16	5.00	31	12	43	243.86
1	3/21/2019	8:53:30 AM	17	5.00	25	6	31	273.79
1	3/21/2019	8:59:43 AM	18	5.00	20	3	23	217.80
1	3/21/2019	9:05:59 AM	19	5.00	15	5	20	400.36
1	3/21/2019	9:12:11 AM	20	5.00	23	6	29	238.81
1	3/21/2019	9:18:23 AM	21	5.00	22	6	28	264.76
1	3/21/2019	9:24:37 AM	22	5.00	21	5	26	278.33
1	3/21/2019	9:30:17 AM	23	5.00	14445	35757	50202	1012.54

LABORATORY SURVEY

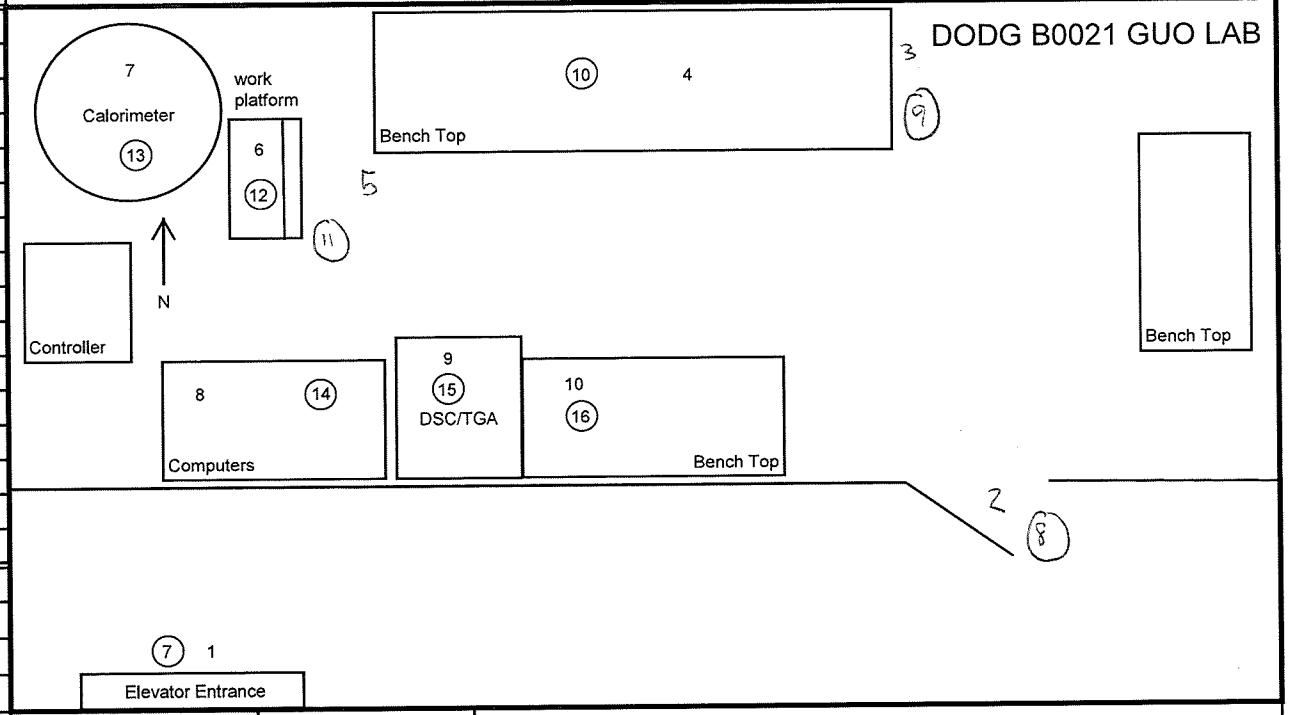
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	85010	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	3/19/19	1214	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	700
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG	Date: 3/19/19	Notes
Swiped By: MJ	Date: 3/19/19	
Reviewed By: [signature]	Date: 3/22/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

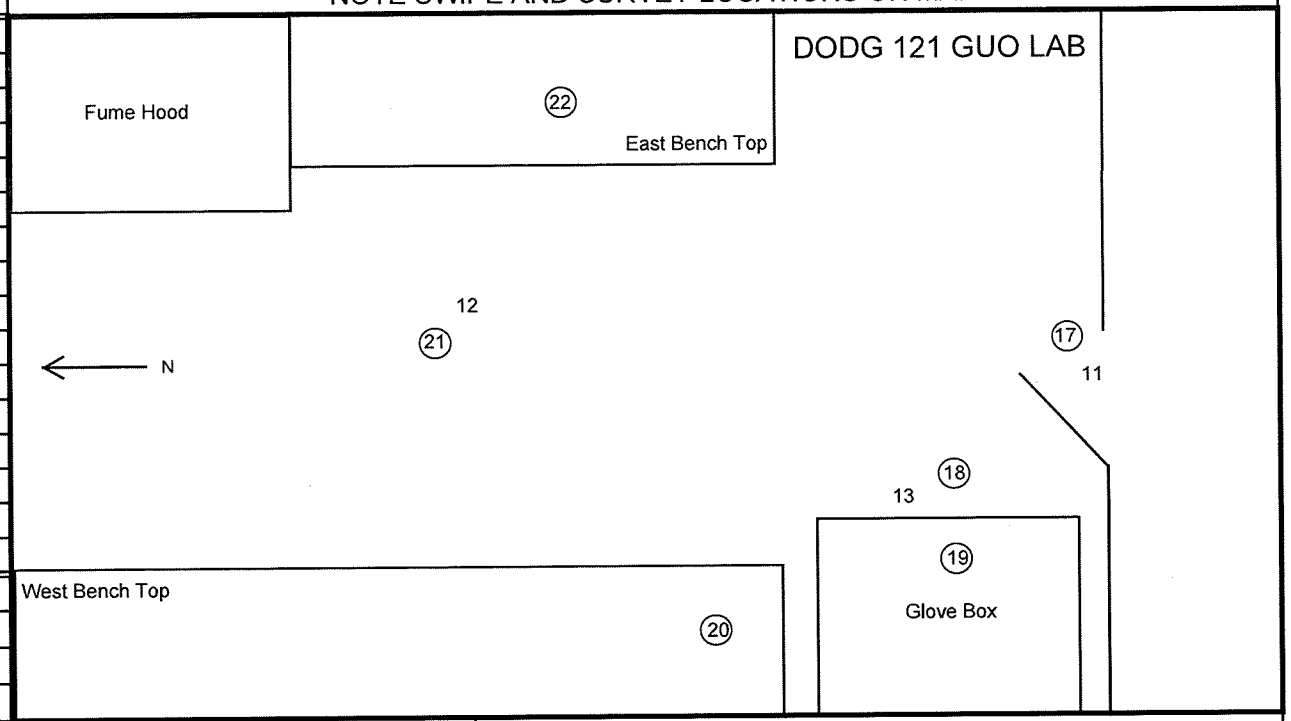
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	85010	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	3/19/19	1228	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date:

Survey #	Location	CPM
11	121 Doorway	≤100
12	121 Center of lab	≤100
13	121 Glove Box	400

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
AG	3/19/19	
Swiped By:	Date:	
MJ	3/19/19	
Reviewed By:	Date:	
[signature]	3/22/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 13	Dates: 3/24/2019-3/30/2019	Counted On 4/1/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.90E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	27	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	30	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	33	**********	*********	
6.	BACKGROUND 6	26	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 EAST FLOOR	31	M	M	
10.	B021 NORTH BENCH TOP	29	M	M	
11.	B021 WEST LAB FLOOR	25	M	M	
12.	B021 WORK PLATFORM	28	M	M	
13.	B021 CALORIMETER	Note 1	#VALUE!	#VALUE!	####
14.	B021 COMPUTERS	29	M	M	
15.	B021 DSC/TGA	27	M	M	
16.	B021 SOUTH BENCH TOP	26	M	M	
17.	121 DOORWAY	34	M	M	
18.	121 GLOVE BOX- FLOOR	25	M	M	
19.	121 GLOVE BOX	31	M	M	
20.	121 WEST BENCH TOP	31	M	M	
21.	121 CENTER OF LAB	25	M	M	
22.	121 EAST BENCH TOP	26	M	M	

Note 1: Calorimeter swipe not taken due to experiment in progress.

^{36}Cl SOURCE 09/14/1971	50060	**********	**********	
	100.94%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 4/1/2019	SIGN/DATE: 4/1/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190401_0713
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190401_0713\20190401_0713.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/1/2019	7:14:33 AM	1	5.00	20	7	27	262.90	
1	4/1/2019	7:20:47 AM	2	5.00	24	5	29	253.86	
1	4/1/2019	7:27:01 AM	3	5.00	25	5	30	246.32	
1	4/1/2019	7:33:16 AM	4	5.00	26	5	32	254.95	
1	4/1/2019	7:39:22 AM	5	5.00	27	6	33	190.65	
1	4/1/2019	7:45:34 AM	6	5.00	22	5	26	245.82	
1	4/1/2019	7:51:49 AM	7	5.00	22	6	28	227.85	
1	4/1/2019	7:58:02 AM	8	5.00	23	6	30	279.24	
1	4/1/2019	8:04:18 AM	9	5.00	25	6	31	193.00	
1	4/1/2019	8:10:25 AM	10	5.00	22	7	29	356.29	
1	4/1/2019	8:16:38 AM	11	5.00	19	6	25	230.52	
1	4/1/2019	8:22:51 AM	12	5.00	23	5	28	231.90	

Missing vial 13.

1	4/1/2019	8:29:09 AM	14	5.00	21	6	27	372.23
1	4/1/2019	8:35:17 AM	15	5.00	25	4	29	188.10
1	4/1/2019	8:41:28 AM	16	5.00	21	7	27	320.92
1	4/1/2019	8:47:42 AM	17	5.00	20	6	26	276.52
1	4/1/2019	8:53:55 AM	18	5.00	27	7	34	330.61
1	4/1/2019	9:00:10 AM	19	5.00	20	5	25	237.82
1	4/1/2019	9:06:26 AM	20	5.00	25	6	31	263.45
1	4/1/2019	9:12:31 AM	21	5.00	25	7	31	251.65
1	4/1/2019	9:18:39 AM	22	5.00	19	6	25	377.60
1	4/1/2019	9:24:58 AM	23	5.00	20	6	26	320.66
1	4/1/2019	9:30:38 AM	24	5.00	14513	35547	50060	1016.14

LABORATORY SURVEY

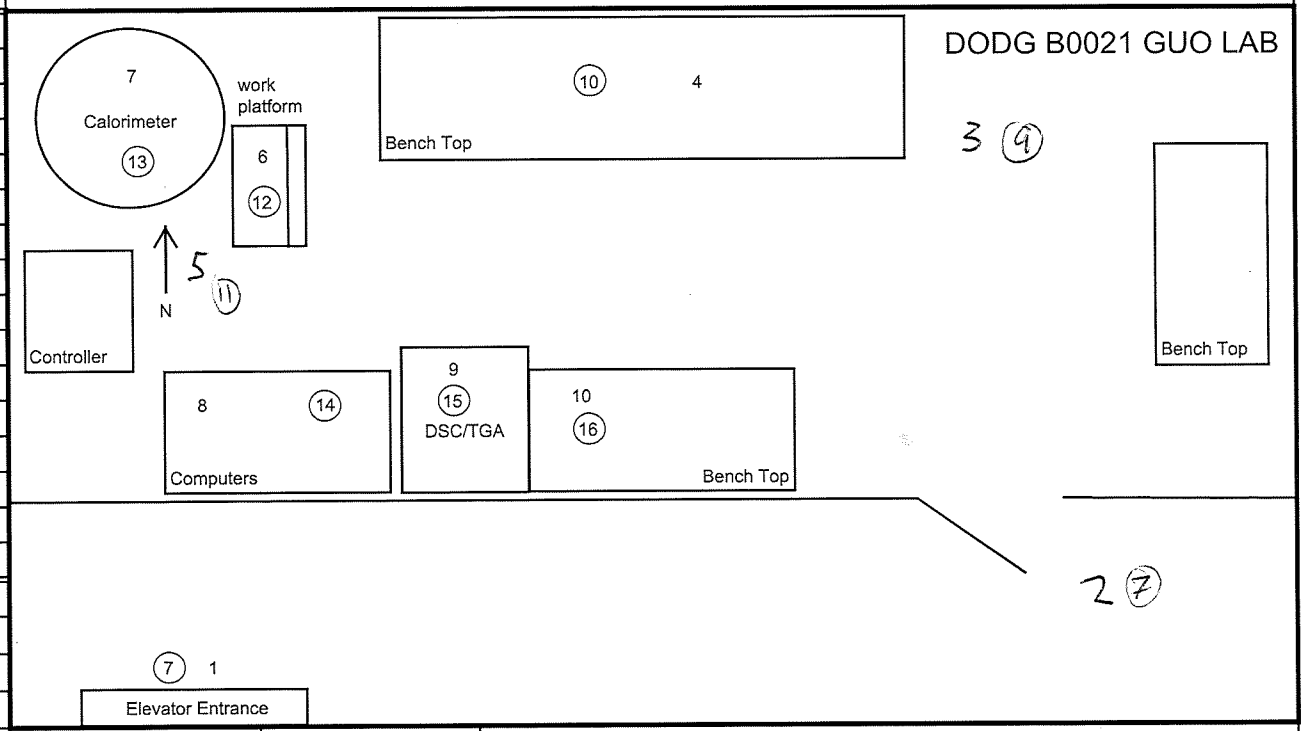
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 3/29/2019	Time: 1539	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/1/2019

Survey #	Location	CPM
1	Elevator Entrance	100
2	South Floor	120
3	East Lab Floor	150
4	North Bench Top	100
5	West Floor	70
6	Work Platform	70
7	Calorimeter	NOTE 1
8	Computers	~~76~~ BT 70
9	DSC/TGA	70
10	South Bench Top	90

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: BT	Date: 3/29/19	Notes: NOTE 1: EXPERIMENT IN PROGRESS, SWIPE AND SURVEY NOT TAKEN.
Swiped By: CMH	Date: 3/29/19	
Reviewed By: [signature]	Date: 4/1/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

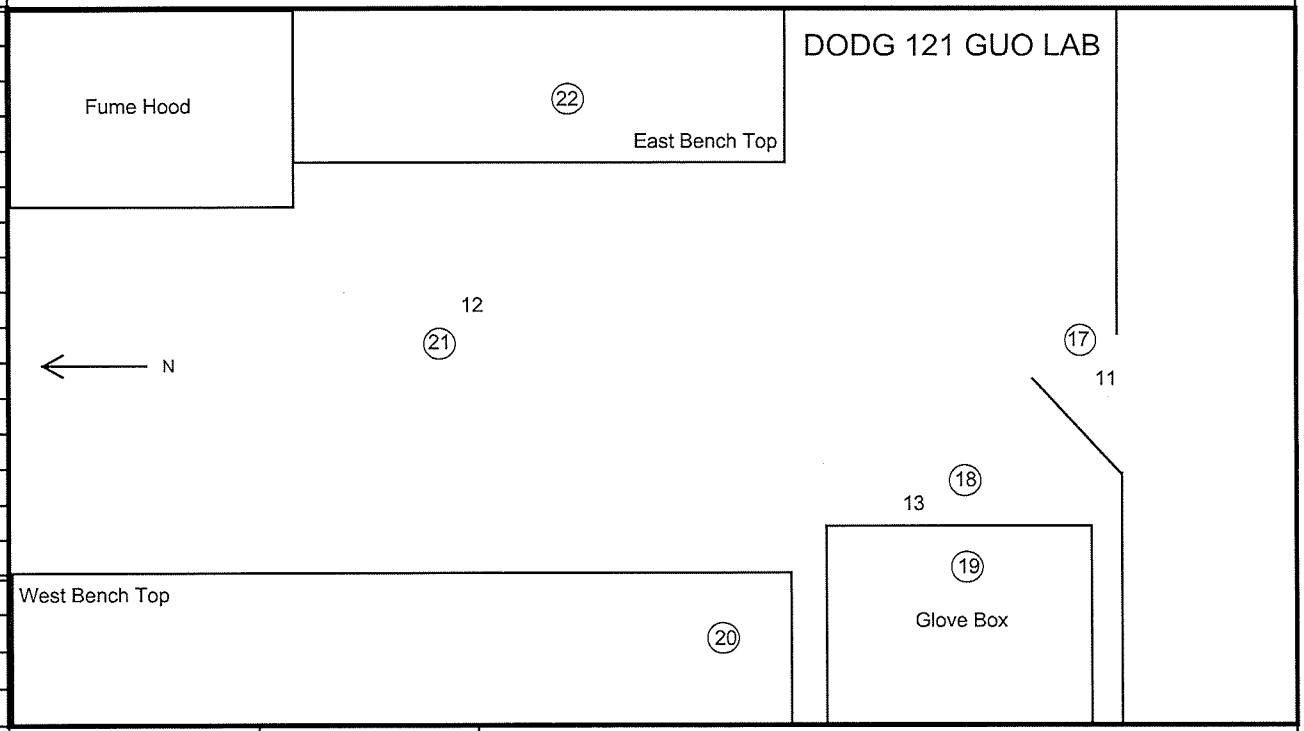
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	3/29/19	1549	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/1/2019

Survey #	Location	CPM
11	121 Doorway	130
12	121 Center of lab	60
13	121 Glove Box	200

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	3/29/19	
Swiped By:	Date:	
CMH	3/29/19	
Reviewed By:	Date:	
[signature]	4/1/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	14	Dates:	3/31/2019-4/6/2019	Counted On	4/8/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	9.02E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	32	**********	*********	
2.	BACKGROUND 2	32	**********	*********	
3.	BACKGROUND 3	31	**********	*********	
4.	BACKGROUND 4	28	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	24	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 EAST FLOOR	29	M	M	
10.	B021 NORTH BENCH TOP	34	M	M	
11.	B021 WEST LAB FLOOR	38	9.80E-06	9.80E-08	
12.	B021 WORK PLATFORM	27	M	M	
13.	B021 CALORIMETER	28	M	M	
14.	B021 COMPUTERS	33	M	M	
15.	B021 DSC/TGA	27	M	M	
16.	B021 SOUTH BENCH TOP	29	M	M	
17.	121 DOORWAY	52	2.94E-05	2.94E-07	
18.	121 GLOVE BOX- FLOOR	28	M	M	
19.	121 GLOVE BOX	26	M	M	
20.	121 WEST BENCH TOP	25	M	M	
21.	121 CENTER OF LAB	21	M	M	
22.	121 EAST BENCH TOP	24	M	M	

None

^{36}Cl SOURCE 09/14/1971	50157	**********	**********	
	101.13%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 4/8/2019	SIGN/DATE: 4/8/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190408_0912
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190408_0912\20190408_0912.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/8/2019	9:13:34 AM	1	5.00	26	6	32	276.94	
1	4/8/2019	9:19:47 AM	2	5.00	26	6	32	282.54	
1	4/8/2019	9:25:59 AM	3	5.00	25	6	31	276.79	
1	4/8/2019	9:32:15 AM	4	5.00	23	5	28	313.26	
1	4/8/2019	9:38:27 AM	5	5.00	25	7	32	270.67	
1	4/8/2019	9:44:42 AM	6	5.00	25	7	31	277.28	
1	4/8/2019	9:50:59 AM	7	5.00	20	3	24	194.78	
1	4/8/2019	9:57:15 AM	8	5.00	22	5	27	265.48	
1	4/8/2019	10:03:29 AM	9	5.00	21	8	29	323.41	
1	4/8/2019	10:09:45 AM	10	5.00	26	8	34	281.87	
1	4/8/2019	10:16:03 AM	11	5.00	30	8	38	265.15	
1	4/8/2019	10:22:20 AM	12	5.00	22	5	27	208.25	

1	4/8/2019	10:28:38 AM	13	5.00	23	5	28	217.94
1	4/8/2019	10:34:54 AM	14	5.00	28	5	33	221.88
1	4/8/2019	10:41:13 AM	15	5.00	21	6	27	296.24
1	4/8/2019	10:47:26 AM	16	5.00	22	7	29	301.29
1	4/8/2019	10:53:42 AM	17	5.00	36	16	52	266.68
1	4/8/2019	10:59:51 AM	18	5.00	20	7	28	351.96
1	4/8/2019	11:06:07 AM	19	5.00	22	4	26	276.50
1	4/8/2019	11:12:16 AM	20	5.00	20	4	25	241.63
1	4/8/2019	11:18:29 AM	21	5.00	17	4	21	202.06
1	4/8/2019	11:24:47 AM	22	5.00	19	5	24	277.41
1	4/8/2019	11:30:28 AM	23	5.00	14616	35541	50157	1015.78

LABORATORY SURVEY

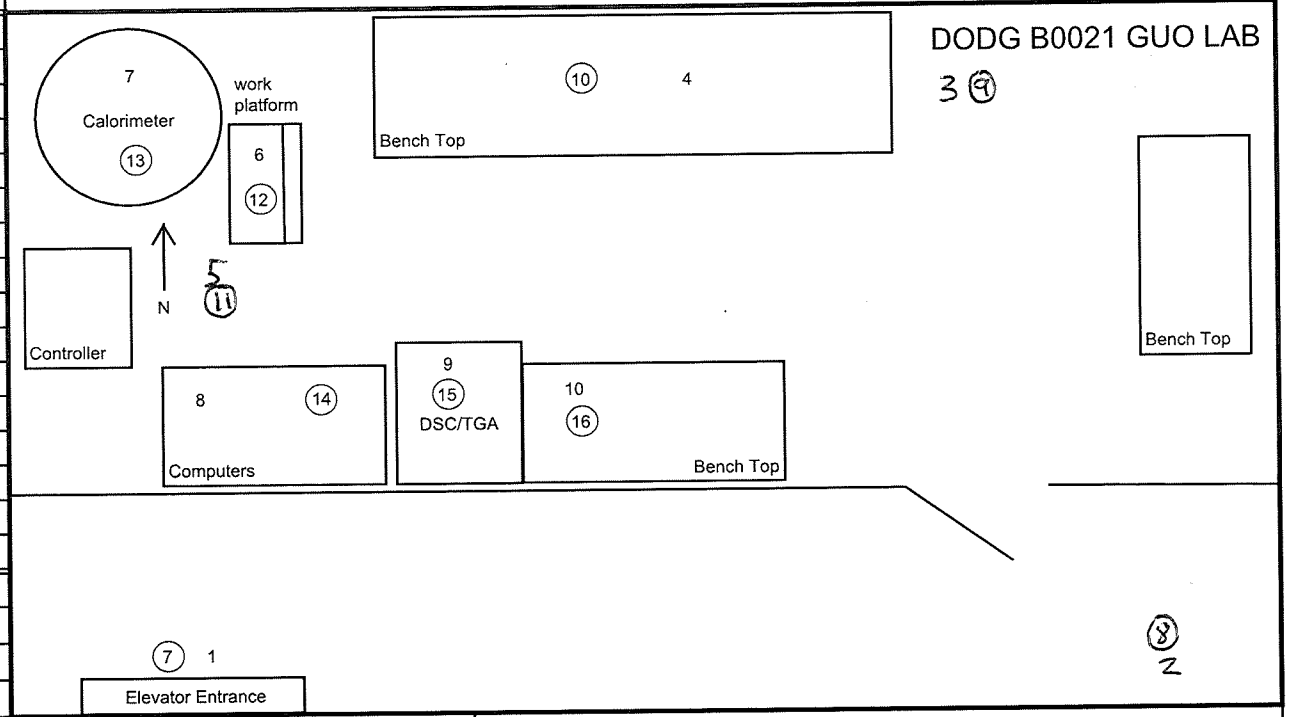
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building: Dodgen Research Facility	Room: B0021 - GUO	Lab Class: D	Survey Instrument: GM Detector Model 3	Serial No.: 58680	Radiation Detected: Gamma
Authorized User: Xiaofeng Guo	Date: 4/5/19	Time: 1543	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One): ON ☒ OFF ☐					

LSC Printout Date: 4/9/2019

Survey #	Location	CPM
1	Elevator Entrance	60
2	South Floor	70
3	East Lab Floor	320
4	North Bench Top	100
5	West Floor	80
6	Work Platform	70
7	Calorimeter	60
8	Computers	100
9	DSC/TGA	80
10	South Bench Top	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	and Locations		
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: ~~JG~~ JS BT	Date: 4/5/19	Notes
Swiped By: JH	Date: 4/5/19	
Reviewed By: [signature]	Date: 4/8/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

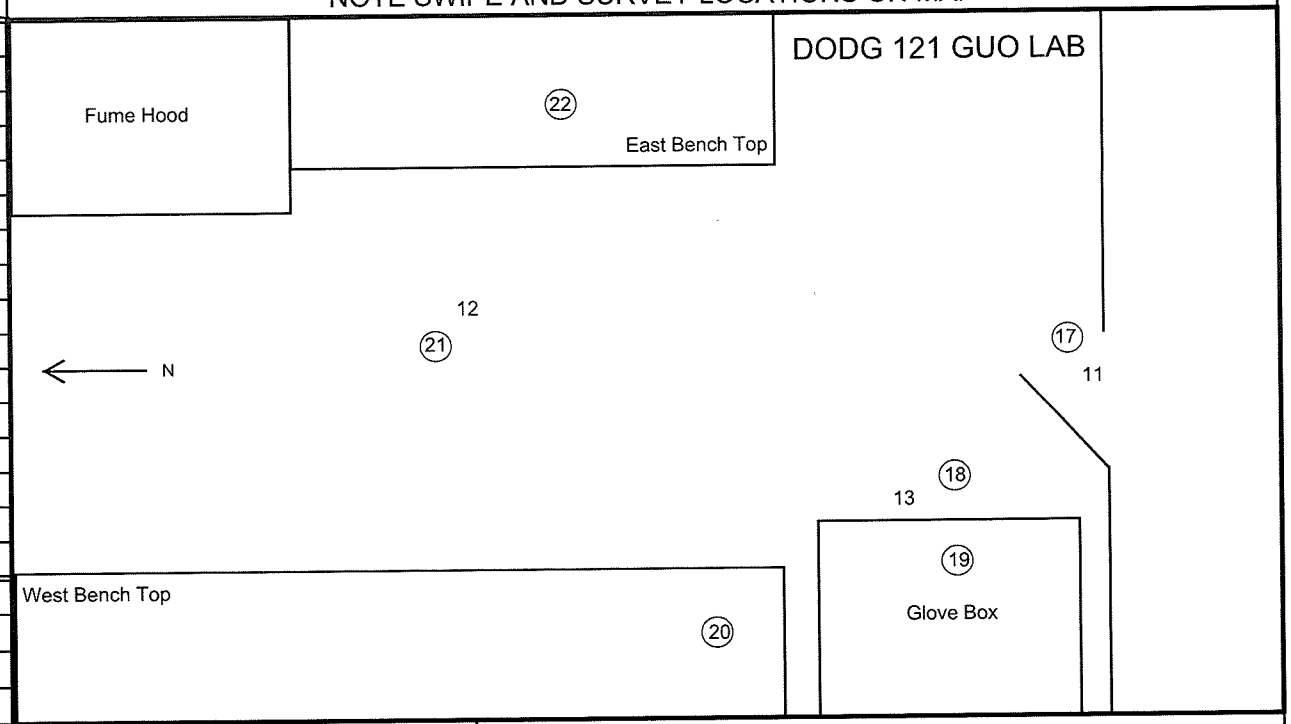
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	4/5/19	1555	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 4/8/2019

Survey #	Location	CPM
11	121 Doorway	50
12	121 Center of lab	80
13	121 Glove Box	140

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	4/5/19	
Swiped By:	Date:	
JS	4/5/19	
Reviewed By:	Date:	
[signature]	4/8/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 15	Dates: 4/7/2019-4/13/2019	Counted On 4/9/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.90E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	33	**********	*********	
2.	BACKGROUND 2	28	**********	*********	
3.	BACKGROUND 3	30	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	29	M	M	
9.	B021 EAST FLOOR	33	M	M	
10.	B021 NORTH BENCH TOP	25	M	M	
11.	B021 WEST LAB FLOOR	27	M	M	
12.	B021 WORK PLATFORM	28	M	M	
13.	B021 CALORIMETER	29	M	M	
14.	B021 COMPUTERS	29	M	M	
15.	B021 DSC/TGA	33	M	M	
16.	B021 SOUTH BENCH TOP	32	M	M	
17.	121 DOORWAY	27	M	M	
18.	121 GLOVE BOX- FLOOR	28	M	M	
19.	121 GLOVE BOX	26	M	M	
20.	121 WEST BENCH TOP	29	M	M	
21.	121 CENTER OF LAB	32	M	M	
22.	121 EAST BENCH TOP	28	M	M	

None

^{36}Cl SOURCE 09/14/1971	50075	**********	**********	
	100.97%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 4/9/2019	SIGN/DATE:

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190409_1317
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190409_1317\20190409_1317.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/9/2019	1:18:44 PM	1	5.00	27	6	33	225.79	
1	4/9/2019	1:24:58 PM	2	5.00	22	6	28	240.21	
1	4/9/2019	1:31:13 PM	3	5.00	25	5	30	213.34	
1	4/9/2019	1:37:30 PM	4	5.00	23	6	30	272.86	
1	4/9/2019	1:43:44 PM	5	5.00	21	5	26	279.87	
1	4/9/2019	1:49:57 PM	6	5.00	26	4	30	167.75	
1	4/9/2019	1:56:13 PM	7	5.00	23	6	29	284.52	
1	4/9/2019	2:02:29 PM	8	5.00	23	5	29	202.13	
1	4/9/2019	2:08:44 PM	9	5.00	27	6	33	166.62	
1	4/9/2019	2:15:02 PM	10	5.00	19	6	25	263.79	
1	4/9/2019	2:21:20 PM	11	5.00	23	4	27	184.52	
1	4/9/2019	2:27:38 PM	12	5.00	24	5	28	206.94	

1	4/9/2019	2:33:57 PM	13	5.00	23	5	29	196.10
1	4/9/2019	2:40:14 PM	14	5.00	25	5	29	187.86
1	4/9/2019	2:46:30 PM	15	5.00	25	8	33	211.82
1	4/9/2019	2:52:43 PM	16	5.00	25	7	32	136.42
1	4/9/2019	2:58:57 PM	17	5.00	23	5	27	174.17
1	4/9/2019	3:05:07 PM	18	5.00	22	5	28	189.38
1	4/9/2019	3:11:24 PM	19	5.00	21	5	26	209.19
1	4/9/2019	3:17:34 PM	20	5.00	25	4	29	175.62
1	4/9/2019	3:23:48 PM	21	5.00	27	5	32	147.51
1	4/9/2019	3:30:07 PM	22	5.00	21	7	28	291.87
1	4/9/2019	3:35:47 PM	23	5.00	14561	35514	50075	1013.22

LABORATORY SURVEY

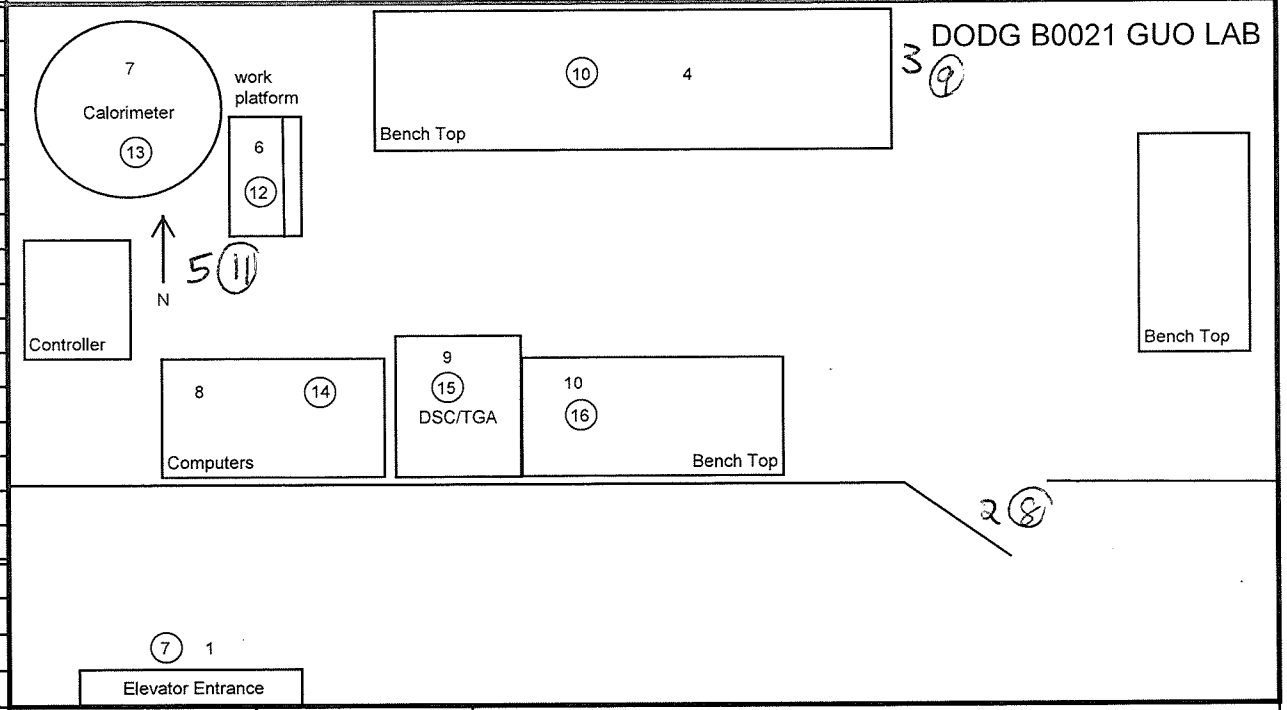
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	4/9/19	1237	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/9/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	900
4	North Bench Top	150
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: AG	Date: 4/9/19	Notes
Swiped By: AG/BT	Date: 4/9/19	
Reviewed By: [signature]	Date: 4/10/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

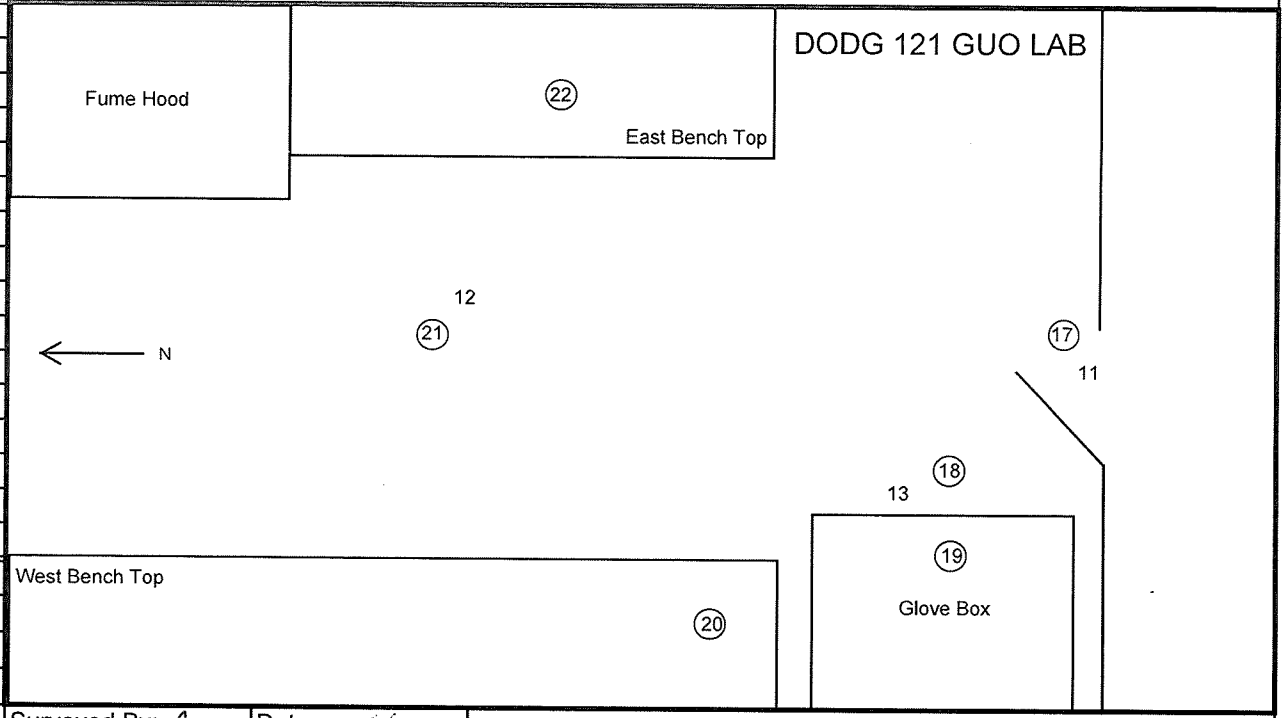
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 4/9/19	Time: 1221	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/9/2019

Survey #	Location	CPM
11	121 Doorway	<100
12	121 Center of lab	<100
13	121 Glove Box	600

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: AG Date: 4/9/19

Swiped By: AG Date: 4/9/19

Reviewed By: [signature] Date: 4/10/2019

Notes

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 16	Dates: 4/14/2019-4/20/2019	Counted On 4/16/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.75E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	27	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	26	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	28	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	32	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 EAST FLOOR	27	M	M	
10.	B021 NORTH BENCH TOP	30	M	M	
11.	B021 WEST LAB FLOOR	29	M	M	
12.	B021 WORK PLATFORM	51	3.29E-05	3.29E-07	
13.	B021 CALORIMETER	31	M	M	
14.	B021 COMPUTERS	25	M	M	
15.	B021 DSC/TGA	32	M	M	
16.	B021 SOUTH BENCH TOP	29	M	M	
17.	121 DOORWAY	28	M	M	
18.	121 GLOVE BOX- FLOOR	28	M	M	
19.	121 GLOVE BOX	29	M	M	
20.	121 WEST BENCH TOP	29	M	M	
21.	121 CENTER OF LAB	28	M	M	
22.	121 EAST BENCH TOP	34	9.10E-06	9.10E-08	

None

^{36}Cl SOURCE 09/14/1971	50275	**********	**********	
	101.37%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madelsan Heine 4/18/19	SIGN/DATE: 4/18/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190416_1403
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190416_1403\20190416_1403.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/16/2019	2:04:20 PM	1	5.00	21	6	27	330.41	
1	4/16/2019	2:10:34 PM	2	5.00	22	4	27	237.24	
1	4/16/2019	2:16:50 PM	3	5.00	22	5	26	217.29	
1	4/16/2019	2:23:03 PM	4	5.00	21	5	26	304.32	
1	4/16/2019	2:29:17 PM	5	5.00	23	5	28	307.23	
1	4/16/2019	2:35:31 PM	6	5.00	26	5	31	217.90	
1	4/16/2019	2:41:47 PM	7	5.00	26	6	32	232.29	
1	4/16/2019	2:48:04 PM	8	5.00	22	9	31	270.16	
1	4/16/2019	2:54:21 PM	9	5.00	22	5	27	293.71	
1	4/16/2019	3:00:36 PM	10	5.00	25	4	30	171.74	
1	4/16/2019	3:06:55 PM	11	5.00	22	6	29	254.04	
1	4/16/2019	3:13:09 PM	12	5.00	45	6	51	233.78	

1	4/16/2019	3:19:29 PM	13	5.00	25	6	31	276.39
1	4/16/2019	3:25:45 PM	14	5.00	21	4	25	247.64
1	4/16/2019	3:31:54 PM	15	5.00	25	7	32	243.83
1	4/16/2019	3:38:10 PM	16	5.00	23	7	29	275.67
1	4/16/2019	3:44:26 PM	17	5.00	23	5	28	249.86
1	4/16/2019	3:50:37 PM	18	5.00	23	5	28	182.83
1	4/16/2019	3:56:54 PM	19	5.00	23	6	29	197.07
1	4/16/2019	4:03:06 PM	20	5.00	25	5	29	211.97
1	4/16/2019	4:09:21 PM	21	5.00	23	5	28	227.77
1	4/16/2019	4:15:37 PM	22	5.00	27	7	34	233.82
1	4/16/2019	4:21:18 PM	23	5.00	14584	35691	50275	1010.23

LABORATORY SURVEY

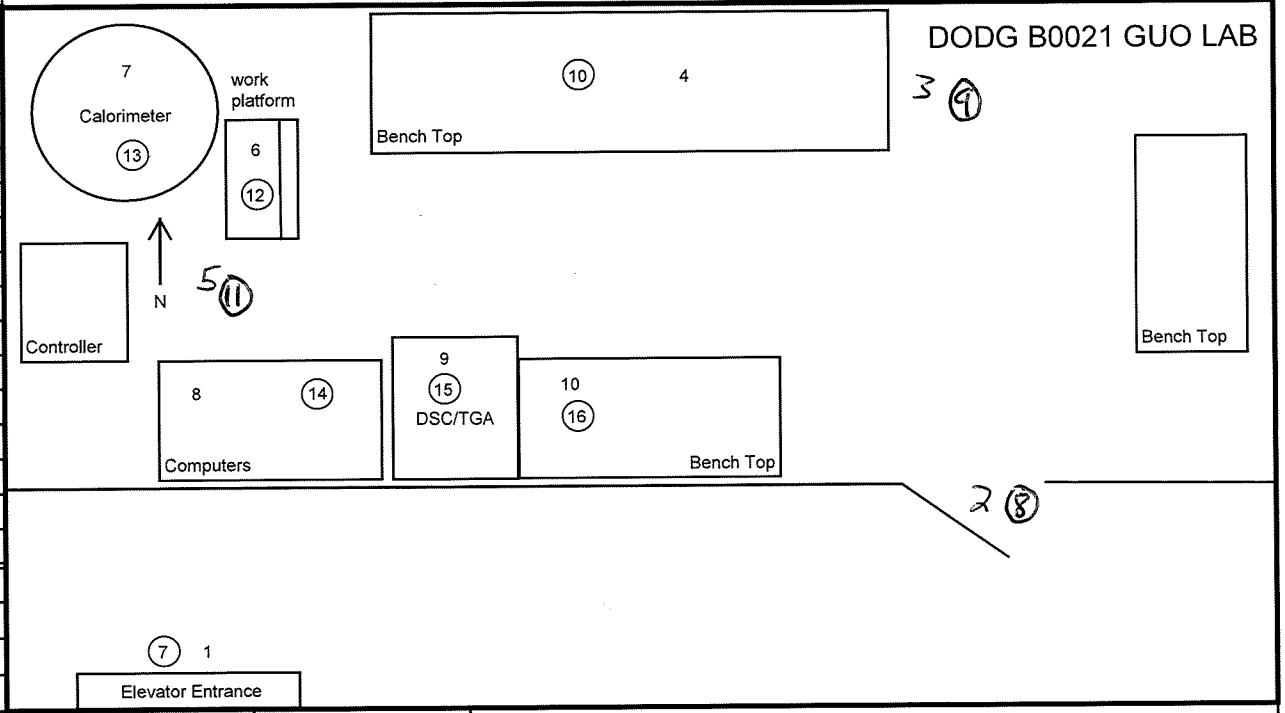
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	Ludlum Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 4/16/19 1219 JS	Time: 1219	Swipe Instrument: Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/16/19

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	700
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	Location		
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: HG	Date: 4/16/19	Notes
Swiped By: JS / DH	Date: 4/16/19	
Reviewed By: [signature]	Date: 4/18/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

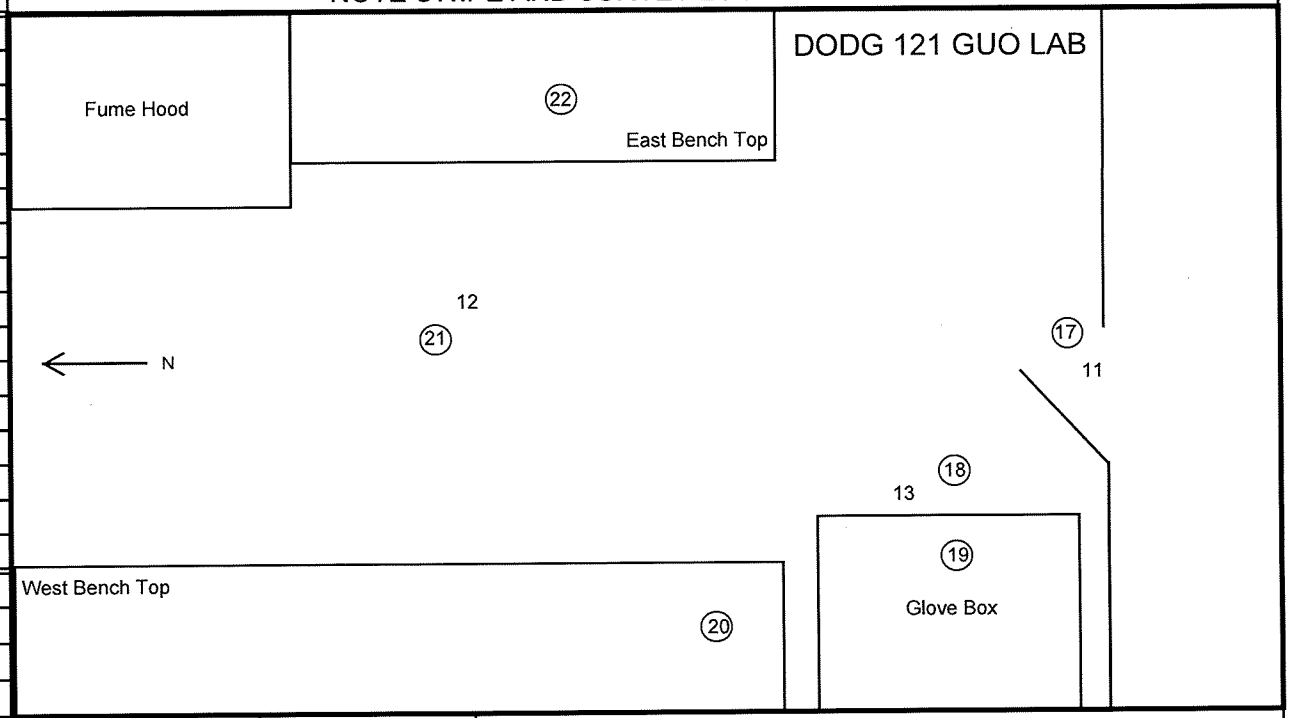
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	Ludlum Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 4/16/19	Time: 1240	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 4/16/19

Survey #	Location	CPM
11	121 Doorway	200
12	121 Center of lab	≤ 100
13	121 Glove Box	150

Swipe #	Location		
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
AH	4/16/2019	
Swiped By: JS	Date: 4/16/19	
Reviewed By:	Date: 4/18/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	17	Dates:	4/21/2019-4/27/2019	Counted On	4/23/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.94E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	32	**********	*********	
4.	BACKGROUND 4	31	**********	*********	
5.	BACKGROUND 5	27	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 EAST FLOOR	26	M	M	
10.	B021 NORTH BENCH TOP	25	M	M	
11.	B021 WEST LAB FLOOR	22	M	M	
12.	B021 WORK PLATFORM	27	M	M	
13.	B021 CALORIMETER	31	M	M	
14.	B021 COMPUTERS	27	M	M	
15.	B021 DSC/TGA	23	M	M	
16.	B021 SOUTH BENCH TOP	26	M	M	
17.	121 DOORWAY	31	M	M	
18.	121 GLOVE BOX- FLOOR	39	1.26E-05	1.26E-07	
19.	121 GLOVE BOX	24	M	M	
20.	121 WEST BENCH TOP	27	M	M	
21.	121 CENTER OF LAB	35	M	M	
22.	121 EAST BENCH TOP	27	M	M	

None

^{36}Cl SOURCE 09/14/1971	50046	**********	**********	
	100.91%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 4/24/2019	SIGN/DATE: 4/24/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190423_1443
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190423_1443\20190423_1443.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/23/2019	2:45:01 PM	1	5.00	22	6	28	312.85	
1	4/23/2019	2:51:17 PM	2	5.00	21	9	30	331.88	
1	4/23/2019	2:57:35 PM	3	5.00	25	6	32	230.63	
1	4/23/2019	3:03:46 PM	4	5.00	24	6	31	255.99	
1	4/23/2019	3:10:01 PM	5	5.00	21	6	27	249.46	
1	4/23/2019	3:16:15 PM	6	5.00	24	7	32	268.27	
1	4/23/2019	3:22:31 PM	7	5.00	22	5	27	290.85	
1	4/23/2019	3:28:50 PM	8	5.00	21	5	27	230.23	
1	4/23/2019	3:35:07 PM	9	5.00	23	4	26	141.01	
1	4/23/2019	3:41:21 PM	10	5.00	19	7	25	287.48	
1	4/23/2019	3:47:39 PM	11	5.00	16	6	22	308.11	
1	4/23/2019	3:53:57 PM	12	5.00	22	5	27	239.04	

1	4/23/2019	4:00:16 PM	13	5.00	26	5	31	215.40
1	4/23/2019	4:06:30 PM	14	5.00	22	4	27	198.77
1	4/23/2019	4:12:43 PM	15	5.00	20	4	23	167.50
1	4/23/2019	4:19:00 PM	16	5.00	21	5	26	242.29
1	4/23/2019	4:25:14 PM	17	5.00	25	6	31	264.33
1	4/23/2019	4:31:32 PM	18	5.00	29	10	39	204.54
1	4/23/2019	4:37:49 PM	19	5.00	19	5	24	287.52
1	4/23/2019	4:44:03 PM	20	5.00	20	7	27	227.15
1	4/23/2019	4:50:17 PM	21	5.00	27	8	35	172.94
1	4/23/2019	4:56:36 PM	22	5.00	22	5	27	126.42
1	4/23/2019	5:02:16 PM	23	5.00	14378	35669	50046	1016.44

LABORATORY SURVEY

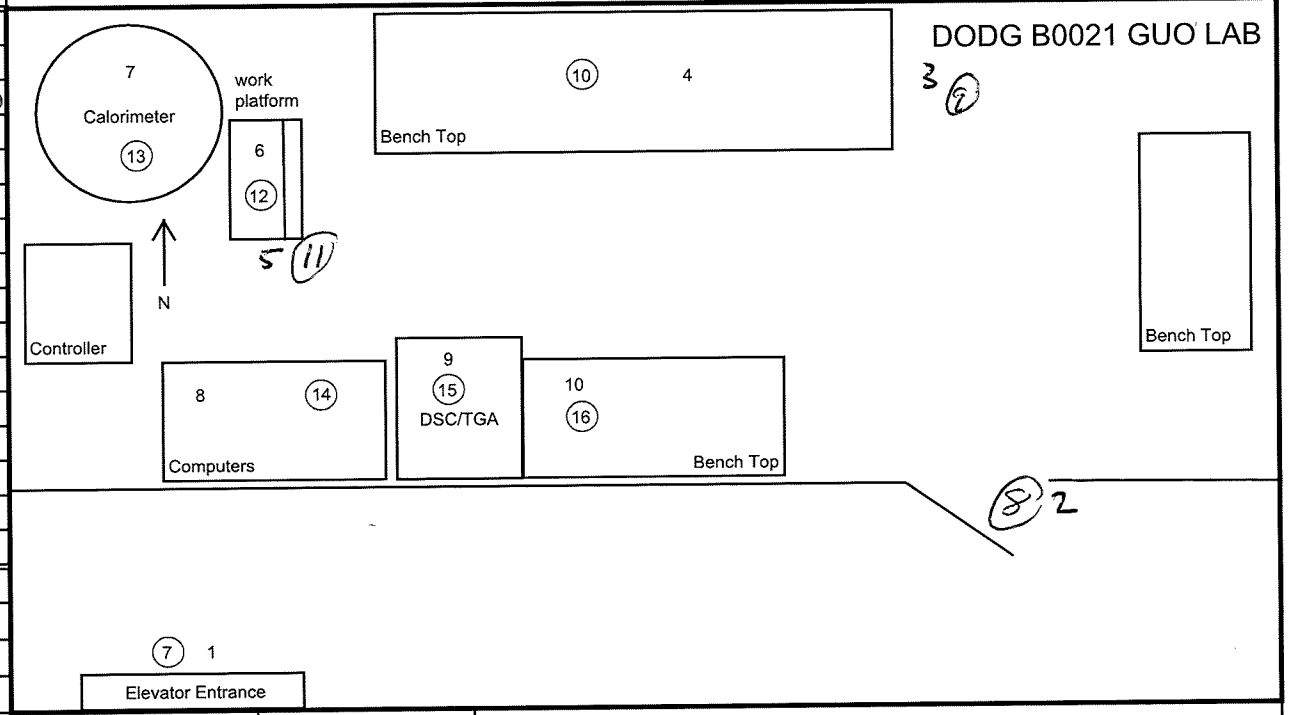
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 4/23/19	Time: 1422	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 4/23/2019

Survey #	Location	CPM
1	Elevator Entrance	≤100
2	South Floor	≤100
3	East Lab Floor	~~200~~ JS 600
4	North Bench Top	≤100
5	West Floor	≤100
6	Work Platform	≤100
7	Calorimeter	≤100
8	Computers	≤100
9	DSC/TGA	≤100
10	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: JS	Date: 4/23/19	Notes
Swiped By: AG	Date: 4/23/19	
Reviewed By: [signature]	Date: 4/24/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

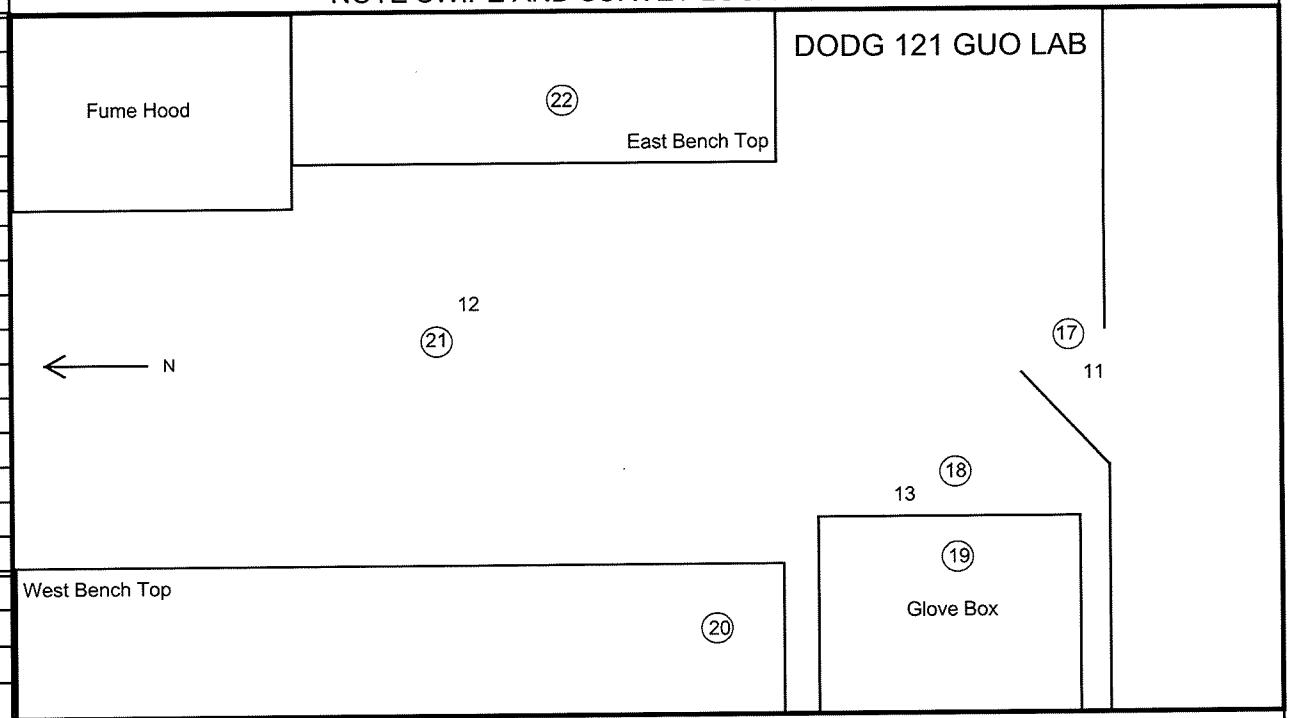
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 4/23/19	Time: 1413	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One): ON ☐ OFF ☑					

LSC Printout Date: 4/23/2019

Survey #	Location	CPM
11	121 Doorway	≤100
12	121 Center of lab	≤100
13	121 Glove Box	≤100

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
JS	4/23/19	
Swiped By: AG	Date: 4/23/19	
Reviewed By: JS JS	Date: 4/23/19 JS	
	4/24/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	18	Dates:	4/28/2019-5/4/2019	Counted On	4/30/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.84E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	29	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	29	**********	*********	
6.	BACKGROUND 6	26	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	29	M	M	
9.	B021 EAST FLOOR	27	M	M	
10.	B021 NORTH BENCH TOP	25	M	M	
11.	B021 WEST LAB FLOOR	29	M	M	
12.	B021 WORK PLATFORM	33	M	M	
13.	B021 CALORIMETER	32	M	M	
14.	B021 COMPUTERS	26	M	M	
15.	B021 DSC/TGA	27	M	M	
16.	B021 SOUTH BENCH TOP	26	M	M	
17.	121 DOORWAY	29	M	M	
18.	121 GLOVE BOX- FLOOR	43	2.01E-05	2.01E-07	
19.	121 GLOVE BOX	29	M	M	
20.	121 WEST BENCH TOP	32	M	M	
21.	121 CENTER OF LAB	30	M	M	
22.	121 EAST BENCH TOP	32	M	M	

None

^{36}Cl SOURCE 09/14/1971	50025	**********	**********	
	100.87%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M.Heine	REVIEWED BY: C. Hines
SIGN/DATE: Maddison Heine 5/1/19	SIGN/DATE: 5/1/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190430_1423
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190430_1423\20190430_1423.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	4/30/2019	2:24:15 PM	1	5.00	23	6	29	277.08	
1	4/30/2019	2:30:24 PM	2	5.00	22	8	30	413.67	
1	4/30/2019	2:36:40 PM	3	5.00	24	4	28	220.34	
1	4/30/2019	2:42:50 PM	4	5.00	24	7	30	316.16	
1	4/30/2019	2:49:04 PM	5	5.00	24	5	29	232.66	
1	4/30/2019	2:55:21 PM	6	5.00	19	7	26	341.36	
1	4/30/2019	3:01:40 PM	7	5.00	24	5	29	202.94	
1	4/30/2019	3:07:55 PM	8	5.00	24	5	29	223.61	
1	4/30/2019	3:14:14 PM	9	5.00	22	5	27	208.10	
1	4/30/2019	3:20:28 PM	10	5.00	21	4	25	258.55	
1	4/30/2019	3:26:44 PM	11	5.00	23	6	29	199.53	
1	4/30/2019	3:32:57 PM	12	5.00	26	7	33	299.69	

1	4/30/2019	3:39:19 PM	13	5.00	27	6	32	291.45
1	4/30/2019	3:45:35 PM	14	5.00	21	5	26	299.55
1	4/30/2019	3:51:51 PM	15	5.00	22	5	27	254.41
1	4/30/2019	3:58:07 PM	16	5.00	21	5	26	290.09
1	4/30/2019	4:04:16 PM	17	5.00	23	6	29	251.45
1	4/30/2019	4:10:32 PM	18	5.00	30	13	43	253.84
1	4/30/2019	4:16:48 PM	19	5.00	22	7	29	355.97
1	4/30/2019	4:23:03 PM	20	5.00	23	9	32	366.42
1	4/30/2019	4:29:22 PM	21	5.00	24	5	30	158.81
1	4/30/2019	4:35:35 PM	22	5.00	25	7	32	317.13
1	4/30/2019	4:41:15 PM	23	5.00	14544	35481	50025	1015.95

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

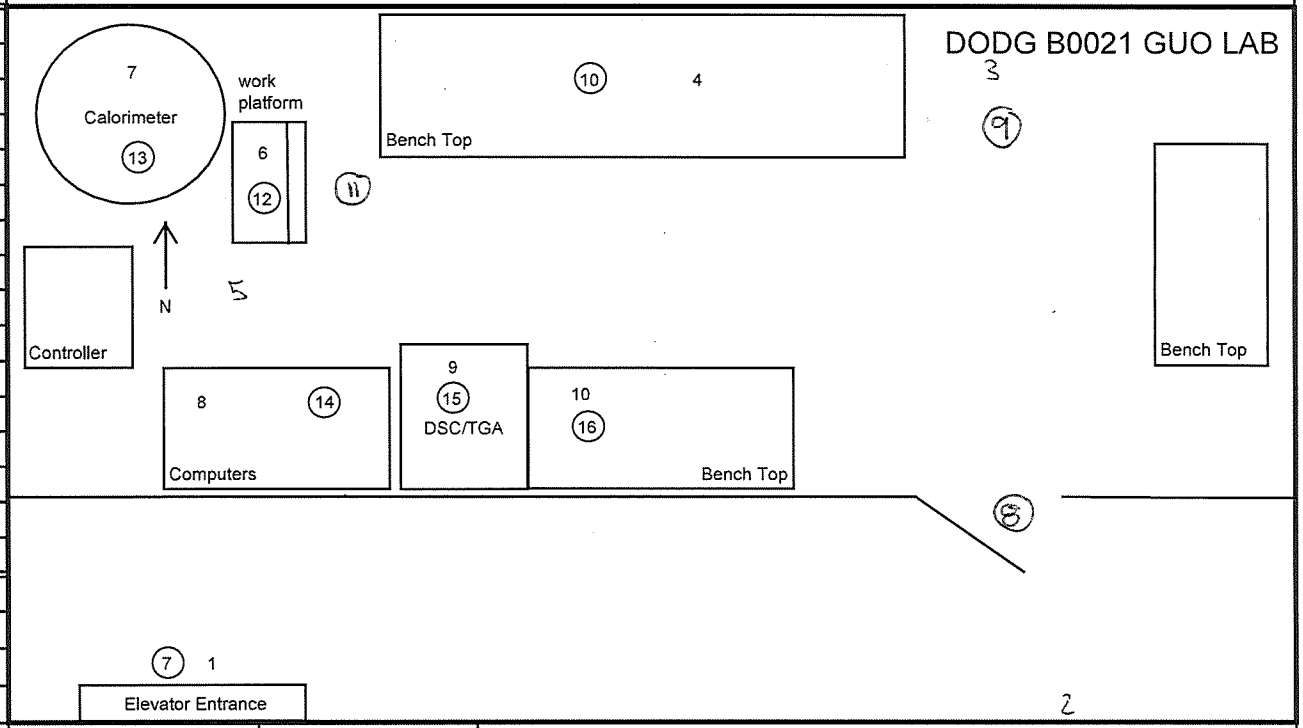
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	4/30/19	1320	Quantasmart	073396	Beta/Gamma

Reactor Status (Check One) ON ☑ OFF ☐

LSC Printout Date: 4/30/2019

Survey #	Location	CPM
1	Elevator Entrance	<100
2	South Floor	<100
3	East Lab Floor	800
4	North Bench Top	<100
5	West Floor	<100
6	Work Platform	<100
7	Calorimeter	<100
8	Computers	<100
9	DSC/TGA	<100
10	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By:	Date:	Notes
MJ	4/30/2019	
Swiped By:	**Date:**	
MH	4/30/19	
Reviewed By:	**Date:**	
[signature]	5/1/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

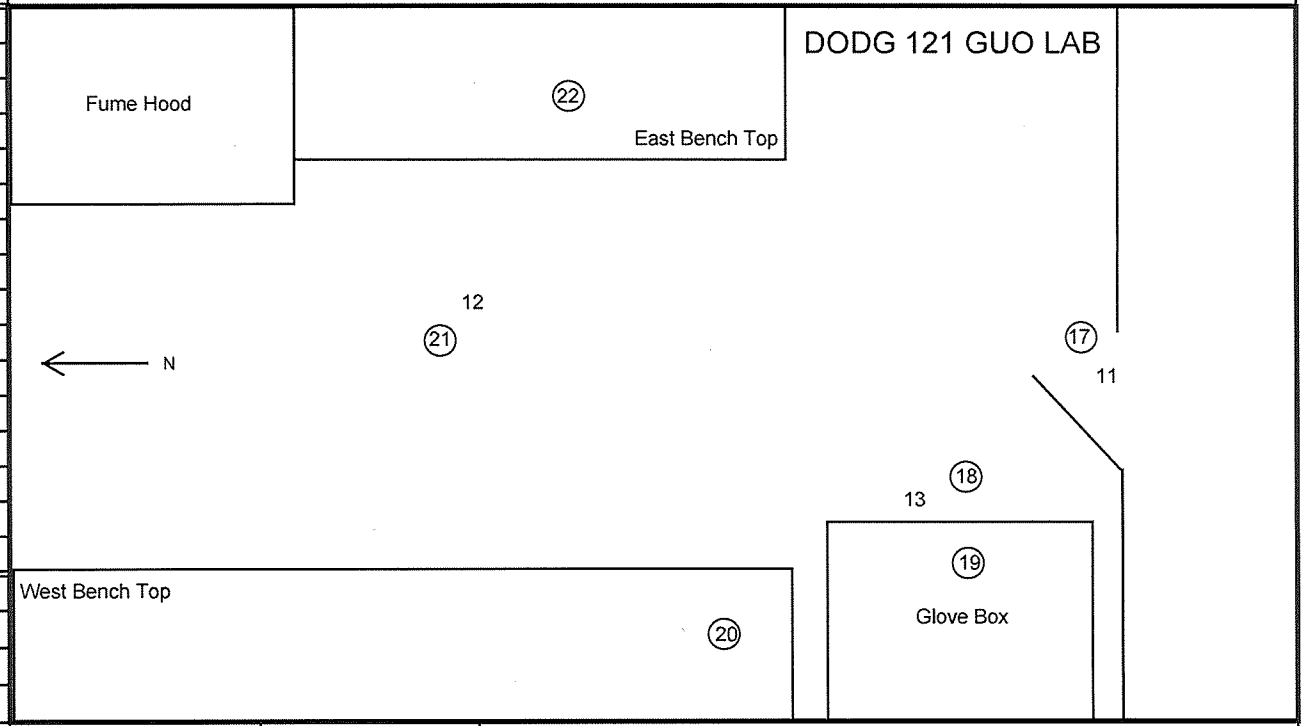
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	4/30/19	1340	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 4/30/2019

Survey #	Location	CPM
11	121 Doorway	<100
12	121 Center of lab	<100
13	121 Glove Box	200

Swipe #	Location		
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
MJ	4/30/2019	
Swiped By: MH	Date: 4/30/19	
Reviewed By:	Date: 5/1/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 19	Dates: 5/5/2019-5/11/2019	Counted On 5/13/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.03E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	34	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	29	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	31	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	28	M	M	
9.	B021 EAST FLOOR	34	M	M	
10.	B021 NORTH BENCH TOP	29	M	M	
11.	B021 WEST LAB FLOOR	33	M	M	
12.	B021 WORK PLATFORM	30	M	M	
13.	B021 CALORIMETER	33	M	M	
14.	B021 COMPUTERS	34	M	M	
15.	B021 DSC/TGA	38	9.57E-06	9.57E-08	
16.	B021 SOUTH BENCH TOP	29	M	M	
17.	121 DOORWAY	39	1.10E-05	1.10E-07	
18.	121 GLOVE BOX- FLOOR	30	M	M	
19.	121 GLOVE BOX	33	M	M	
20.	121 WEST BENCH TOP	32	M	M	
21.	121 CENTER OF LAB	30	M	M	
22.	121 EAST BENCH TOP	32	M	M	

Swipe 13 not taken due to an experiment in progress with the calorimeter. A background swipe was put in its place.

^{36}Cl SOURCE 09/14/1971	49988	**********	*********	
	100.79%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE:	SIGN/DATE: 5/13/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190513_0810
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190513_0810\20190513_0810.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	5/13/2019	8:11:15 AM	1	5.00	28	6	34	197.72	
1	5/13/2019	8:17:22 AM	2	5.00	23	6	29	270.09	
1	5/13/2019	8:23:34 AM	3	5.00	23	6	29	257.44	
1	5/13/2019	8:29:42 AM	4	5.00	26	5	32	227.26	
1	5/13/2019	8:35:55 AM	5	5.00	25	6	31	220.46	
1	5/13/2019	8:42:08 AM	6	5.00	28	5	32	154.74	
1	5/13/2019	8:48:23 AM	7	5.00	24	6	30	300.83	
1	5/13/2019	8:54:36 AM	8	5.00	24	4	28	170.87	
1	5/13/2019	9:00:50 AM	9	5.00	28	6	34	218.10	
1	5/13/2019	9:07:00 AM	10	5.00	24	5	29	294.33	
1	5/13/2019	9:13:12 AM	11	5.00	27	6	33	180.58	
1	5/13/2019	9:19:26 AM	12	5.00	23	7	30	273.74	

1	5/13/2019	9:25:44 AM	13	5.00	27	6	33	239.13
1	5/13/2019	9:31:58 AM	14	5.00	27	7	34	282.05
1	5/13/2019	9:38:05 AM	15	5.00	29	8	38	278.82
1	5/13/2019	9:44:18 AM	16	5.00	25	4	29	193.70
1	5/13/2019	9:50:33 AM	17	5.00	32	7	39	207.05
1	5/13/2019	9:56:47 AM	18	5.00	26	5	30	213.86
1	5/13/2019	10:03:01 AM	19	5.00	25	8	33	339.13
1	5/13/2019	10:09:14 AM	20	5.00	25	7	32	261.28
1	5/13/2019	10:15:22 AM	21	5.00	22	7	30	267.38
1	5/13/2019	10:21:36 AM	22	5.00	26	6	32	258.17
1	5/13/2019	10:27:17 AM	23	5.00	14247	35742	49988	1014.17

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

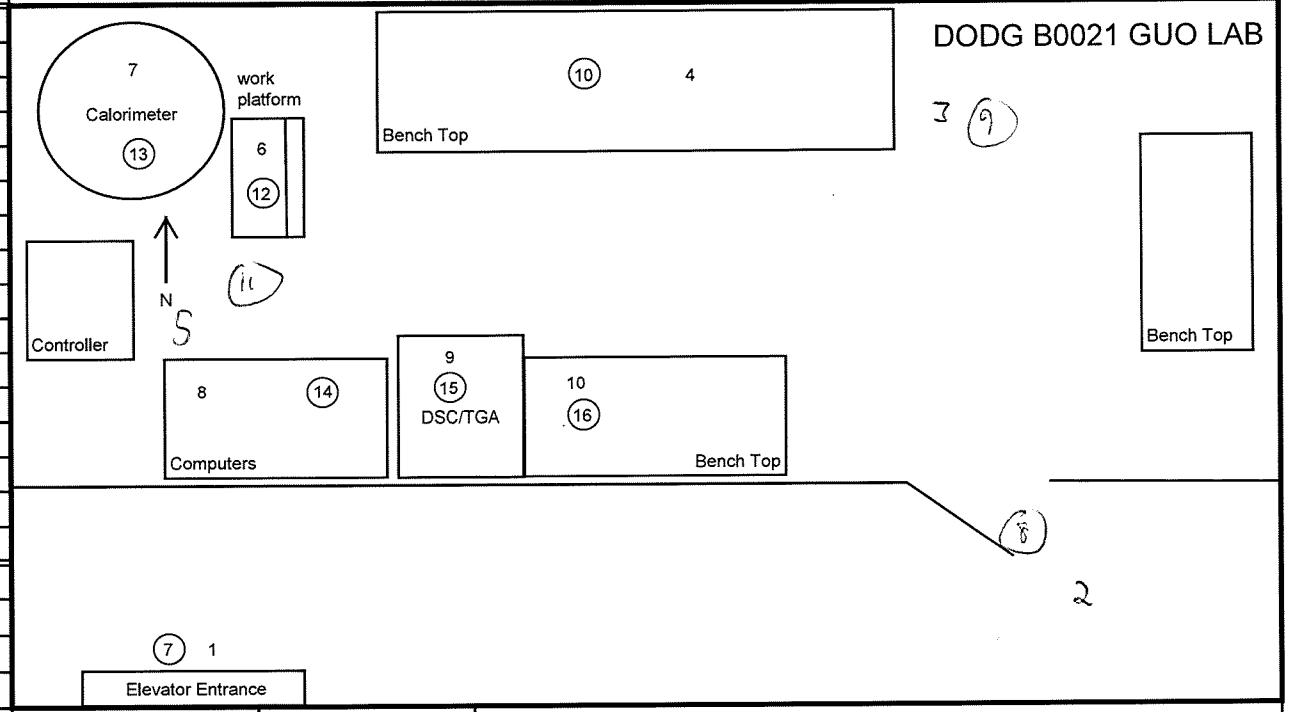
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	5/9/19	1130	Quantasmart	073396	Beta/Gamma

Reactor Status (Check One) ON ☑ OFF ☐

LSC Printout Date: 5/13/2019 ~~5/9/2019~~ BT

Survey #	Location	CPM
1	Elevator Entrance	80
2	South Floor	120
3	East Lab Floor	~~700~~ CMH 600
4	North Bench Top	120
5	West Floor	80
6	Work Platform	100
7	Calorimeter	100
8	Computers	100
9	DSC/TGA	120
10	South Bench Top	120

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	South Bench Top
7	Elevator Entrance		
8	South Floor		
9	East Lab Floor		
10	North Bench Top		
11	West Lab Floor		
12	Work Platform		
13	Calorimeter		
14	Computers		
15	DSC/TGA		

Surveyed By: CMH	Date: 5/9/2019	Notes
Swiped By: MS	Date: 5/9/19	
Reviewed By:	Date: 5/13/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

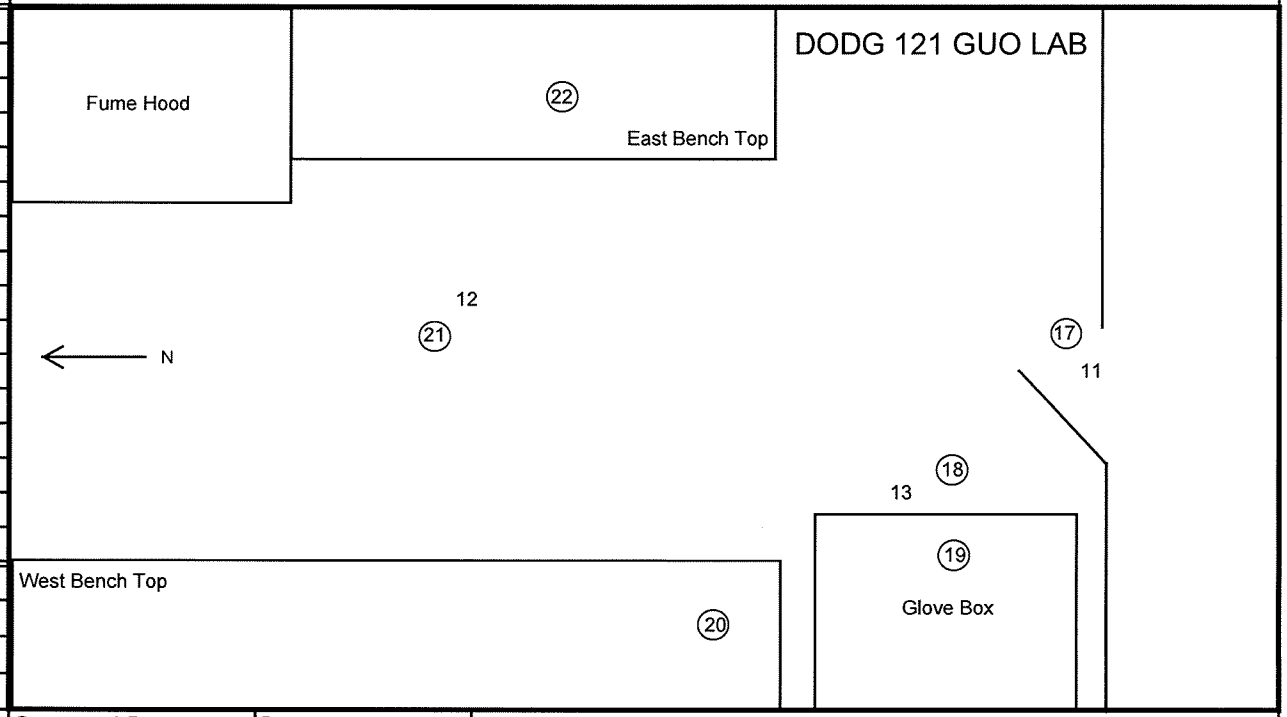
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	5/9/19	1146	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 5/13/2019 ~~5/9/2019~~ BT

Survey #	Location	CPM
11	121 Doorway	110
12	121 Center of lab	120
13	121 Glove Box	240

Swipe # and Locations			
17	121 Doorway		
18	121 Glove Box-floor		
19	121 Glove Box		
20	West Bench Top		
21	121 Center of lab		
22	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
CMH	5/9/2019	
Swiped By:	Date:	
MS	5/9/19	
Reviewed By:	Date:	
[signature]	5/13/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	20	Dates:	5/12/2019-5/19/2019	Counted On	5/14/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	9.00E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	32	**********	*********	
4.	BACKGROUND 4	35	**********	*********	
5.	BACKGROUND 5	28	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	22	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 RAM SAFE	26	M	M	
10.	B021 EAST FLOOR	33	M	M	
11.	B021 NORTH BENCH TOP	22	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	30	M	M	
15.	B021 COMPUTERS	29	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	31	M	M	
18.	121 DOORWAY	38	1.00E-05	1.00E-07	
19.	121 GLOVE BOX- FLOOR	26	M	M	
20.	121 GLOVE BOX	33	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	25	M	M	

None

^{36}Cl SOURCE 09/14/1971	50154	**********	*********	
	101.13%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 5/15/2019	SIGN/DATE: 5/15/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190514_1527
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190514_1527\20190514_1527.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	5/14/2019	3:28:48 PM	1	5.00	24	7	31	210.79	
1	5/14/2019	3:34:57 PM	2	5.00	21	6	27	287.79	
1	5/14/2019	3:41:15 PM	3	5.00	26	6	32	281.03	
1	5/14/2019	3:47:24 PM	4	5.00	28	6	35	203.63	
1	5/14/2019	3:53:40 PM	5	5.00	21	6	28	326.34	
1	5/14/2019	3:59:57 PM	6	5.00	25	7	32	339.26	
1	5/14/2019	4:06:15 PM	7	5.00	17	5	22	262.75	
1	5/14/2019	4:12:31 PM	8	5.00	21	6	27	247.73	
1	5/14/2019	4:18:50 PM	9	5.00	21	5	26	182.35	
1	5/14/2019	4:25:02 PM	10	5.00	28	5	33	164.16	
1	5/14/2019	4:31:19 PM	11	5.00	17	5	22	189.41	
1	5/14/2019	4:37:34 PM	12	5.00	24	5	29	203.69	

1	5/14/2019	4:43:56 PM	13	5.00	22	5	27	240.34
1	5/14/2019	4:50:14 PM	14	5.00	25	5	30	237.69
1	5/14/2019	4:56:24 PM	15	5.00	23	5	29	203.23
1	5/14/2019	5:02:41 PM	16	5.00	23	6	29	243.92
1	5/14/2019	5:08:59 PM	17	5.00	23	7	31	318.34
1	5/14/2019	5:15:17 PM	18	5.00	25	13	38	324.38
1	5/14/2019	5:21:34 PM	19	5.00	20	5	26	231.92
1	5/14/2019	5:27:51 PM	20	5.00	27	6	33	221.48
1	5/14/2019	5:33:59 PM	21	5.00	22	5	27	177.92
1	5/14/2019	5:40:16 PM	22	5.00	24	6	30	197.88
1	5/14/2019	5:46:28 PM	23	5.00	20	6	25	223.97
1	5/14/2019	5:52:08 PM	24	5.00	14410	35744	50154	1009.53

LABORATORY SURVEY

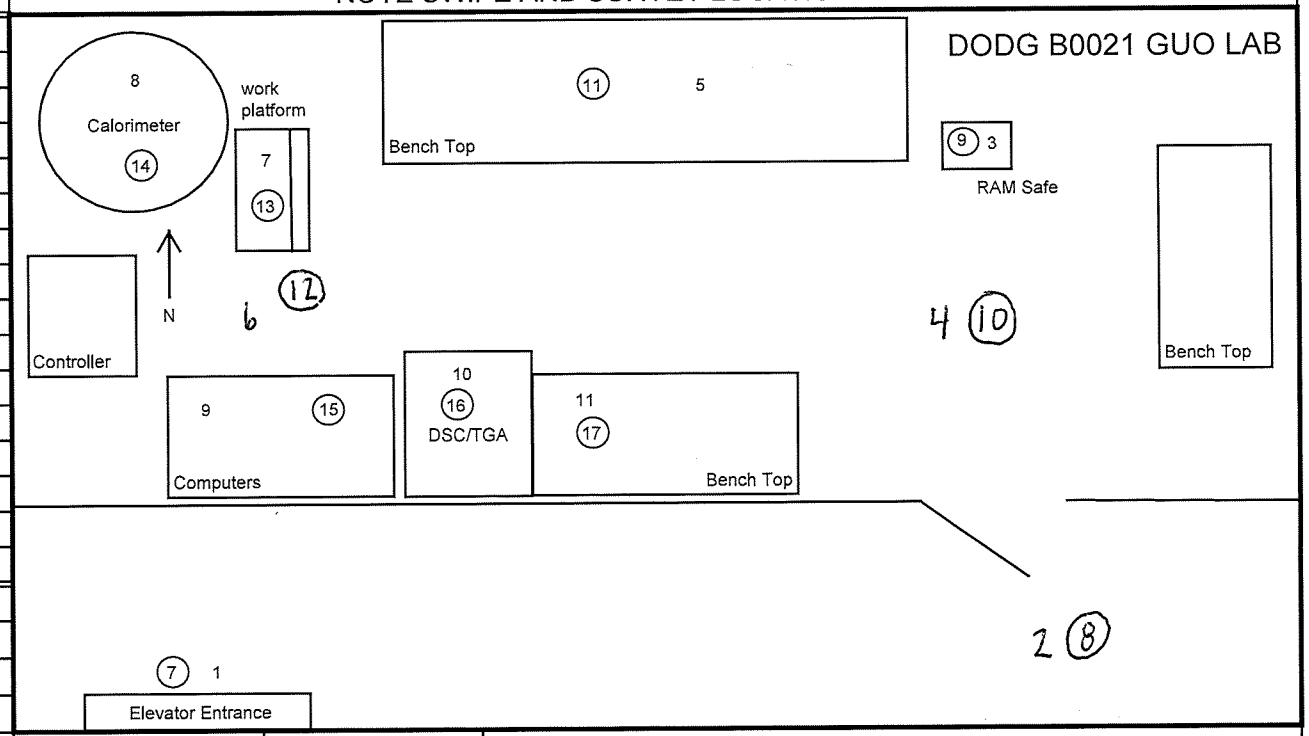
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	5/14/19	1402	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 5/14/19

Survey #	Location	CPM
1	Elevator Entrance	120
2	South Floor	120
3	RAM Safe	1600
4	East Lab Floor	80
5	North Bench Top	160
6	West Floor	100
7	Work Platform	80
8	Calorimeter	160
9	Computers	80
10	DSC/TGA	120
11	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 5/14/19	Notes
Swiped By: BT	Date: 5/14/19	
Reviewed By: [signature]	Date: 5/15/209	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

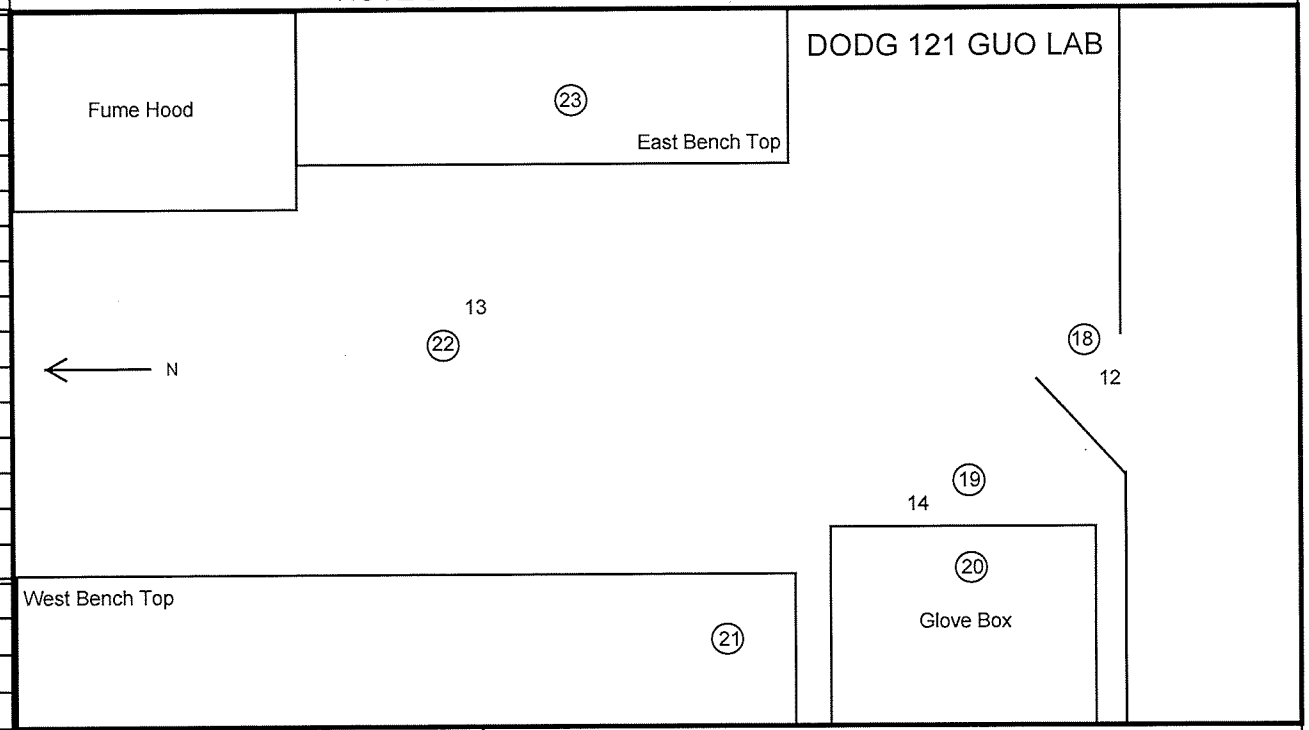
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	5/14/19	1418	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 5/14/19

Survey #	Location	CPM
12	121 Doorway	100
13	121 Center of lab	120
14	121 Glove Box	120

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	5/14/19	
Swiped By: BT	Date: 5/14/19	
Reviewed By:	Date: 5/15/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	21	Dates:	5/19/2019-5/25/2019	Counted On	5/21/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.98E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	23	**********	*********	
2.	BACKGROUND 2	26	**********	*********	
3.	BACKGROUND 3	23	**********	*********	
4.	BACKGROUND 4	28	**********	*********	
5.	BACKGROUND 5	66	**********	*********	
6.	BACKGROUND 6	25	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 RAM SAFE	21	M	M	
10.	B021 EAST FLOOR	27	M	M	
11.	B021 NORTH BENCH TOP	26	M	M	
12.	B021 WEST LAB FLOOR	31	M	M	
13.	B021 WORK PLATFORM	34	M	M	
14.	B021 CALORIMETER	29	M	M	
15.	B021 COMPUTERS	35	M	M	
16.	B021 DSC/TGA	38	M	M	
17.	B021 SOUTH BENCH TOP	33	M	M	
18.	121 DOORWAY	33	M	M	
19.	121 GLOVE BOX- FLOOR	29	M	M	
20.	121 GLOVE BOX	122	1.26E-04	1.26E-06	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	35	M	M	
23.	122 EAST BENCH TOP	32	M	M	

Swipe 20 came back 99 over the lowest background. Additional swipes taken of the glovebox to ensure no contamination and the results are attached to this form.

^{36}Cl SOURCE 09/14/1971	49886	**********	**********	
	100.59%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 5/22/19	SIGN/DATE: 5/31/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190521_1400
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190521_1400\20190521_1400.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	5/21/2019	2:01:36 PM	1	5.00	20	3	23	224.37	
1	5/21/2019	2:07:53 PM	2	5.00	21	5	26	268.65	
1	5/21/2019	2:14:10 PM	3	5.00	19	4	23	220.97	
1	5/21/2019	2:20:25 PM	4	5.00	23	5	28	269.29	
1	5/21/2019	2:26:40 PM	5	5.00	50	16	66	266.00	
1	5/21/2019	2:32:54 PM	6	5.00	21	3	25	243.48	
1	5/21/2019	2:39:11 PM	7	5.00	24	6	30	196.28	
1	5/21/2019	2:45:28 PM	8	5.00	26	6	31	242.76	
1	5/21/2019	2:51:45 PM	9	5.00	17	4	21	247.69	
1	5/21/2019	2:58:01 PM	10	5.00	21	6	27	242.41	
1	5/21/2019	3:04:18 PM	11	5.00	21	4	26	295.47	
1	5/21/2019	3:10:38 PM	12	5.00	25	6	31	240.05	

1	5/21/2019	3:17:01 PM	13	5.00	26	8	34	259.68
1	5/21/2019	3:23:19 PM	14	5.00	23	6	29	246.66
1	5/21/2019	3:29:29 PM	15	5.00	30	5	35	236.89
1	5/21/2019	3:35:46 PM	16	5.00	31	7	38	206.05
1	5/21/2019	3:42:00 PM	17	5.00	25	8	33	329.32
1	5/21/2019	3:48:16 PM	18	5.00	26	7	33	293.91
1	5/21/2019	3:54:35 PM	19	5.00	22	7	29	276.89
1	5/21/2019	4:00:53 PM	20	5.00	114	8	122	149.15
1	5/21/2019	4:07:12 PM	21	5.00	22	6	29	248.25
1	5/21/2019	4:13:32 PM	22	5.00	28	6	35	141.58
1	5/21/2019	4:19:48 PM	23	5.00	27	5	32	194.32
1	5/21/2019	4:25:28 PM	24	5.00	14345	35541	49886	1016.55

Cycle 1 Results

S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	1.00	10	11	28	42.48	
2	1.00	6	12	21	39.45	
3	1.00	6	12	21	42.74	
4	1.00	4	14	26	37.86	
5	1.00	5	9	17	33.75	

1) BACKGROUND
2) SOUTH HALF OF GLASS FACE
3) SOUTH GLOVE (LEFT HAND)
4) NORTH HALF OF GLASS FACE
5) NORTH GLOVE (RIGHT HAND)

LABORATORY SURVEY

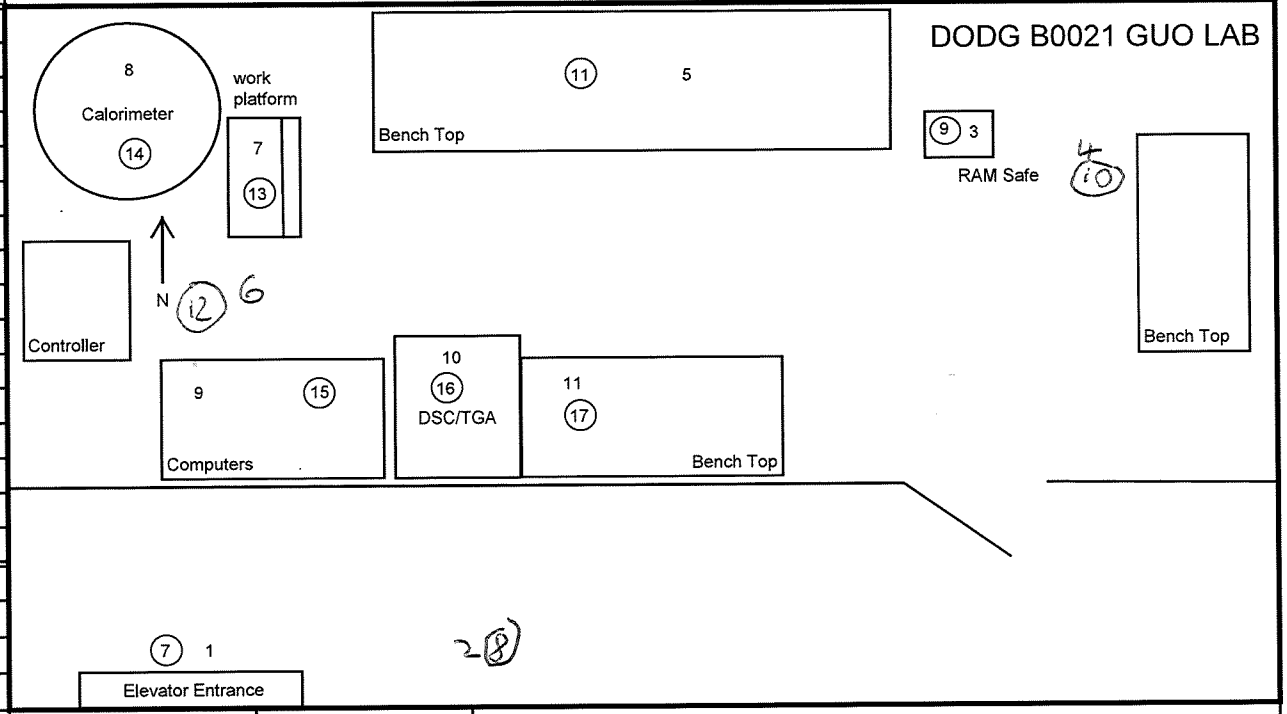
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	5/21/2019	1313	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 5/21/2019

Survey #	Location	CPM
1	Elevator Entrance	120
2	South Floor	120
3	RAM Safe	600
4	East Lab Floor	160
5	North Bench Top	120
6	West Floor	80
7	Work Platform	80
8	Calorimeter	120
9	Computers	80
10	DSC/TGA	80
11	South Bench Top	120

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: CS	Date: 5/21/19	Notes
Swiped By: CS	Date: 5/21/19	
Reviewed By: [signature]	Date: 5/31/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

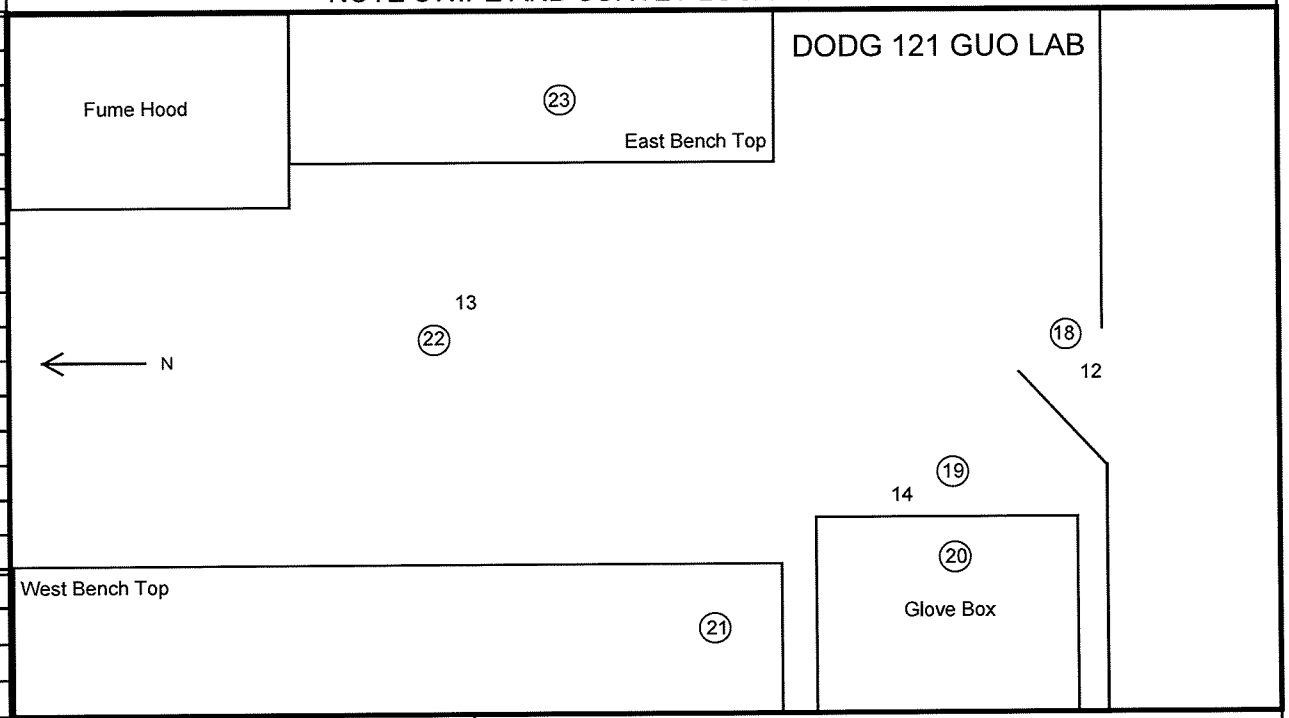
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 5/21/2019	Time: 1335	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 5/21/2019

Survey #	Location	CPM
12	121 Doorway	120
13	121 Center of lab	120
14	121 Glove Box	120

Swipe #	Swipe # and Locations		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: CS	Date: 5/21/19	Notes
Swiped By: CS	Date: 5/21/19	
Reviewed By: [signature]	Date: 5/31/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 22	Dates: 5/26/2019-6/1/2019	Counted On 5/29/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.84E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	26	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	29	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	28	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	34	M	M	
8.	B021 FENCED GATE	26	M	M	
9.	B021 RAM SAFE	30	M	M	
10.	B021 EAST FLOOR	29	M	M	
11.	B021 NORTH BENCH TOP	29	M	M	
12.	B021 WEST LAB FLOOR	31	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	43	2.01E-05	2.01E-07	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	26	M	M	
17.	B021 SOUTH BENCH TOP	29	M	M	
18.	121 DOORWAY	26	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	28	M	M	
21.	121 WEST BENCH TOP	32	M	M	
22.	121 CENTER OF LAB	25	M	M	
23.	122 EAST BENCH TOP	31	M	M	

^{36}Cl SOURCE 09/14/1971	50202	**********	*********	
	101.22%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 5/30/2019	SIGN/DATE: 5/31/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190529_1317
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190529_1317\20190529_1317.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	5/29/2019	1:18:36 PM	1	5.00	22	5	26	276.74	
1	5/29/2019	1:24:45 PM	2	5.00	22	8	30	384.69	
1	5/29/2019	1:31:03 PM	3	5.00	23	6	29	322.87	
1	5/29/2019	1:37:13 PM	4	5.00	24	5	29	207.59	
1	5/29/2019	1:43:28 PM	5	5.00	22	6	28	364.10	
1	5/29/2019	1:49:44 PM	6	5.00	25	4	30	181.10	
1	5/29/2019	1:56:03 PM	7	5.00	29	5	34	218.76	
1	5/29/2019	2:02:19 PM	8	5.00	20	6	26	238.90	
1	5/29/2019	2:08:37 PM	9	5.00	24	5	30	260.03	
1	5/29/2019	2:14:50 PM	10	5.00	24	5	29	257.91	
1	5/29/2019	2:21:04 PM	11	5.00	23	6	29	266.21	
1	5/29/2019	2:27:20 PM	12	5.00	25	6	31	205.03	

1	5/29/2019	2:33:40 PM	13	5.00	22	5	27	215.37
1	5/29/2019	2:39:57 PM	14	5.00	32	10	43	341.43
1	5/29/2019	2:46:07 PM	15	5.00	25	6	31	305.29
1	5/29/2019	2:52:15 PM	16	5.00	21	5	26	247.96
1	5/29/2019	2:58:30 PM	17	5.00	24	4	29	181.88
1	5/29/2019	3:04:45 PM	18	5.00	21	5	26	203.14
1	5/29/2019	3:11:03 PM	19	5.00	23	5	28	190.34
1	5/29/2019	3:17:18 PM	20	5.00	23	5	28	206.27
1	5/29/2019	3:23:34 PM	21	5.00	27	5	32	237.59
1	5/29/2019	3:29:45 PM	22	5.00	20	5	25	179.14
1	5/29/2019	3:36:02 PM	23	5.00	25	6	31	270.33
1	5/29/2019	3:41:42 PM	24	5.00	14539	35663	50202	1011.12

LABORATORY SURVEY

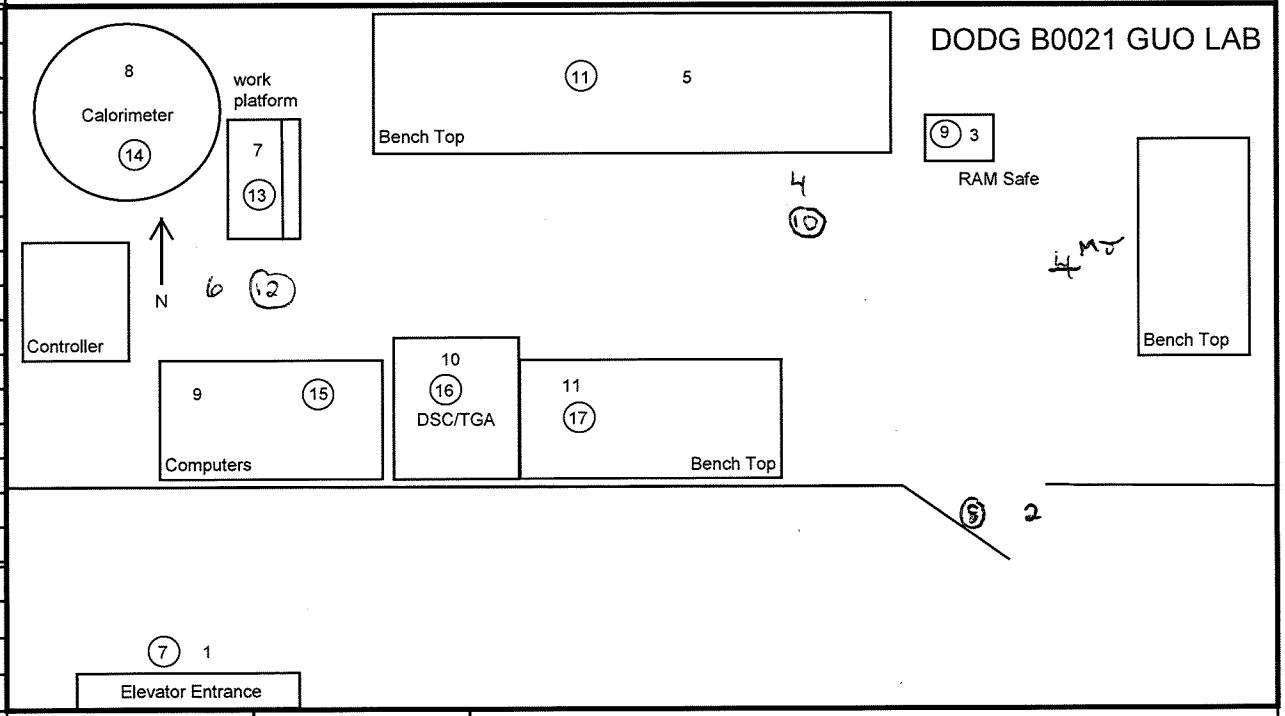
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	5/29/19	1231	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 5/29/2019

Survey #	Location	CPM
1	Elevator Entrance	150
2	South Floor	150
3	RAM Safe	1300
4	East Lab Floor	<100
5	North Bench Top	175
6	West Floor	<100
7	Work Platform	<100
8	Calorimeter	<100
9	Computers	<100
10	DSC/TGA	<100
11	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: MJ	Date: 5/29/19
Swiped By: MJ	Date: 5/29/19
Reviewed By: [signature]	Date: 5/31/2019

Notes: 14 MJ ~~Swipe #15 not taken since calorimeter was running~~ MJ

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

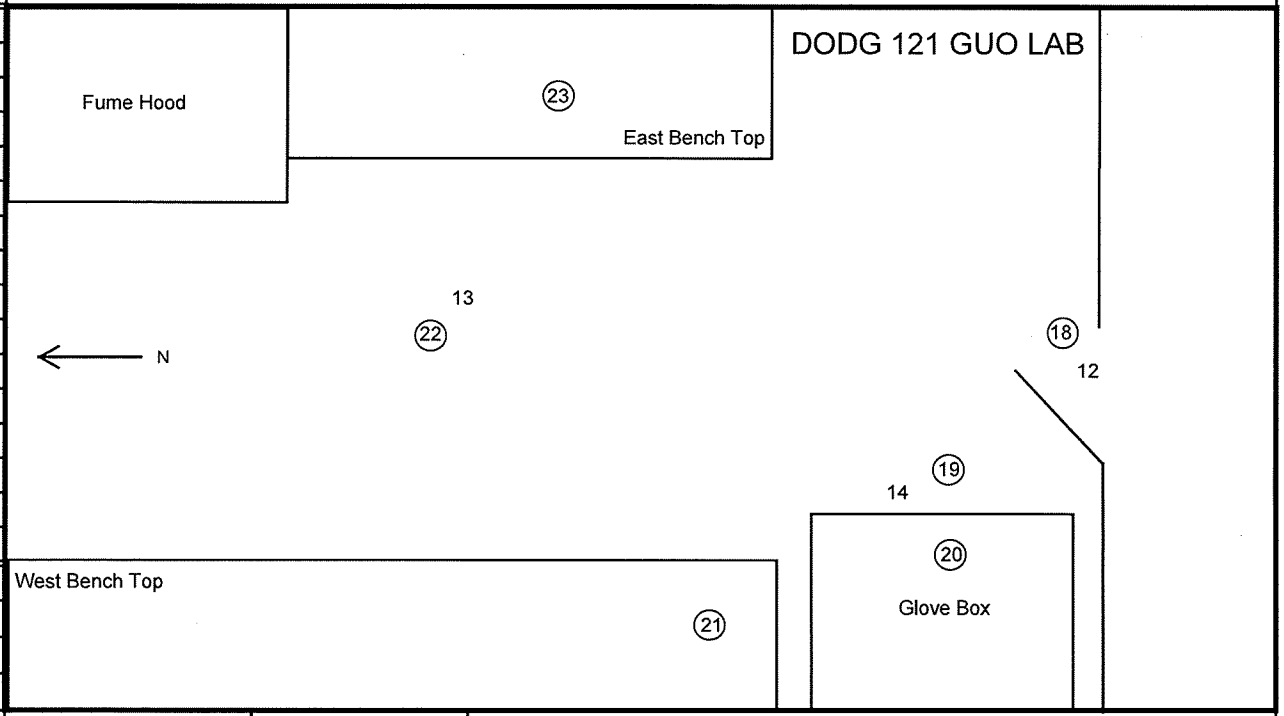
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	5/29/19	1217	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 5/29/2019

Survey #	Location	CPM
12	121 Doorway	<100
13	121 Center of lab	<100
14	121 Glove Box	<100

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
MJ	5/29/19	
Swiped By:	Date:	
MJ	5/29/19	
Reviewed By:	Date:	
[signature]	5/31/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	23	Dates:	6/2/2019-6/8/2019	Counted On	6/4/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.93E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	31	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	24	M	M	
8.	B021 FENCED GATE	26	M	M	
9.	B021 RAM SAFE	30	M	M	
10.	B021 EAST FLOOR	31	M	M	
11.	B021 NORTH BENCH TOP	26	M	M	
12.	B021 WEST LAB FLOOR	27	M	M	
13.	B021 WORK PLATFORM	31	M	M	
14.	B021 CALORIMETER	37	1.00E-05	1.00E-07	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	33	M	M	
17.	B021 SOUTH BENCH TOP	31	M	M	
18.	121 DOORWAY	27	M	M	
19.	121 GLOVE BOX- FLOOR	31	M	M	
20.	121 GLOVE BOX	29	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	25	M	M	
23.	122 EAST BENCH TOP	27	M	M	

^{36}Cl SOURCE 09/14/1971	50223	**********	**********	
	101.26%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 6/5/2019	SIGN/DATE: 6/5/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190604_1529
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190604_1529\20190604_1529.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	6/4/2019	3:30:51 PM	1	5.00	26	5	31	238.36	
1	6/4/2019	3:37:01 PM	2	5.00	22	7	29	310.51	
1	6/4/2019	3:43:19 PM	3	5.00	21	6	28	361.88	
1	6/4/2019	3:49:29 PM	4	5.00	25	6	31	323.98	
1	6/4/2019	3:55:43 PM	5	5.00	23	6	30	441.13	
1	6/4/2019	4:02:00 PM	6	5.00	25	5	30	268.72	
1	6/4/2019	4:08:19 PM	7	5.00	20	4	24	220.74	
1	6/4/2019	4:14:34 PM	8	5.00	19	7	26	352.98	
1	6/4/2019	4:20:49 PM	9	5.00	22	7	30	315.93	
1	6/4/2019	4:27:03 PM	10	5.00	26	5	31	180.84	
1	6/4/2019	4:33:18 PM	11	5.00	20	6	26	283.29	
1	6/4/2019	4:39:34 PM	12	5.00	21	6	27	224.60	

1	6/4/2019	4:45:54 PM	13	5.00	26	5	31	234.83
1	6/4/2019	4:52:11 PM	14	5.00	29	7	37	292.14
1	6/4/2019	4:58:21 PM	15	5.00	23	8	31	333.25
1	6/4/2019	5:04:31 PM	16	5.00	27	6	33	238.51
1	6/4/2019	5:10:47 PM	17	5.00	24	7	31	245.59
1	6/4/2019	5:17:04 PM	18	5.00	21	6	27	316.08
1	6/4/2019	5:23:21 PM	19	5.00	25	6	31	202.50
1	6/4/2019	5:29:36 PM	20	5.00	22	7	29	277.66
1	6/4/2019	5:35:53 PM	21	5.00	22	5	27	224.45
1	6/4/2019	5:42:04 PM	22	5.00	21	4	25	161.61
1	6/4/2019	5:48:21 PM	23	5.00	21	5	27	263.41
1	6/4/2019	5:54:01 PM	24	5.00	14454	35770	50223	1014.28

LABORATORY SURVEY

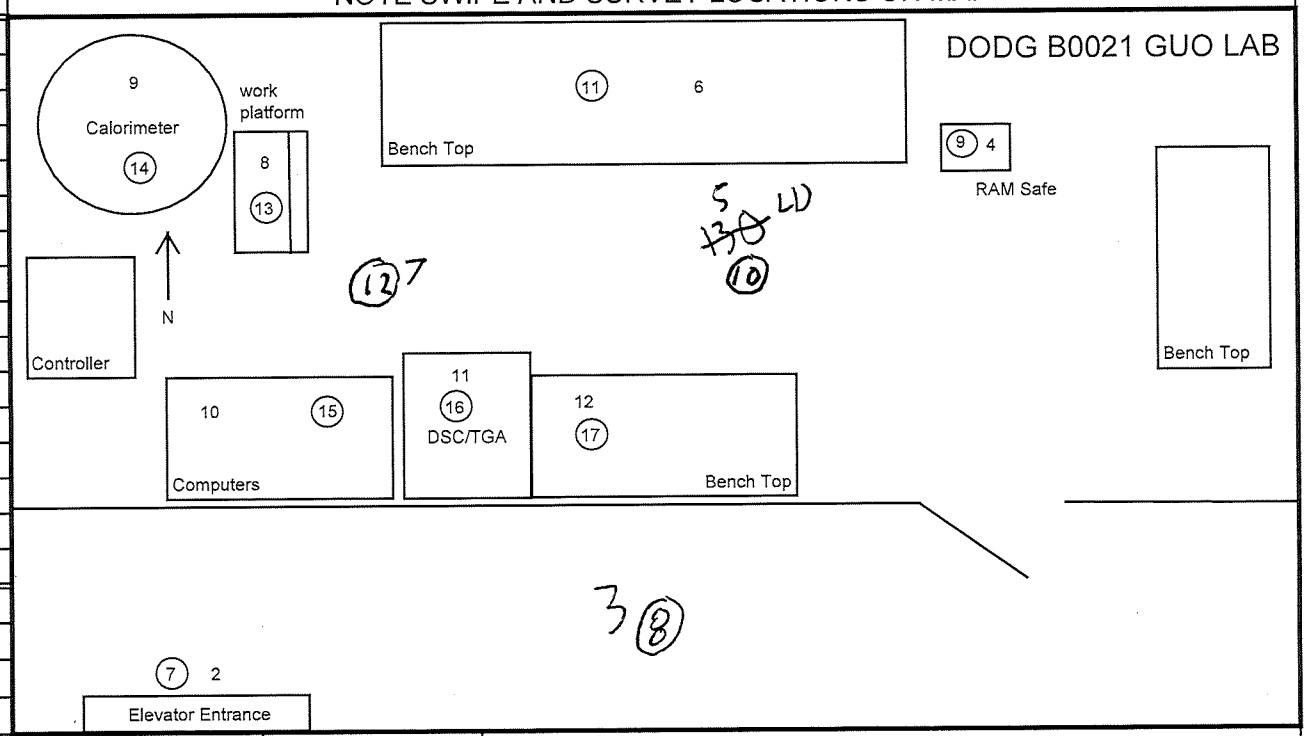
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 6/4/19	Time: 1501	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 6/4/2019

Survey #	Location	CPM
1	Background	100
2	Elevator Entrance	120
3	South Floor	140
4	RAM Safe	1200
5	East Lab Floor	130
6	North Bench Top	110
7	West Floor	140
8	Work Platform	<100
9	Calorimeter	<100
10	Computers	120
11	DSC/TGA	<100
12	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By:	Date:	Notes
LD	6/4/19	
Swiped By: BT	Date: 6/4/19	
Reviewed By: [signature]	Date: 6/5/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

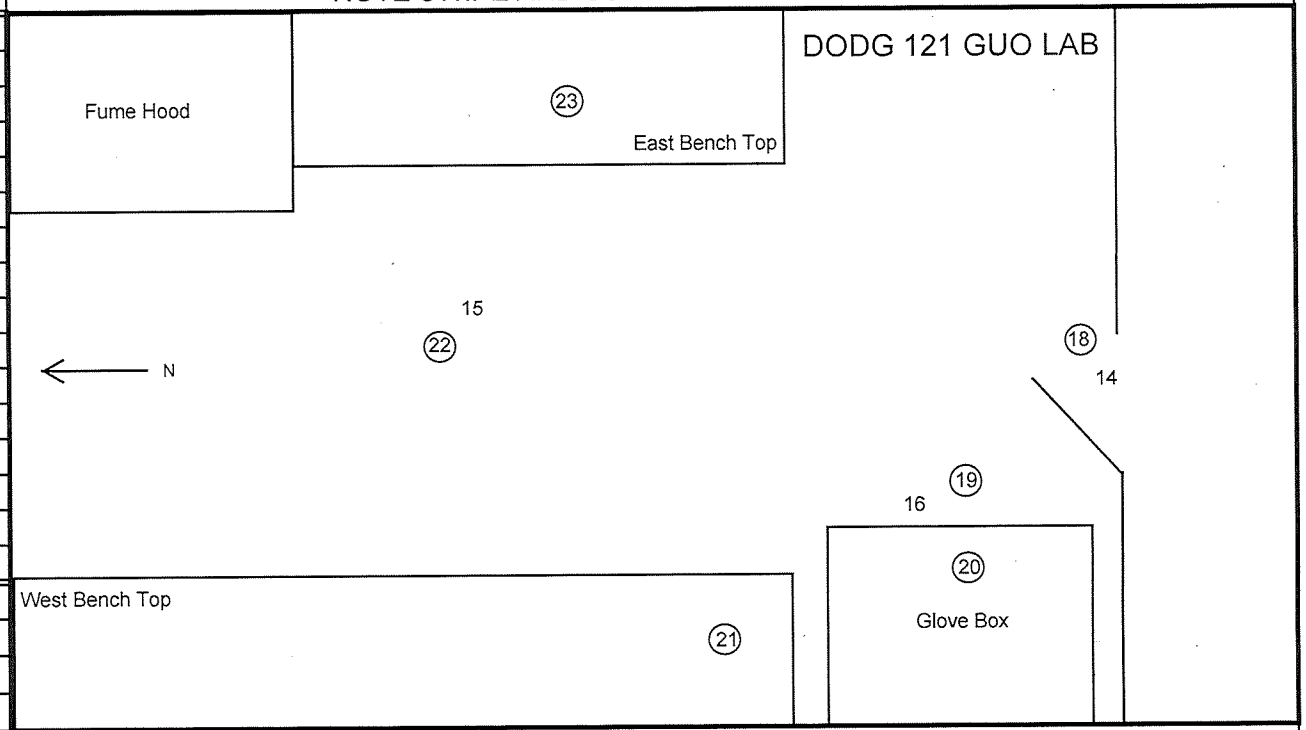
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	6/4/2019	1524	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 6/4/2019

Survey #	Location	CPM
13	Background	130
14	121 Doorway	<100
15	121 Center of lab	120
16	121 Glove Box	300

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
CD	6/4/19	
Swiped By: BT	Date: 6/4/19	
Reviewed By:	Date: 6/5/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 24	Dates: 6/9/2019-6/15/2019	Counted On 6/12/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.12E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	34	**********	*********	
2.	BACKGROUND 2	34	**********	*********	
3.	BACKGROUND 3	36	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	29	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 RAM SAFE	31	M	M	
10.	B021 EAST FLOOR	24	M	M	
11.	B021 NORTH BENCH TOP	30	M	M	
12.	B021 WEST LAB FLOOR	25	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	25	M	M	
15.	B021 COMPUTERS	28	M	M	
16.	B021 DSC/TGA	28	M	M	
17.	B021 SOUTH BENCH TOP	31	M	M	
18.	121 DOORWAY	25	M	M	
19.	121 GLOVE BOX- FLOOR	30	M	M	
20.	121 GLOVE BOX	27	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	30	M	M	

^{36}Cl SOURCE 09/14/1971	50283	**********	**********	
	101.39%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madalison Heine 6/14/19	SIGN/DATE: C. Hines 6/14/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190612_1203
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190612_1203\20190612_1203.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	6/12/2019	12:04:57 PM	1	5.00	28	6	34	275.84	
1	6/12/2019	12:11:15 PM	2	5.00	26	8	34	263.36	
1	6/12/2019	12:17:31 PM	3	5.00	29	7	36	274.12	
1	6/12/2019	12:23:47 PM	4	5.00	23	7	30	333.43	
1	6/12/2019	12:30:02 PM	5	5.00	26	6	32	295.78	
1	6/12/2019	12:36:14 PM	6	5.00	24	5	29	302.39	
1	6/12/2019	12:42:27 PM	7	5.00	23	5	27	337.41	
1	6/12/2019	12:48:45 PM	8	5.00	24	6	30	271.97	
1	6/12/2019	12:55:02 PM	9	5.00	27	4	31	199.17	
1	6/12/2019	1:01:19 PM	10	5.00	21	4	24	154.02	
1	6/12/2019	1:07:36 PM	11	5.00	24	6	30	291.85	
1	6/12/2019	1:13:54 PM	12	5.00	20	5	25	301.48	

1	6/12/2019	1:20:17 PM	13	5.00	22	5	27	272.94
1	6/12/2019	1:26:36 PM	14	5.00	19	6	25	359.00
1	6/12/2019	1:32:47 PM	15	5.00	20	8	28	415.65
1	6/12/2019	1:39:03 PM	16	5.00	24	4	28	237.56
1	6/12/2019	1:45:17 PM	17	5.00	26	5	31	191.19
1	6/12/2019	1:51:32 PM	18	5.00	20	4	25	273.09
1	6/12/2019	1:57:51 PM	19	5.00	25	6	30	233.79
1	6/12/2019	2:04:05 PM	20	5.00	22	5	27	292.05
1	6/12/2019	2:10:23 PM	21	5.00	24	5	29	228.84
1	6/12/2019	2:16:40 PM	22	5.00	26	4	30	177.81
1	6/12/2019	2:22:57 PM	23	5.00	24	6	30	286.83
1	6/12/2019	2:28:37 PM	24	5.00	14396	35887	50283	1009.47

LABORATORY SURVEY

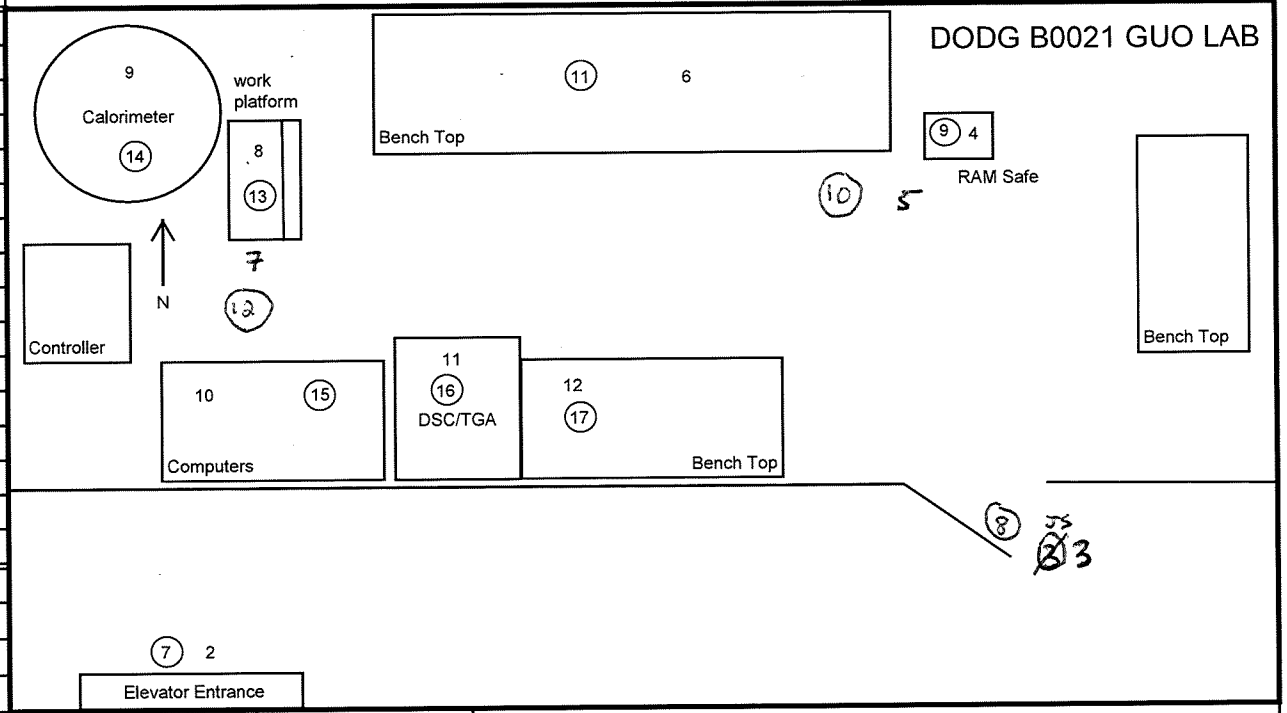
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building: Dodgen Research Facility	Room: B0021 - GUO	Lab Class: D	Survey Instrument: GM Detector Model 12	Serial No.: 172178	Radiation Detected: Gamma
Authorized User: Xiaofeng Guo	Date: 6/12/19	Time: 1139	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One): ON ☑ OFF ☐					

LSC Printout Date: 6/12/19

Survey #	Location	CPM
1	Background	≤ 100
2	Elevator Entrance	≤ 100
3	South Floor	≤ 100
4	RAM Safe	1400
5	East Lab Floor	JS ~~400~~ ≤ 100
6	North Bench Top	≤ 100
7	West Floor	≤ 100
8	Work Platform	≤ 100
9	Calorimeter	≤ 100
10	Computers	≤ 100
11	DSC/TGA	≤ 100
12	South Bench Top	≤ 100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	Location	Survey #	Location
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: JS	Date: 6/12/19	Notes
Swiped By: MJ	Date: 6/12/19	
Reviewed By: [signature]	Date: 6/14/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	6/12/19	1153	Quantasmart	073396	Beta/Gamma

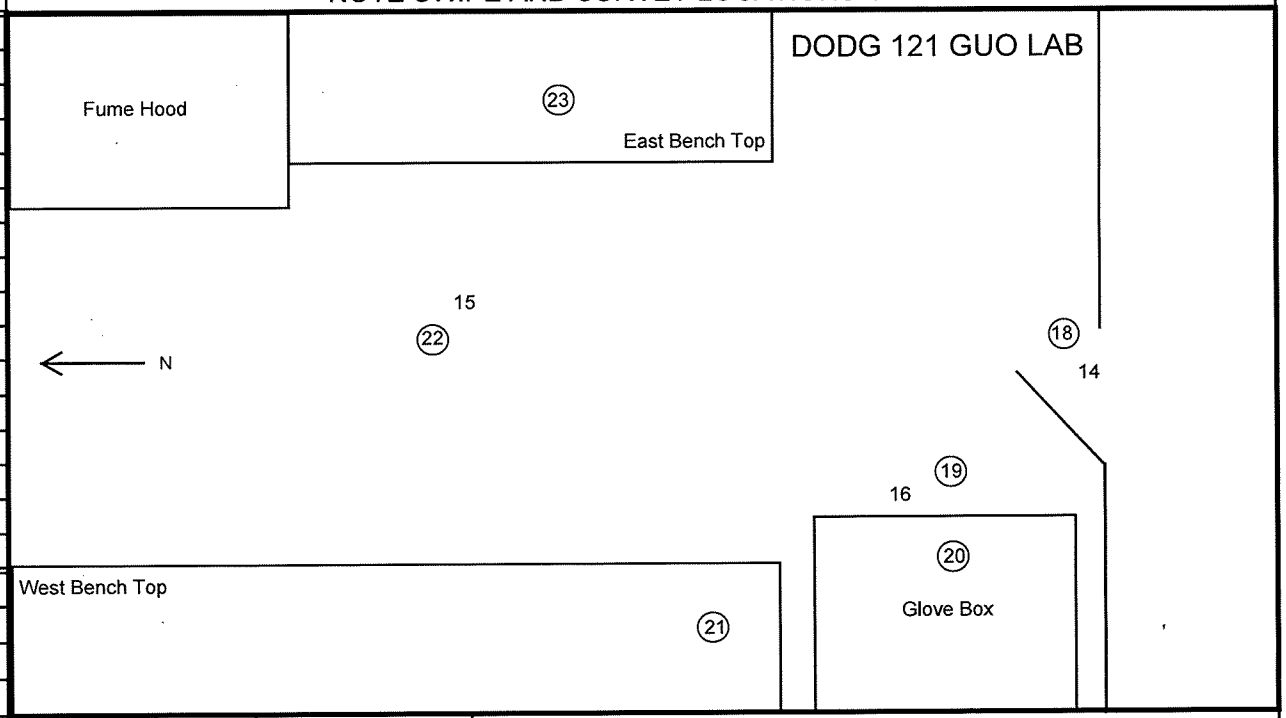
Reactor Status (Check One) ON ☑ OFF ☐

LSC Printout Date: 6/12/19

Survey #	Location	CPM
13	Background	≤ 100
14	121 Doorway	≤ 100
15	121 Center of lab	≤ 100
16	121 Glove Box	150

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
JS	6/12/19	
Swiped By:	Date:	
MS	6/12/19	
Reviewed By:	Date:	
[signature]	6/14/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 25	Dates: 6/16/2019-6/22/2019	Counted On 6/19/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR: 1.40E-06	
CHANNEL ENERGY RANGE (keV)	CH A: 4-200 CH B: 200-2000 CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)= 8.84E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK	

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	30	**********	*********	
2.	BACKGROUND 2	33	**********	*********	
3.	BACKGROUND 3	25	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	31	**********	*********	
6.	BACKGROUND 6	24	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 RAM SAFE	33	M	M	
10.	B021 EAST FLOOR	29	M	M	
11.	B021 NORTH BENCH TOP	29	M	M	
12.	B021 WEST LAB FLOOR	27	M	M	
13.	B021 WORK PLATFORM	29	M	M	
14.	B021 CALORIMETER	34	M	M	
15.	B021 COMPUTERS	26	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	31	M	M	
19.	121 GLOVE BOX- FLOOR	25	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	25	M	M	
22.	121 CENTER OF LAB	31	M	M	
23.	122 EAST BENCH TOP	29	M	M	

^{36}Cl SOURCE 09/14/1971	50134	**********	**********	
	101.09%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1×10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Madison Heine 6/20/19	SIGN/DATE: C. Hines 6/20/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190619_0847
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190619_0847\20190619_0847.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	6/19/2019	8:48:46 AM	1	5.00	25	6	30	301.03	
1	6/19/2019	8:55:02 AM	2	5.00	26	6	33	239.30	
1	6/19/2019	9:01:20 AM	3	5.00	21	4	25	268.44	
1	6/19/2019	9:07:33 AM	4	5.00	22	7	29	358.90	
1	6/19/2019	9:13:46 AM	5	5.00	24	7	31	374.56	
1	6/19/2019	9:20:01 AM	6	5.00	17	6	24	340.85	
1	6/19/2019	9:26:15 AM	7	5.00	21	9	30	383.24	
1	6/19/2019	9:32:31 AM	8	5.00	23	7	30	268.30	
1	6/19/2019	9:38:48 AM	9	5.00	27	6	33	253.01	
1	6/19/2019	9:45:02 AM	10	5.00	23	6	29	258.31	
1	6/19/2019	9:51:21 AM	11	5.00	21	7	29	293.47	
1	6/19/2019	9:57:42 AM	12	5.00	22	4	27	215.86	

1	6/19/2019	10:04:06 AM	13	5.00	25	4	29	175.75
1	6/19/2019	10:10:25 AM	14	5.00	26	8	34	297.26
1	6/19/2019	10:16:35 AM	15	5.00	22	5	26	198.41
1	6/19/2019	10:22:49 AM	16	5.00	24	5	29	236.04
1	6/19/2019	10:29:05 AM	17	5.00	20	6	27	295.79
1	6/19/2019	10:35:21 AM	18	5.00	26	5	31	169.67
1	6/19/2019	10:41:38 AM	19	5.00	19	6	25	237.02
1	6/19/2019	10:47:52 AM	20	5.00	20	5	25	252.26
1	6/19/2019	10:54:10 AM	21	5.00	22	2	25	110.50
1	6/19/2019	11:00:29 AM	22	5.00	26	5	31	165.73
1	6/19/2019	11:06:47 AM	23	5.00	23	6	29	266.78
1	6/19/2019	11:12:27 AM	24	5.00	14364	35770	50134	1015.75

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

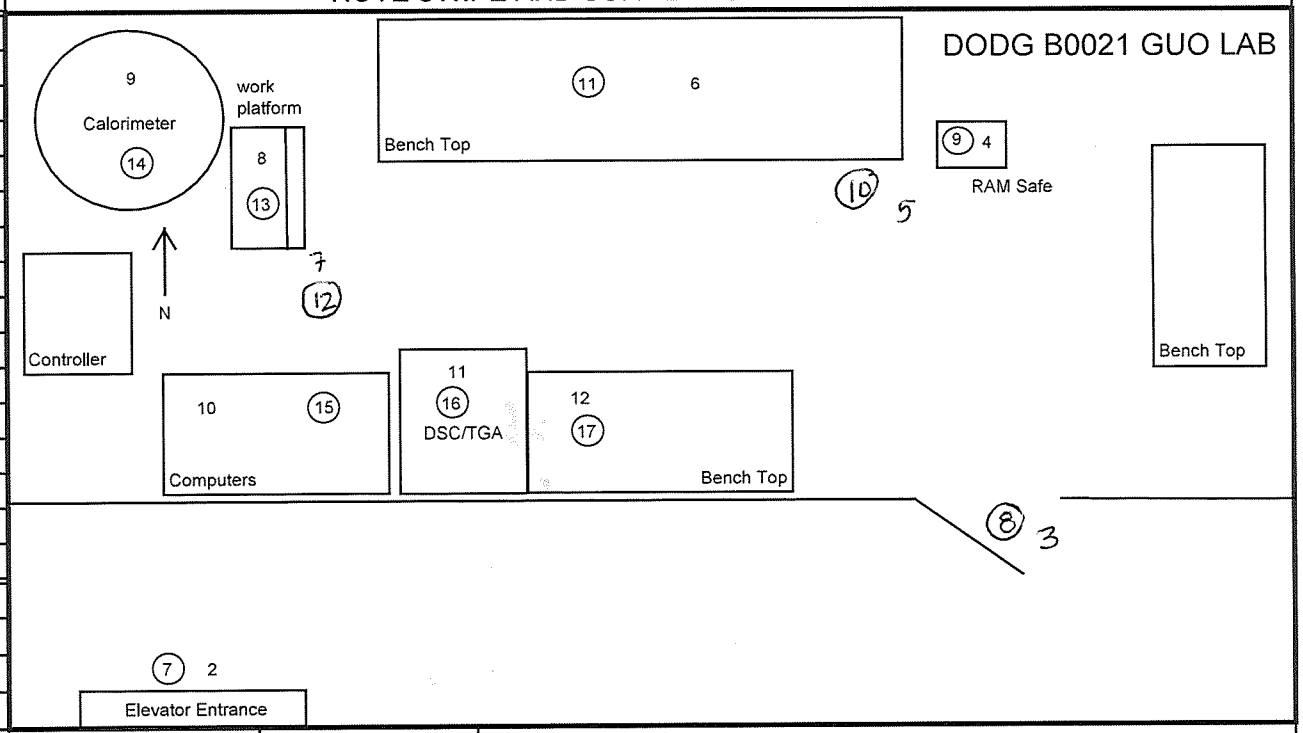
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	6/19/19	0822	Quantasmart	073396	Beta/Gamma

Reactor Status (Check One) ON ☐ OFF ☑

LSC Printout Date: 6/19/19

Survey #	Location	CPM
1	Background	≤100
2	Elevator Entrance	≤100
3	South Floor	≤100
4	RAM Safe	1400
5	East Lab Floor	≤100
6	North Bench Top	≤100
7	West Floor	≤100
8	Work Platform	≤100
9	Calorimeter	≤100
10	Computers	≤100
11	DSC/TGA	≤100
12	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: MH	Date: 6/19/19	Notes
Swiped By: MH	Date: 6/19/19	
Reviewed By: [signature]	Date: 6/20/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

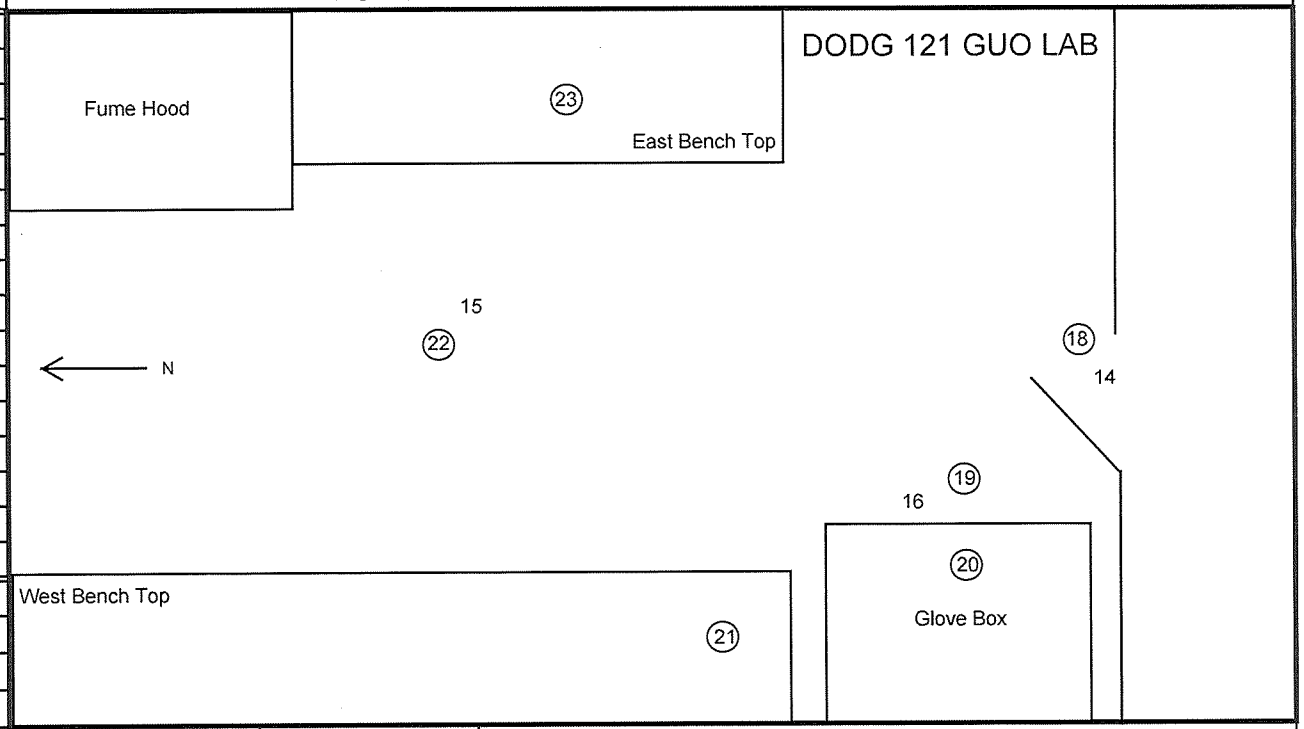
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 6/19/19	Time: 0840	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 6/19/19

Survey #	Location	CPM
13	Background	≤100
14	121 Doorway	≤100
15	121 Center of lab	≤100
16	121 Glove Box	≤100

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
MH	6/19/19	
Swiped By: MH	Date: 6/19/19	
Reviewed By: [signature]	Date: 6/20/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	26	Dates:	6/23/2019-6/29/2019	Counted On	6/25/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	9.27E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	37	**********	*********	
2.	BACKGROUND 2	37	**********	*********	
3.	BACKGROUND 3	36	**********	*********	
4.	BACKGROUND 4	33	**********	*********	
5.	BACKGROUND 5	35	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	35	M	M	
8.	B021 FENCED GATE	29	M	M	
9.	B021 RAM SAFE	31	M	M	
10.	B021 EAST FLOOR	29	M	M	
11.	B021 NORTH BENCH TOP	32	M	M	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	31	M	M	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	30	M	M	
19.	121 GLOVE BOX- FLOOR	31	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	33	M	M	
22.	121 CENTER OF LAB	29	M	M	
23.	122 EAST BENCH TOP	23	M	M	

^{36}Cl SOURCE 09/14/1971	49994	**********	**********	
	100.80%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Maddison Heine 6/26/19	SIGN/DATE: [signature] 6/26/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190625_1637
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190625_1637\20190625_1637.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	6/25/2019	4:38:08 PM	1	5.00	33	4	37	187.34	
1	6/25/2019	4:44:18 PM	2	5.00	29	9	37	316.46	
1	6/25/2019	4:50:37 PM	3	5.00	31	6	36	208.48	
1	6/25/2019	4:56:46 PM	4	5.00	26	7	33	304.83	
1	6/25/2019	5:03:02 PM	5	5.00	28	7	35	288.39	
1	6/25/2019	5:09:20 PM	6	5.00	23	6	30	275.37	
1	6/25/2019	5:15:39 PM	7	5.00	25	10	35	368.91	
1	6/25/2019	5:21:53 PM	8	5.00	22	8	29	314.32	
1	6/25/2019	5:28:11 PM	9	5.00	25	5	31	205.48	
1	6/25/2019	5:34:26 PM	10	5.00	24	5	29	184.00	
1	6/25/2019	5:40:42 PM	11	5.00	27	5	32	278.03	
1	6/25/2019	5:46:58 PM	12	5.00	23	5	28	183.14	

1	6/25/2019	5:53:17 PM	13	5.00	23	5	28	232.95
1	6/25/2019	5:59:32 PM	14	5.00	25	5	31	245.64
1	6/25/2019	6:05:42 PM	15	5.00	25	6	31	262.06
1	6/25/2019	6:11:57 PM	16	5.00	24	3	27	177.09
1	6/25/2019	6:18:16 PM	17	5.00	22	5	27	232.89
1	6/25/2019	6:24:30 PM	18	5.00	23	6	30	268.32
1	6/25/2019	6:30:47 PM	19	5.00	25	6	31	208.31
1	6/25/2019	6:37:05 PM	20	5.00	20	5	25	299.77
1	6/25/2019	6:43:15 PM	21	5.00	26	7	33	237.39
1	6/25/2019	6:49:26 PM	22	5.00	24	5	29	183.91
1	6/25/2019	6:55:48 PM	23	5.00	18	5	23	231.29
1	6/25/2019	7:01:28 PM	24	5.00	14358	35636	49994	1013.28

LABORATORY SURVEY

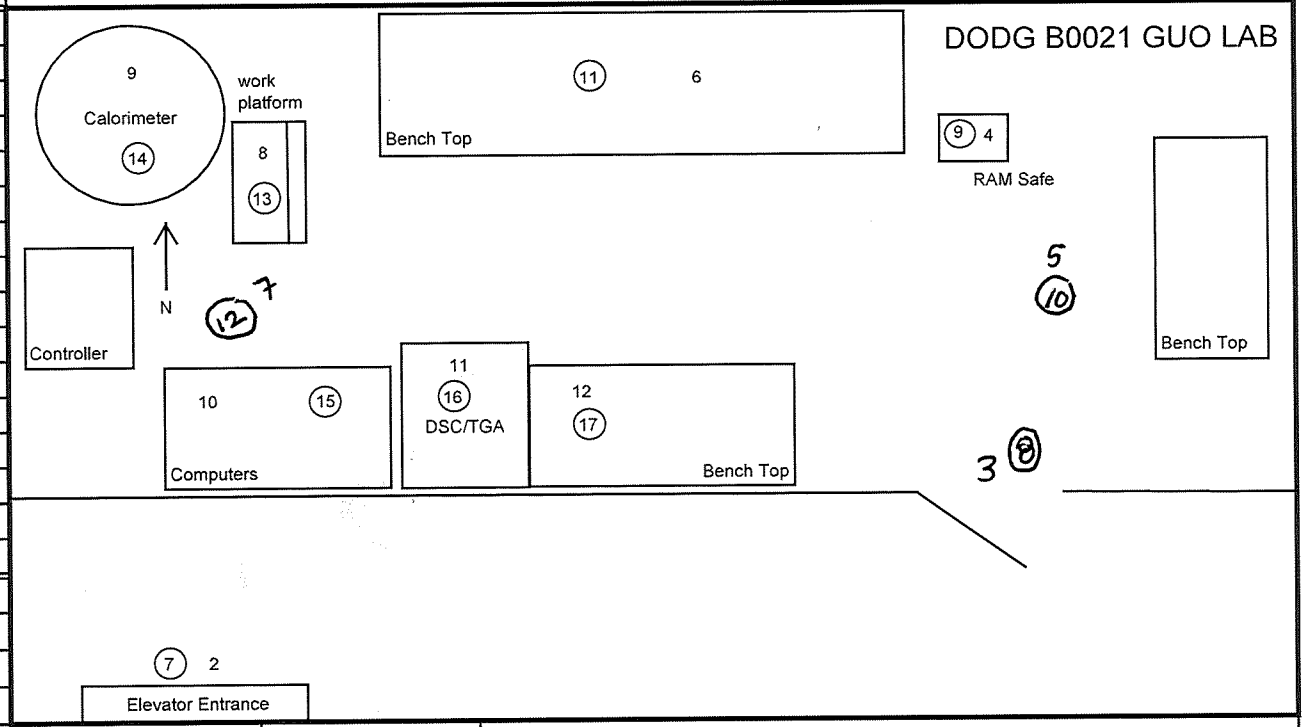
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 6/25/19	Time: 1615	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 6/25/2019

Survey #	Location	CPM
1	Background	≤100
2	Elevator Entrance	≤100
3	South Floor	≤100
4	RAM Safe	1225
5	East Lab Floor	≤100
6	North Bench Top	≤100
7	West Floor	≤100
8	Work Platform	≤100
9	Calorimeter	≤100
10	Computers	≤100
11	DSC/TGA	≤100
12	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: MH	Date: 6/25/19	Notes
Swiped By: MH	Date: 6/25/19	
Reviewed By: [signature]	Date: 6/26/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

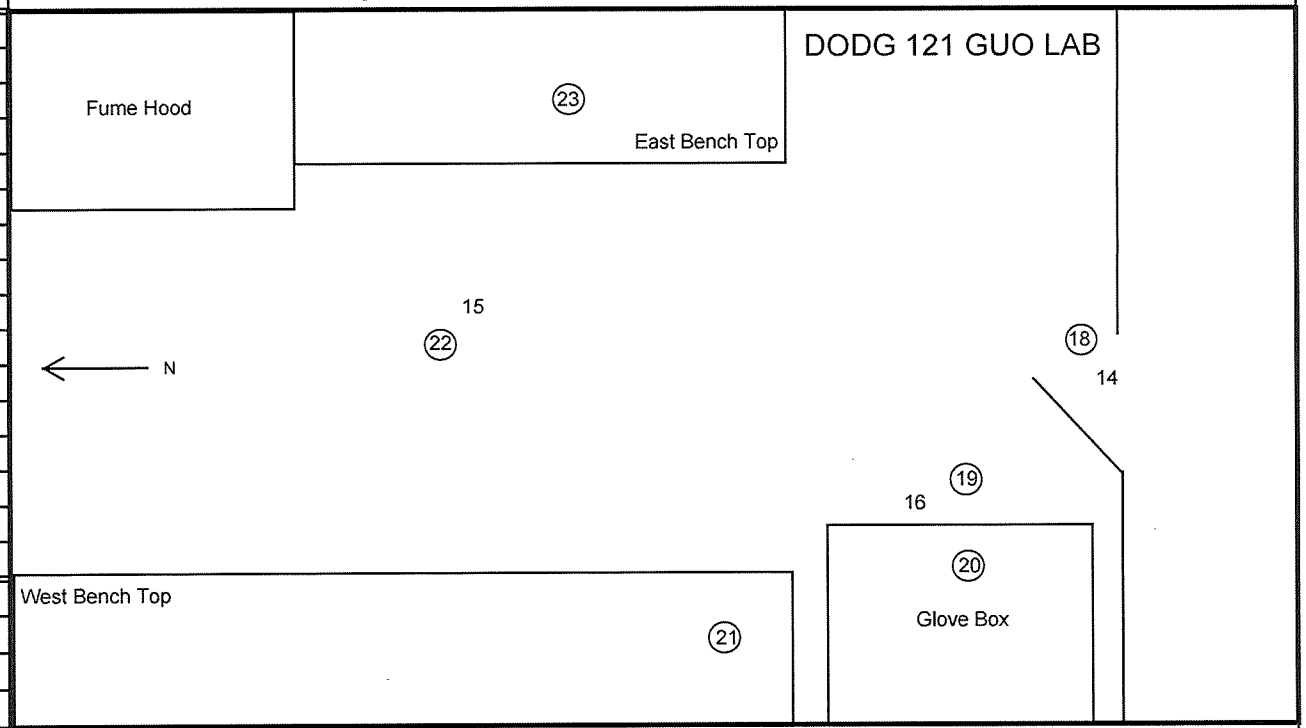
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 6/25/19	Time: 1630	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 6/25/19

Survey #	Location	CPM
13	Background	≤100
14	121 Doorway	≤100
15	121 Center of lab	≤100
16	121 Glove Box	≤100

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
MH	6/25/19	
Swiped By: MH	Date: 6/25/19	
Reviewed By:	Date: 6/26/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week # 27	Dates: 6/30/2019-7/06/2019	Counted On 7/3/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200 CH B: 200-2000	CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)= 9.01E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK	

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	25	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	41	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	35	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	33	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 RAM SAFE	25	M	M	
10.	B021 EAST FLOOR	32	M	M	
11.	B021 NORTH BENCH TOP	27	M	M	
12.	B021 WEST LAB FLOOR	30	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	34	M	M	
15.	B021 COMPUTERS	28	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	29	M	M	
18.	121 DOORWAY	28	M	M	
19.	121 GLOVE BOX- FLOOR	25	M	M	
20.	121 GLOVE BOX	29	M	M	
21.	121 WEST BENCH TOP	32	M	M	
22.	121 CENTER OF LAB	35	M	M	
23.	122 EAST BENCH TOP	30	M	M	

^{36}Cl SOURCE 09/14/1971	50127	**********	**********	
	101.07%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: M. Heine	REVIEWED BY: C. Hines
SIGN/DATE: Maddison Heine 7/5/19	SIGN/DATE: [signature] 7/5/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190703_1634
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190703_1634\20190703_1634.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	7/3/2019	4:35:56 PM	1	5.00	19	6	25	360.79	
1	7/3/2019	4:42:05 PM	2	5.00	24	5	29	239.99	
1	7/3/2019	4:48:22 PM	3	5.00	33	8	41	311.18	
1	7/3/2019	4:54:32 PM	4	5.00	22	5	27	337.89	
1	7/3/2019	5:00:48 PM	5	5.00	28	7	35	316.65	
1	7/3/2019	5:07:04 PM	6	5.00	24	6	30	304.20	
1	7/3/2019	5:13:23 PM	7	5.00	28	5	33	216.81	
1	7/3/2019	5:19:40 PM	8	5.00	25	7	31	205.93	
1	7/3/2019	5:25:58 PM	9	5.00	20	5	25	223.81	
1	7/3/2019	5:32:15 PM	10	5.00	26	6	32	204.43	
1	7/3/2019	5:38:30 PM	11	5.00	23	4	27	177.63	
1	7/3/2019	5:44:47 PM	12	5.00	24	7	30	242.88	

1	7/3/2019	5:51:06 PM	13	5.00	23	5	28	341.07
1	7/3/2019	5:57:22 PM	14	5.00	28	7	34	216.59
1	7/3/2019	6:03:29 PM	15	5.00	23	5	28	243.60
1	7/3/2019	6:09:43 PM	16	5.00	21	6	27	285.70
1	7/3/2019	6:16:00 PM	17	5.00	23	6	29	374.69
1	7/3/2019	6:22:16 PM	18	5.00	24	4	28	217.41
1	7/3/2019	6:28:32 PM	19	5.00	20	5	25	214.43
1	7/3/2019	6:34:51 PM	20	5.00	22	7	29	284.69
1	7/3/2019	6:40:58 PM	21	5.00	25	7	32	267.62
1	7/3/2019	6:47:09 PM	22	5.00	28	7	35	190.23
1	7/3/2019	6:53:28 PM	23	5.00	25	5	30	260.74
1	7/3/2019	6:59:08 PM	24	5.00	14531	35597	50127	1011.19

LABORATORY SURVEY

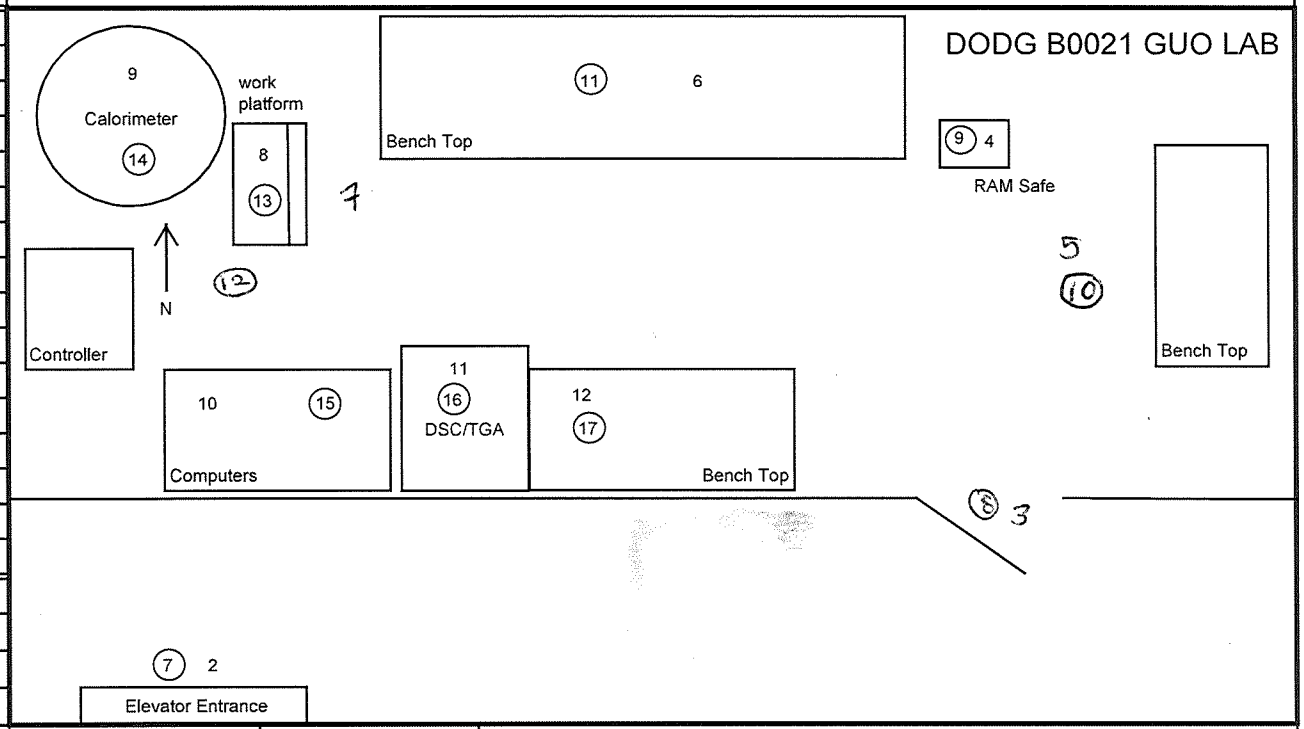
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/3/19	1614	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 7/3/2019

Survey #	Location	CPM
1	Background	150
2	Elevator Entrance	130
3	South Floor	≤100
4	RAM Safe	950
5	East Lab Floor	≤100
6	North Bench Top	≤100
7	West Floor	110
8	Work Platform	≤100
9	Calorimeter	≤100
10	Computers	≤100
11	DSC/TGA	≤100
12	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: MH	Date: 7/3/19	Notes
Swiped By: AH	Date: 7/3/19	
Reviewed By: [signature]	Date: 7/5/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/3/19	1624	Quantasmart	073396	Beta/Gamma

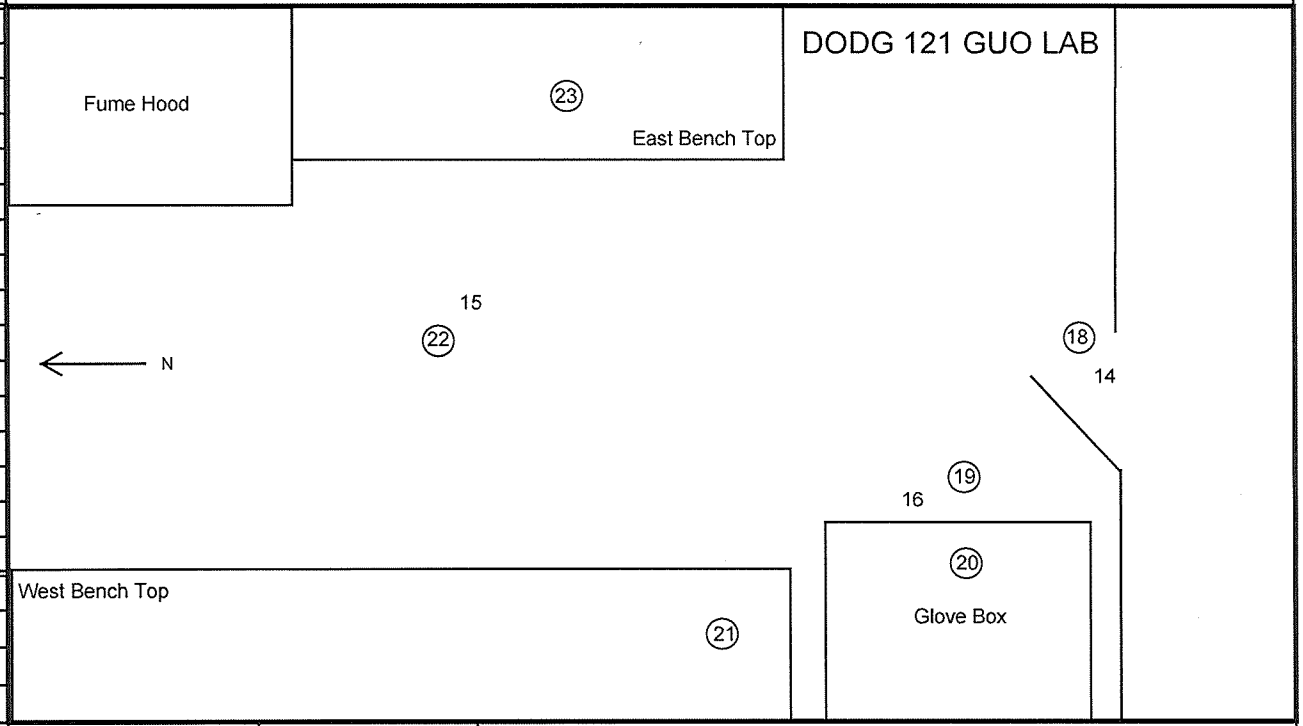
Reactor Status (Check One) ON ☐ OFF ☒

LSC Printout Date: 7/3/2019

Survey #	Location	CPM
13	Background	≤100
14	121 Doorway	≤100
15	121 Center of lab	150
16	121 Glove Box	110

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
MH	7/3/19	
Swiped By:	**Date:**	
MH	7/3/19	
Reviewed By:	**Date:**	
[signature]	7/5/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB B0021 WEEKLY SWIPES & SURVEYS

Revised 2/20/2019

Week #	28	Dates:	7/07/2019-7/13/2019	Counted On	7/9/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.87E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	27	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	28	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	29	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 RAM SAFE	27	M	M	
10.	B021 EAST FLOOR	27	M	M	
11.	B021 NORTH BENCH TOP	25	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	30	M	M	
14.	B021 CALORIMETER	28	M	M	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	26	M	M	
17.	B021 SOUTH BENCH TOP	29	M	M	
18.	121 DOORWAY	25	M	M	
19.	121 GLOVE BOX- FLOOR	29	M	M	
20.	121 GLOVE BOX	26	M	M	
21.	121 WEST BENCH TOP	30	M	M	
22.	121 CENTER OF LAB	31	M	M	
23.	122 EAST BENCH TOP	25	M	M	

^{36}Cl SOURCE 09/14/1971	50097	**********	*********	
	101.01%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 7/9/2019	SIGN/DATE: 7/9/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190709_1052
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190709_1052\20190709_1052.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	7/9/2019	10:53:40 AM	1	5.00	21	6	27	237.80	
1	7/9/2019	10:59:49 AM	2	5.00	24	6	30	336.03	
1	7/9/2019	11:06:07 AM	3	5.00	23	5	28	223.12	
1	7/9/2019	11:12:16 AM	4	5.00	25	3	28	202.83	
1	7/9/2019	11:18:30 AM	5	5.00	28	4	32	217.25	
1	7/9/2019	11:24:48 AM	6	5.00	24	5	29	202.31	
1	7/9/2019	11:31:08 AM	7	5.00	23	5	28	162.68	
1	7/9/2019	11:37:23 AM	8	5.00	26	4	30	133.99	
1	7/9/2019	11:43:41 AM	9	5.00	22	5	27	231.50	
1	7/9/2019	11:49:56 AM	10	5.00	21	6	27	218.35	
1	7/9/2019	11:56:13 AM	11	5.00	21	5	25	204.51	
1	7/9/2019	12:02:27 PM	12	5.00	24	5	29	167.66	

1	7/9/2019	12:08:46 PM	13	5.00	26	4	30	211.00
1	7/9/2019	12:14:58 PM	14	5.00	23	6	28	236.60
1	7/9/2019	12:21:07 PM	15	5.00	25	6	31	224.34
1	7/9/2019	12:27:22 PM	16	5.00	22	4	26	229.65
1	7/9/2019	12:33:41 PM	17	5.00	24	5	29	216.20
1	7/9/2019	12:39:57 PM	18	5.00	19	6	25	264.77
1	7/9/2019	12:46:13 PM	19	5.00	23	6	29	294.05
1	7/9/2019	12:52:34 PM	20	5.00	20	6	26	305.42
1	7/9/2019	12:58:43 PM	21	5.00	24	6	30	273.12
1	7/9/2019	1:04:53 PM	22	5.00	27	5	31	175.26
1	7/9/2019	1:11:13 PM	23	5.00	20	4	25	220.98
1	7/9/2019	1:16:53 PM	24	5.00	14501	35596	50097	1012.12

LABORATORY SURVEY

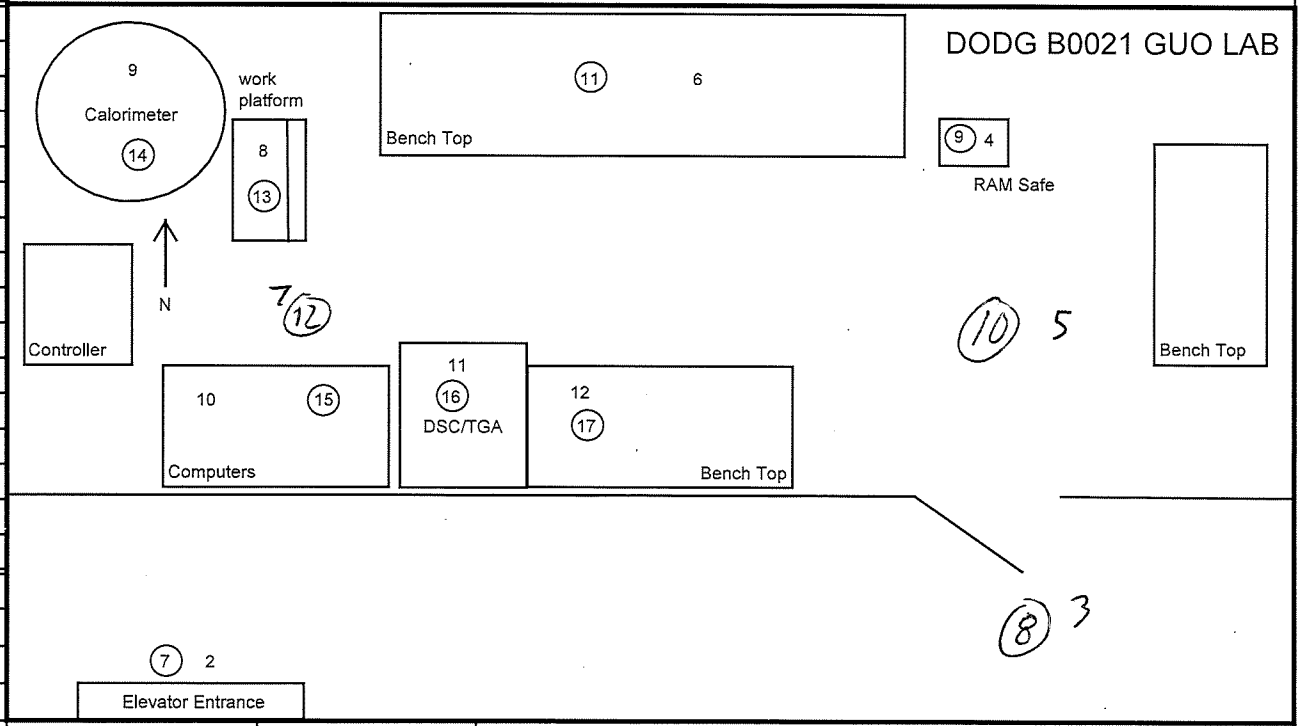
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	7/9/2019	0903	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 7/9/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	80
3	South Floor	120
4	RAM Safe	1000
5	East Lab Floor	100
6	North Bench Top	120
7	West Floor	100
8	Work Platform	60
9	Calorimeter	80
10	Computers	100
11	DSC/TGA	120
12	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By:	Date:	Notes
BT	7/9/19	
Swiped By:	Date:	
BT	7/9/19	
Reviewed By:	Date:	
[signature]	7/9/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

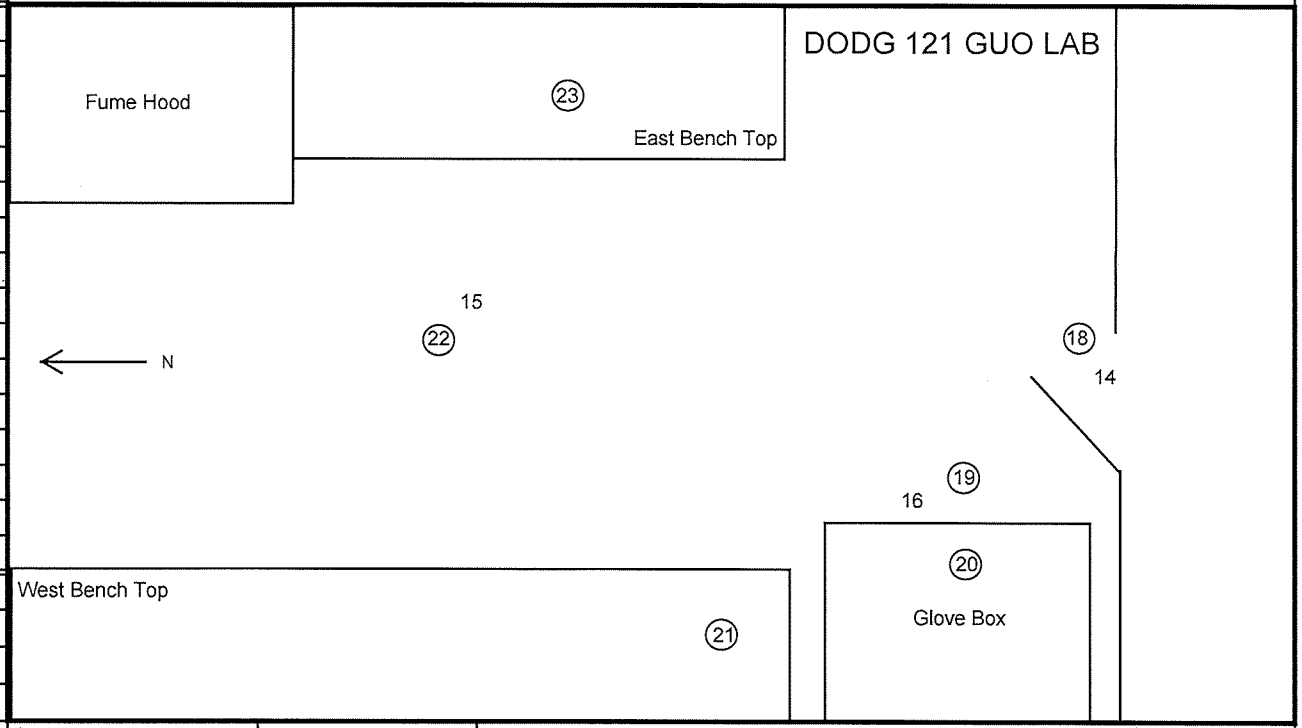
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	7/9/2019	0927	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 7/9/2019

Survey #	Location	CPM
13	Background	80
14	121 Doorway	80
15	121 Center of lab	60
16	121 Glove Box	120

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	7/9/19	
Swiped By: BT	Date: 7/9/19	
Reviewed By: [signature]	Date: 7/9/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 29	Dates: 7/14/2019-7/20/2019	Counted On 7/18/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.75E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	25	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	25	**********	*********	
5.	BACKGROUND 5	34	**********	*********	
6.	BACKGROUND 6	27	**********	*********	
7.	B021 ELEVATOR ENTRANCE	25	M	M	
8.	B021 FENCED GATE	25	M	M	
9.	B021 RAM SAFE	24	M	M	
10.	B021 EAST FLOOR	24	M	M	
11.	B021 NORTH BENCH TOP	24	M	M	
12.	B021 WEST LAB FLOOR	26	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	43	2.17E-05	2.17E-07	
15.	B021 COMPUTERS	27	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	31	M	M	
19.	121 GLOVE BOX- FLOOR	30	M	M	
20.	121 GLOVE BOX	29	M	M	
21.	121 WEST BENCH TOP	31	M	M	
22.	121 CENTER OF LAB	40	1.75E-05	1.75E-07	
23.	122 EAST BENCH TOP	30	M	M	

^{36}Cl SOURCE 09/14/1971	50301	**********	**********	
	101.42%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 7/19/19	SIGN/DATE:

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190718_1507
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190718_1507\20190718_1507.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	7/18/2019	3:09:55 PM	1	5.00	21	4	25	187.19	
1	7/18/2019	3:16:10 PM	2	5.00	23	4	27	279.36	
1	7/18/2019	3:22:29 PM	3	5.00	21	6	27	329.72	
1	7/18/2019	3:30:13 PM	4	5.00	22	3	25	121.23	
1	7/18/2019	3:36:27 PM	5	5.00	27	7	34	289.56	
1	7/18/2019	3:42:47 PM	6	5.00	23	4	27	184.83	
1	7/18/2019	3:49:06 PM	7	5.00	21	4	25	268.10	
1	7/18/2019	3:55:26 PM	8	5.00	20	5	25	246.01	
1	7/18/2019	4:02:01 PM	9	5.00	22	2	24	133.18	
1	7/18/2019	4:08:20 PM	10	5.00	19	5	24	274.19	
1	7/18/2019	4:17:52 PM	11	5.00	22	3	24	100.69	
1	7/18/2019	4:24:06 PM	12	5.00	19	7	26	325.52	

1	7/18/2019	4:30:26 PM	13	5.00	23	5	28	284.56
1	7/18/2019	4:36:39 PM	14	5.00	29	14	43	414.16
1	7/18/2019	4:43:17 PM	15	5.00	24	3	27	133.00
1	7/18/2019	4:50:00 PM	16	5.00	23	4	27	166.47
1	7/18/2019	4:56:39 PM	17	5.00	25	2	27	168.03
1	7/18/2019	5:02:56 PM	18	5.00	25	6	31	294.14
1	7/18/2019	5:09:13 PM	19	5.00	23	7	30	295.82
1	7/18/2019	5:15:26 PM	20	5.00	24	5	29	208.29
1	7/18/2019	5:21:38 PM	21	5.00	25	6	31	291.65
1	7/18/2019	5:28:09 PM	22	5.00	36	4	40	165.81
1	7/18/2019	5:34:48 PM	23	5.00	27	3	30	237.66
1	7/18/2019	5:40:29 PM	24	5.00	14374	35927	50301	1025.33

LABORATORY SURVEY

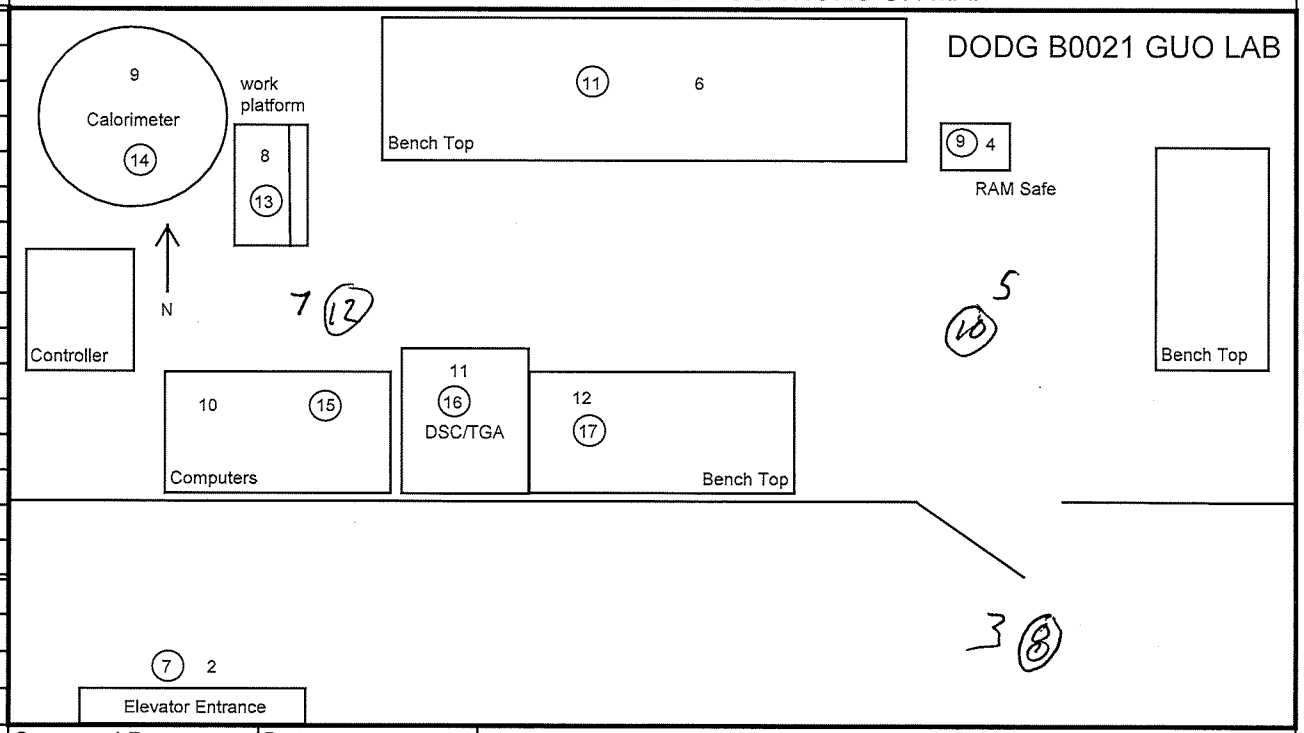
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/18/2019	1118	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/18/2019

Survey #	Location	CPM
1	Background	60
2	Elevator Entrance	80
3	South Floor	60
4	RAM Safe	1100
5	East Lab Floor	60
6	North Bench Top	100
7	West Floor	80
8	Work Platform	100
9	Calorimeter	60
10	Computers	60
11	DSC/TGA	80
12	South Bench Top	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By:	Date:	Notes
BT	7/18/2019	
Swiped By:	Date:	
BT	7/18/2019	
Reviewed By:	Date:	
[signature]	7/29/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

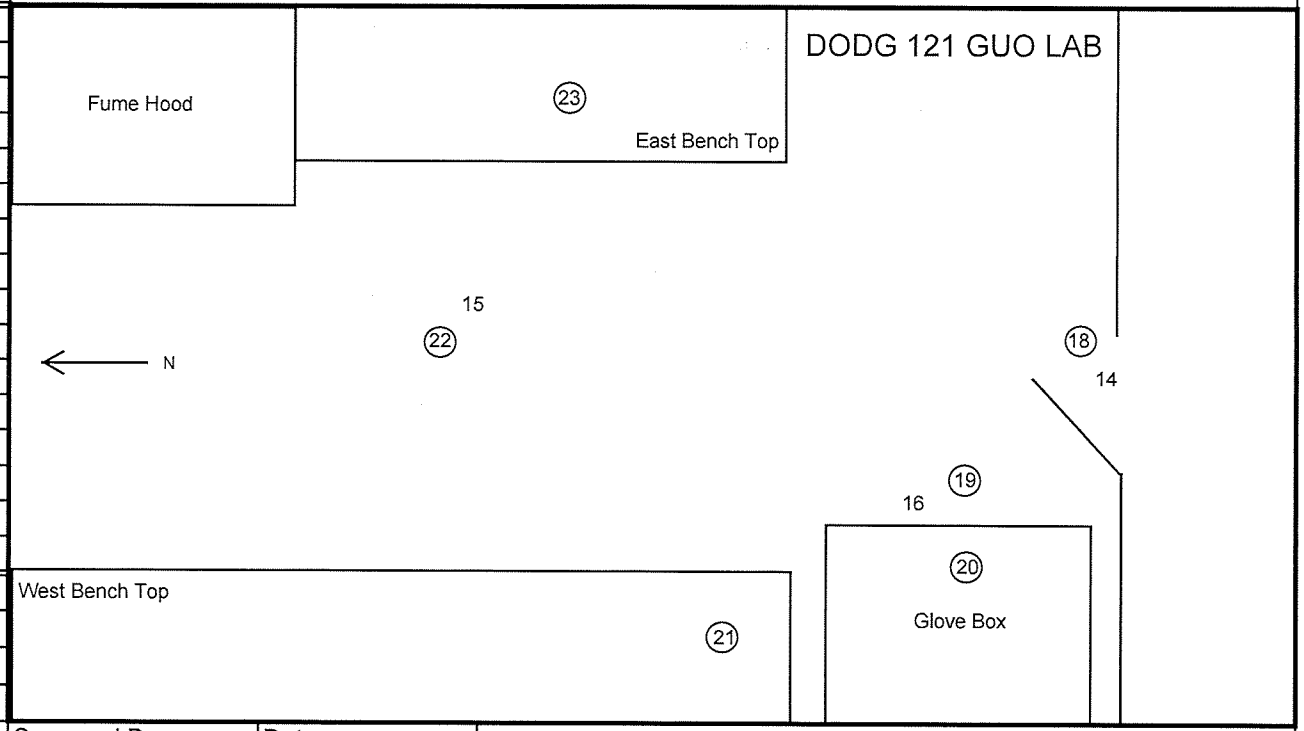
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/18/2019	1135	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/18/2019

Survey #	Location	CPM
13	Background	80
14	121 Doorway	110
15	121 Center of lab	60
16	121 Glove Box	120

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: BT	Date: 7/18/19	Notes
Swiped By: BT	Date: 7/18/19	
Reviewed By:	Date: 7/29/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	30	Dates:	7/21/2019-7/27/2019	Counted On	7/24/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.77E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	28	**********	*********	
3.	BACKGROUND 3	29	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	28	**********	*********	
7.	B021 ELEVATOR ENTRANCE	32	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 RAM SAFE	28	M	M	
10.	B021 EAST FLOOR	28	M	M	
11.	B021 NORTH BENCH TOP	46	2.57E-05	2.57E-07	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	29	M	M	
14.	B021 CALORIMETER	50	3.13E-05	3.13E-07	
15.	B021 COMPUTERS	25	M	M	
16.	B021 DSC/TGA	26	M	M	
17.	B021 SOUTH BENCH TOP	31	M	M	
18.	121 DOORWAY	33	M	M	
19.	121 GLOVE BOX- FLOOR	32	M	M	
20.	121 GLOVE BOX	29	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	28	M	M	
^{36}Cl SOURCE 09/14/1971		50091	**********	*********	
		101.00%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 7/25/19	SIGN/DATE: 7/29/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190724_1550
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190724_1550\20190724_1550.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	7/24/2019	3:51:43 PM	1	5.00	24	4	28	220.57	
1	7/24/2019	3:57:53 PM	2	5.00	21	7	28	344.37	
1	7/24/2019	4:04:11 PM	3	5.00	22	7	29	293.81	
1	7/24/2019	4:10:21 PM	4	5.00	24	4	27	190.91	
1	7/24/2019	4:16:35 PM	5	5.00	22	4	26	212.12	
1	7/24/2019	4:22:52 PM	6	5.00	25	4	28	157.18	
1	7/24/2019	4:29:14 PM	7	5.00	26	6	32	256.25	
1	7/24/2019	4:35:31 PM	8	5.00	25	6	31	228.91	
1	7/24/2019	4:41:53 PM	9	5.00	23	5	28	150.19	
1	7/24/2019	4:48:13 PM	10	5.00	24	4	28	162.04	
1	7/24/2019	4:54:24 PM	11	5.00	35	11	46	243.53	
1	7/24/2019	5:00:42 PM	12	5.00	22	6	28	221.23	

1	7/24/2019	5:07:01 PM	13	5.00	23	6	29	147.03
1	7/24/2019	5:13:22 PM	14	5.00	37	13	50	272.79
1	7/24/2019	5:19:44 PM	15	5.00	19	6	25	238.63
1	7/24/2019	5:25:59 PM	16	5.00	20	6	26	336.43
1	7/24/2019	5:32:18 PM	17	5.00	24	7	31	326.40
1	7/24/2019	5:38:35 PM	18	5.00	27	6	33	178.56
1	7/24/2019	5:44:49 PM	19	5.00	28	4	32	101.98
1	7/24/2019	5:51:07 PM	20	5.00	24	4	29	207.08
1	7/24/2019	5:57:18 PM	21	5.00	23	6	29	212.55
1	7/24/2019	6:03:29 PM	22	5.00	24	6	30	234.87
1	7/24/2019	6:09:49 PM	23	5.00	22	6	28	229.78
1	7/24/2019	6:15:29 PM	24	5.00	14445	35646	50091	1025.06

LABORATORY SURVEY

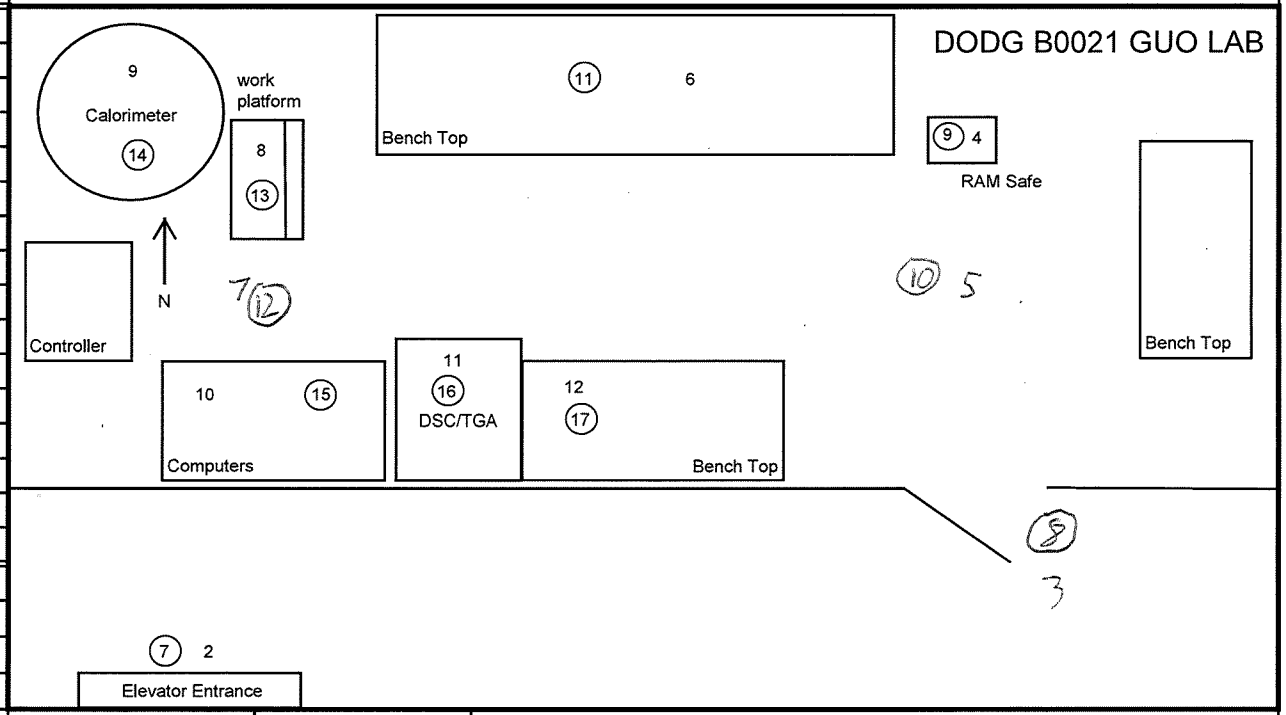
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/24/19	1446	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/24/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	100
3	South Floor	80
4	RAM Safe	1100
5	East Lab Floor	100
6	North Bench Top	100
7	West Floor	60
8	Work Platform	80
9	Calorimeter	120
10	Computers	100
11	DSC/TGA	90
12	South Bench Top	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 7/29/19	Notes
Swiped By: CS	Date: 7/24/19	
Reviewed By: [signature]	Date: 7/29/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

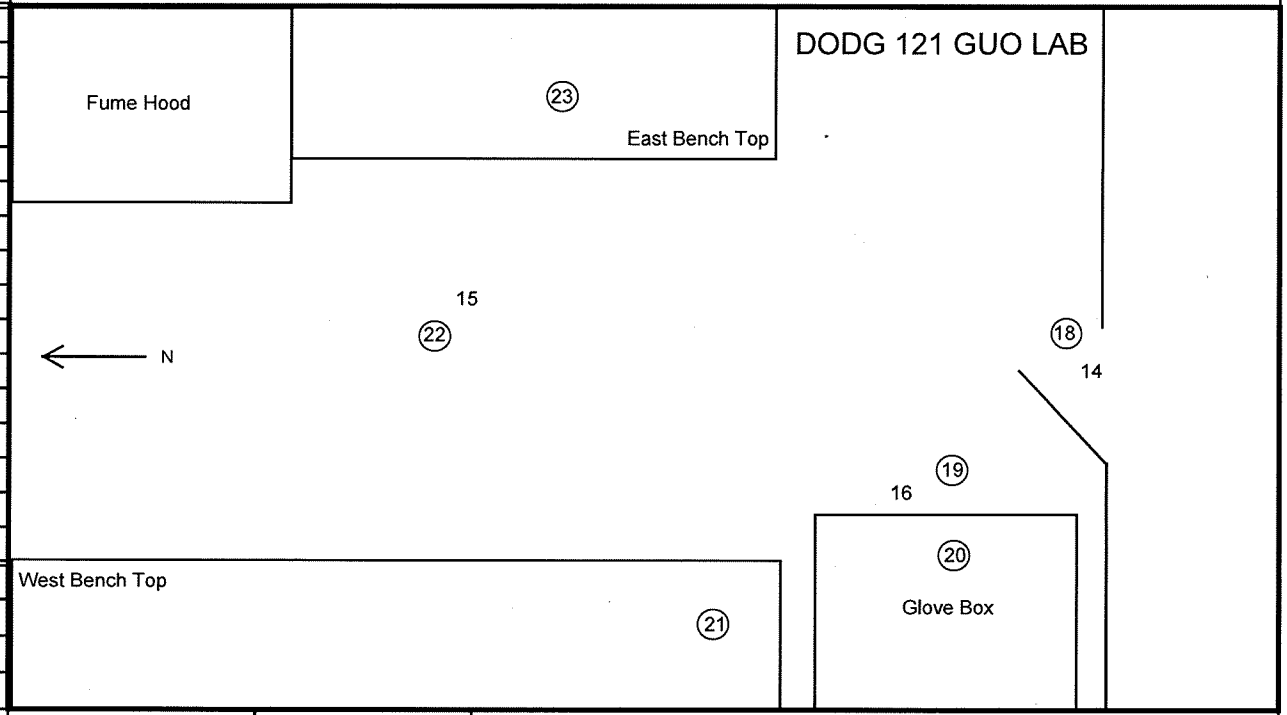
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	7/24/19	1456	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/24/2019

Survey #	Location	CPM
13	Background	80
14	121 Doorway	60
15	121 Center of lab	80
16	121 Glove Box	120

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BY	7/24/19	
Swiped By: CS	Date: 7/24/19	
Reviewed By:	Date: 7/29/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	31	Dates:	7/28/2019-8/03/2019	Counted On	7/29/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.94E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	32	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	28	**********	*********	
5.	BACKGROUND 5	31	**********	*********	
6.	BACKGROUND 6	30	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 RAM SAFE	31	M	M	
10.	B021 EAST FLOOR	24	M	M	
11.	B021 NORTH BENCH TOP	29	M	M	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	23	M	M	
15.	B021 COMPUTERS	26	M	M	
16.	B021 DSC/TGA	25	M	M	
17.	B021 SOUTH BENCH TOP	24	M	M	
18.	121 DOORWAY	28	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	24	M	M	
21.	121 WEST BENCH TOP	26	M	M	
22.	121 CENTER OF LAB	27	M	M	
23.	122 EAST BENCH TOP	33	M	M	

^{36}Cl SOURCE 09/14/1971	50322	**********	**********	
	101.46%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: C. Hines
SIGN/DATE: 7/30/2019	SIGN/DATE: 7/30/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190729_1644
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190729_1644\20190729_1644.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	7/29/2019	4:45:08 PM	1	5.00	26	6	32	279.89	
1	7/29/2019	4:51:19 PM	2	5.00	25	6	31	243.41	
1	7/29/2019	4:57:36 PM	3	5.00	23	5	28	293.92	
1	7/29/2019	5:03:46 PM	4	5.00	23	5	28	261.07	
1	7/29/2019	5:10:01 PM	5	5.00	27	5	31	205.10	
1	7/29/2019	5:16:19 PM	6	5.00	23	6	30	269.04	
1	7/29/2019	5:22:38 PM	7	5.00	21	6	27	300.45	
1	7/29/2019	5:28:51 PM	8	5.00	20	7	27	320.67	
1	7/29/2019	5:35:09 PM	9	5.00	27	4	31	77.13	
1	7/29/2019	5:41:28 PM	10	5.00	19	5	24	264.53	
1	7/29/2019	5:47:39 PM	11	5.00	23	6	29	285.31	
1	7/29/2019	5:53:54 PM	12	5.00	23	5	28	189.47	

1	7/29/2019	6:00:14 PM	13	5.00	22	5	27	214.80
1	7/29/2019	6:06:30 PM	14	5.00	19	5	23	300.07
1	7/29/2019	6:12:38 PM	15	5.00	20	6	26	245.00
1	7/29/2019	6:18:52 PM	16	5.00	18	7	25	323.95
1	7/29/2019	6:25:07 PM	17	5.00	20	4	24	264.73
1	7/29/2019	6:31:17 PM	18	5.00	22	6	28	258.29
1	7/29/2019	6:37:33 PM	19	5.00	25	3	28	41.85
1	7/29/2019	6:43:52 PM	20	5.00	18	5	24	268.93
1	7/29/2019	6:50:08 PM	21	5.00	22	4	26	238.95
1	7/29/2019	6:56:27 PM	22	5.00	22	5	27	243.72
1	7/29/2019	7:02:36 PM	23	5.00	26	7	33	304.08
1	7/29/2019	7:08:17 PM	24	5.00	14387	35935	50322	1015.06

LABORATORY SURVEY

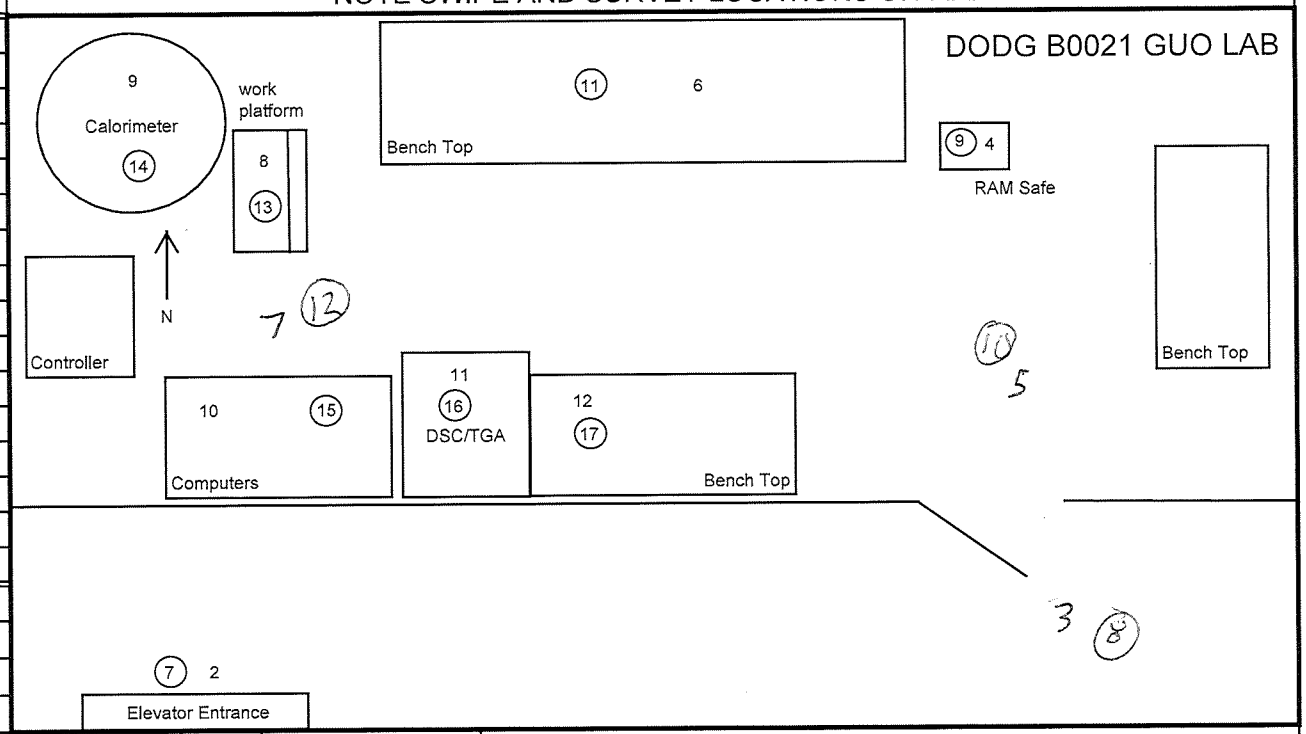
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	7/29/19	1616	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/29/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	120
3	South Floor	100
4	RAM Safe	1000
5	East Lab Floor	80
6	North Bench Top	120
7	West Floor	100
8	Work Platform	120
9	Calorimeter	100
10	Computers	100
11	DSC/TGA	80
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 7/29/2019	Notes
Swiped By: BT	Date: 7/29/2019	
Reviewed By: [signature]	Date: 7/30/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

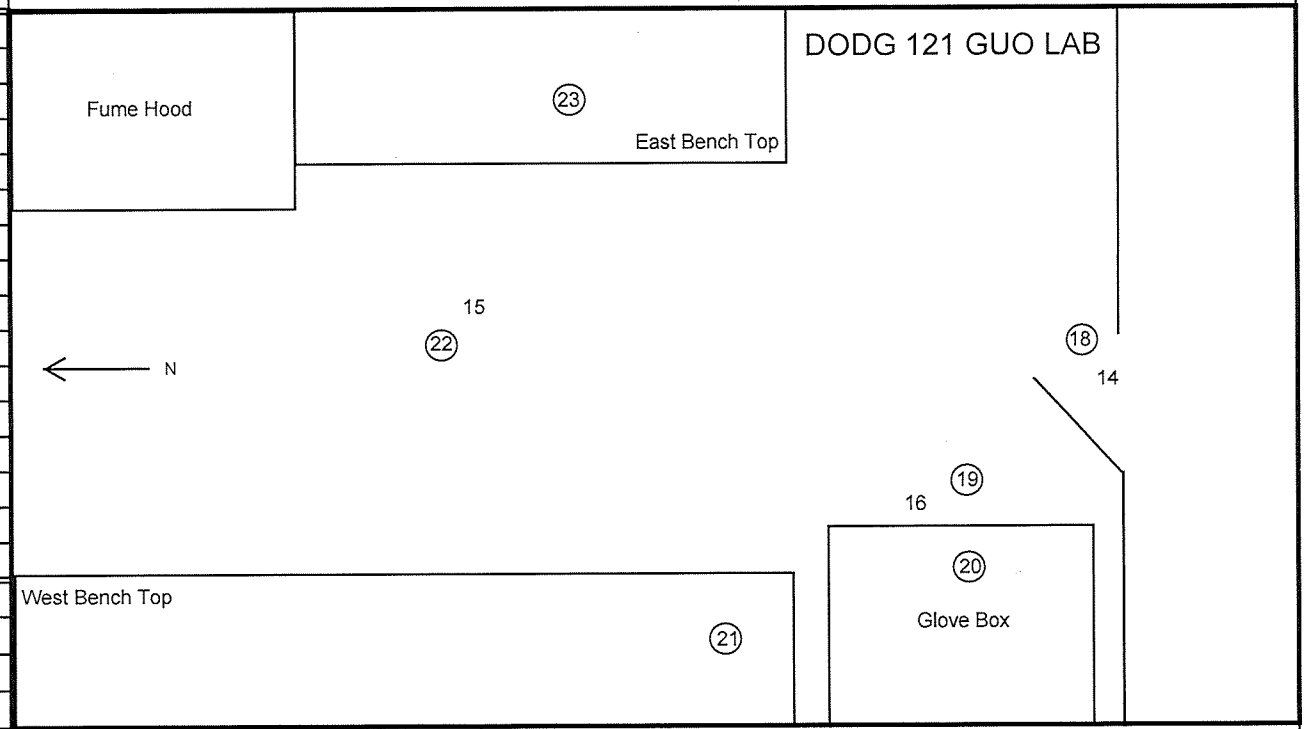
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	7/29/2019	1637	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 7/29/2019

Survey #	Location	CPM
13	Background	180
14	121 Doorway	100
15	121 Center of lab	80
16	121 Glove Box	140

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	7/29/19	
Swiped By:	Date:	
BT	7/29/19	
Reviewed By:	Date:	
[signature]	7/30/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	32	Dates:	8/04/2019-8/10/2019	Counted On	8/7/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	9.10E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	35	**********	*********	
2.	BACKGROUND 2	33	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	33	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	30	M	M	
8.	B021 FENCED GATE	28	M	M	
9.	B021 RAM SAFE	31	M	M	
10.	B021 EAST FLOOR	29	M	M	
11.	B021 NORTH BENCH TOP	29	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	30	M	M	
14.	B021 CALORIMETER	28	M	M	
15.	B021 COMPUTERS	36	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	25	M	M	
19.	121 GLOVE BOX- FLOOR	32	M	M	
20.	121 GLOVE BOX	32	M	M	
21.	121 WEST BENCH TOP	25	M	M	
22.	121 CENTER OF LAB	31	M	M	
23.	122 EAST BENCH TOP	29	M	M	

^{36}Cl SOURCE 09/14/1971	50043	**********	**********	
	100.90%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: [signature] 8/28/2019	SIGN/DATE: [signature] 8/28/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190807_1414
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190807_1414\20190807_1414.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	8/7/2019	2:15:10 PM	1	5.00	28	7	35	248.67	
1	8/7/2019	2:21:19 PM	2	5.00	25	8	33	395.50	
1	8/7/2019	2:27:37 PM	3	5.00	23	5	28	265.74	
1	8/7/2019	2:33:46 PM	4	5.00	26	6	32	376.72	
1	8/7/2019	2:40:01 PM	5	5.00	27	5	33	220.45	
1	8/7/2019	2:46:18 PM	6	5.00	26	6	32	233.29	
1	8/7/2019	2:52:38 PM	7	5.00	25	5	30	197.57	
1	8/7/2019	2:58:54 PM	8	5.00	23	5	28	217.62	
1	8/7/2019	3:05:12 PM	9	5.00	26	5	31	124.34	
1	8/7/2019	3:11:31 PM	10	5.00	24	5	29	182.67	
1	8/7/2019	3:17:45 PM	11	5.00	23	6	29	323.50	
1	8/7/2019	3:24:03 PM	12	5.00	24	5	29	141.80	

1	8/7/2019	3:30:23 PM	13	5.00	25	5	30	231.12
1	8/7/2019	3:36:38 PM	14	5.00	22	6	28	275.52
1	8/7/2019	3:42:46 PM	15	5.00	30	6	36	207.40
1	8/7/2019	3:48:59 PM	16	5.00	22	5	27	238.11
1	8/7/2019	3:55:15 PM	17	5.00	22	5	27	251.84
1	8/7/2019	4:01:27 PM	18	5.00	20	5	25	192.60
1	8/7/2019	4:07:48 PM	19	5.00	27	5	32	127.26
1	8/7/2019	4:14:04 PM	20	5.00	24	7	32	264.84
1	8/7/2019	4:20:23 PM	21	5.00	21	4	25	250.77
1	8/7/2019	4:26:42 PM	22	5.00	25	6	31	119.36
1	8/7/2019	4:32:55 PM	23	5.00	24	5	29	223.52
1	8/7/2019	4:38:35 PM	24	5.00	14277	35766	50043	1014.88

LABORATORY SURVEY

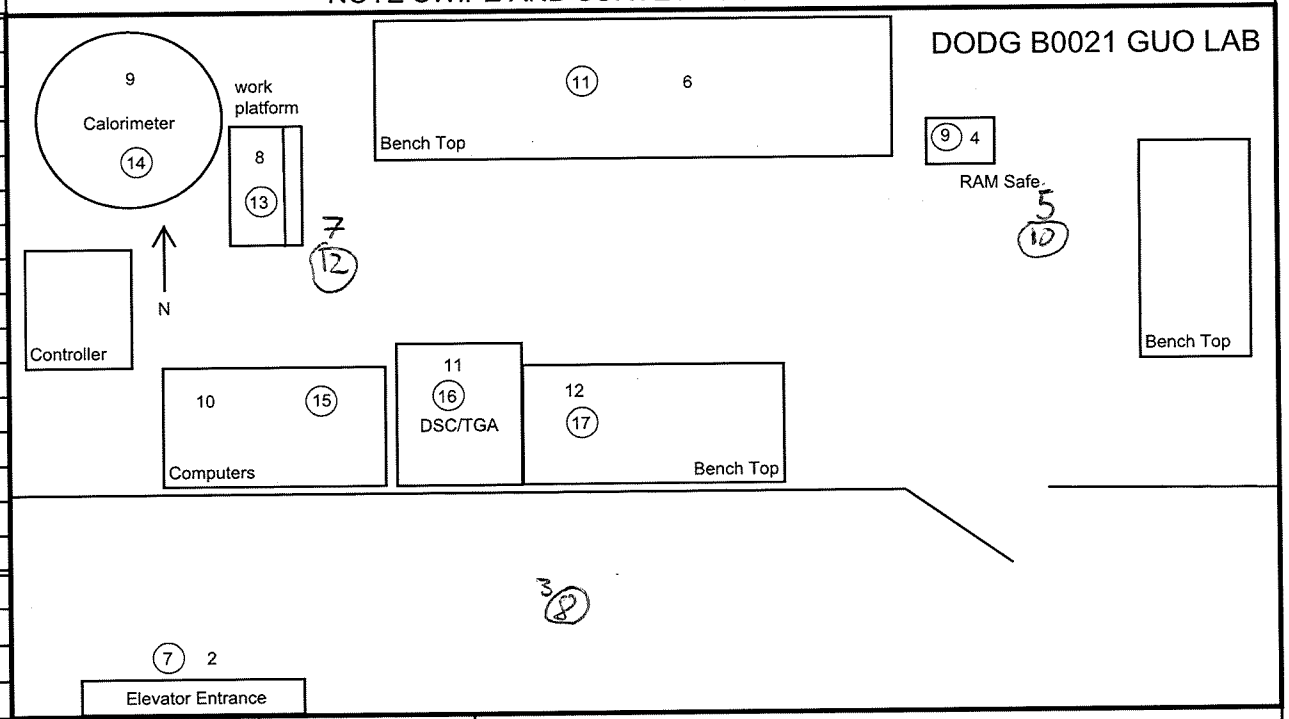
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 8/7/19	Time: 1333	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One): ON ☒ OFF ☐					

LSC Printout Date: 8/7/2019

Survey #	Location	CPM
1	Background	100
2	Elevator Entrance	100
3	South Floor	100
4	RAM Safe	1000
5	East Lab Floor	200
6	North Bench Top	100
7	West Floor	100
8	Work Platform	100
9	Calorimeter	100
10	Computers	100
11	DSC/TGA	100
12	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: CS	Date: 8/7/2019	Notes
Swiped By: CS	Date: 8/7/2019	
Reviewed By: Meaghan Heine m.Heine	Date: 8/28/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 8/7/2019	Time: 1403	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

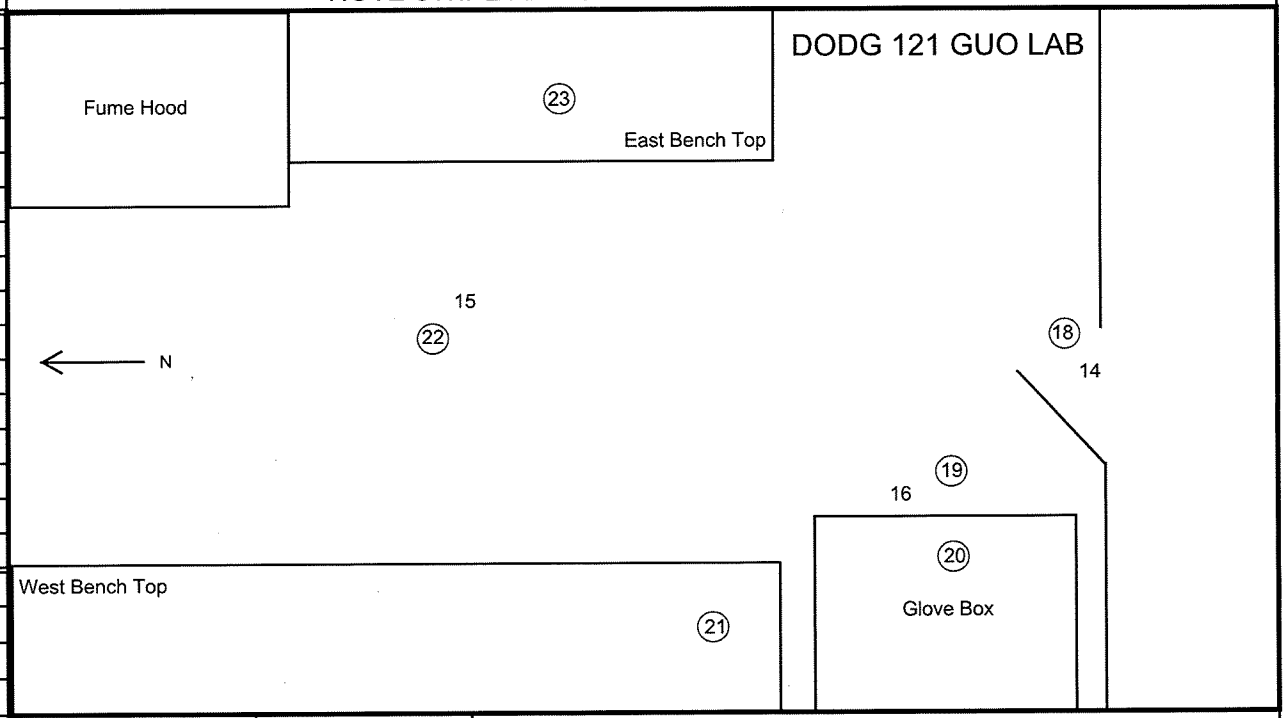
LSC Printout Date: 8/7/2019

Survey #	Location	CPM
13	Background	100
14	121 Doorway	100
15	121 Center of lab	100
16	121 Glove Box	100

Swipe # and Locations

18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: CS	Date: 8/7/2019	Notes
Swiped By: CS	Date: 8/7/2019	
Reviewed By: Meddum Heinu M. Heinu	Date: 8/28/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	33	Dates:	8/11/2019-8/17/2019	Counted On	8/14/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.89E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	32	**********	*********	
2.	BACKGROUND 2	28	**********	*********	
3.	BACKGROUND 3	30	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	27	**********	*********	
6.	BACKGROUND 6	33	**********	*********	
7.	B021 ELEVATOR ENTRANCE	31	M	M	
8.	B021 FENCED GATE	32	M	M	
9.	B021 RAM SAFE	28	M	M	
10.	B021 EAST FLOOR	24	M	M	
11.	B021 NORTH BENCH TOP	32	M	M	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	30	M	M	
15.	B021 COMPUTERS	32	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	26	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	32	M	M	
20.	121 GLOVE BOX	24	M	M	
21.	121 WEST BENCH TOP	23	M	M	
22.	121 CENTER OF LAB	24	M	M	
23.	122 EAST BENCH TOP	23	M	M	

^{36}Cl SOURCE 09/14/1971	50038	**********	**********	
	100.89%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 8/15/2019	SIGN/DATE: 9/11/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190814_1642
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190814_1642\20190814_1642.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	8/14/2019	4:43:37 PM	1	5.00	25	6	32	318.65	
1	8/14/2019	4:49:46 PM	2	5.00	23	5	28	258.66	
1	8/14/2019	4:56:03 PM	3	5.00	24	6	30	293.20	
1	8/14/2019	5:02:13 PM	4	5.00	21	6	26	312.48	
1	8/14/2019	5:08:28 PM	5	5.00	22	4	27	227.13	
1	8/14/2019	5:14:45 PM	6	5.00	27	6	33	272.16	
1	8/14/2019	5:21:04 PM	7	5.00	25	6	31	269.46	
1	8/14/2019	5:27:18 PM	8	5.00	24	8	32	288.87	
1	8/14/2019	5:33:35 PM	9	5.00	22	6	28	251.52	
1	8/14/2019	5:39:48 PM	10	5.00	19	5	24	266.73	
1	8/14/2019	5:46:03 PM	11	5.00	23	9	32	361.15	
1	8/14/2019	5:52:19 PM	12	5.00	20	7	28	302.31	

1	8/14/2019	5:58:39 PM	13	5.00	21	6	28	288.08
1	8/14/2019	6:04:54 PM	14	5.00	24	6	30	278.49
1	8/14/2019	6:11:03 PM	15	5.00	26	6	32	250.24
1	8/14/2019	6:17:16 PM	16	5.00	25	4	29	173.92
1	8/14/2019	6:23:33 PM	17	5.00	21	5	26	266.22
1	8/14/2019	6:29:44 PM	18	5.00	24	6	29	252.10
1	8/14/2019	6:36:02 PM	19	5.00	25	7	32	308.72
1	8/14/2019	6:42:17 PM	20	5.00	21	4	24	235.30
1	8/14/2019	6:48:34 PM	21	5.00	18	5	23	297.82
1	8/14/2019	6:54:53 PM	22	5.00	20	5	24	179.23
1	8/14/2019	7:01:03 PM	23	5.00	19	4	23	239.14
1	8/14/2019	7:06:43 PM	24	5.00	14369	35669	50038	1022.65

LABORATORY SURVEY

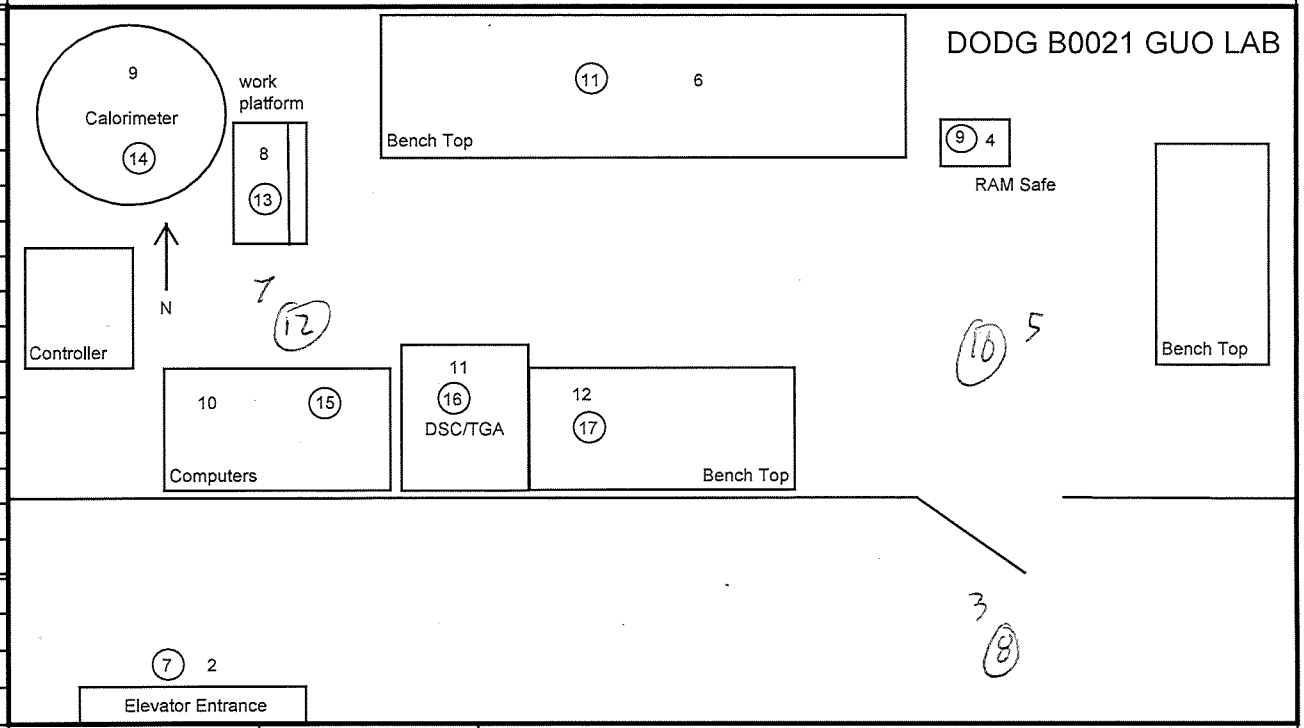
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	8/14/19	1620	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 8/14/2019

Survey #	Location	CPM
1	Background	100
2	Elevator Entrance	120
3	South Floor	80
4	RAM Safe	1000
5	East Lab Floor	120
6	North Bench Top	100
7	West Floor	100
8	Work Platform	100
9	Calorimeter	80
10	Computers	100
11	DSC/TGA	80
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 8/14/19	Notes
Swiped By: BT	Date: 8/14/19	
Reviewed By: M Heine m. Heine	Date: 9/11/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

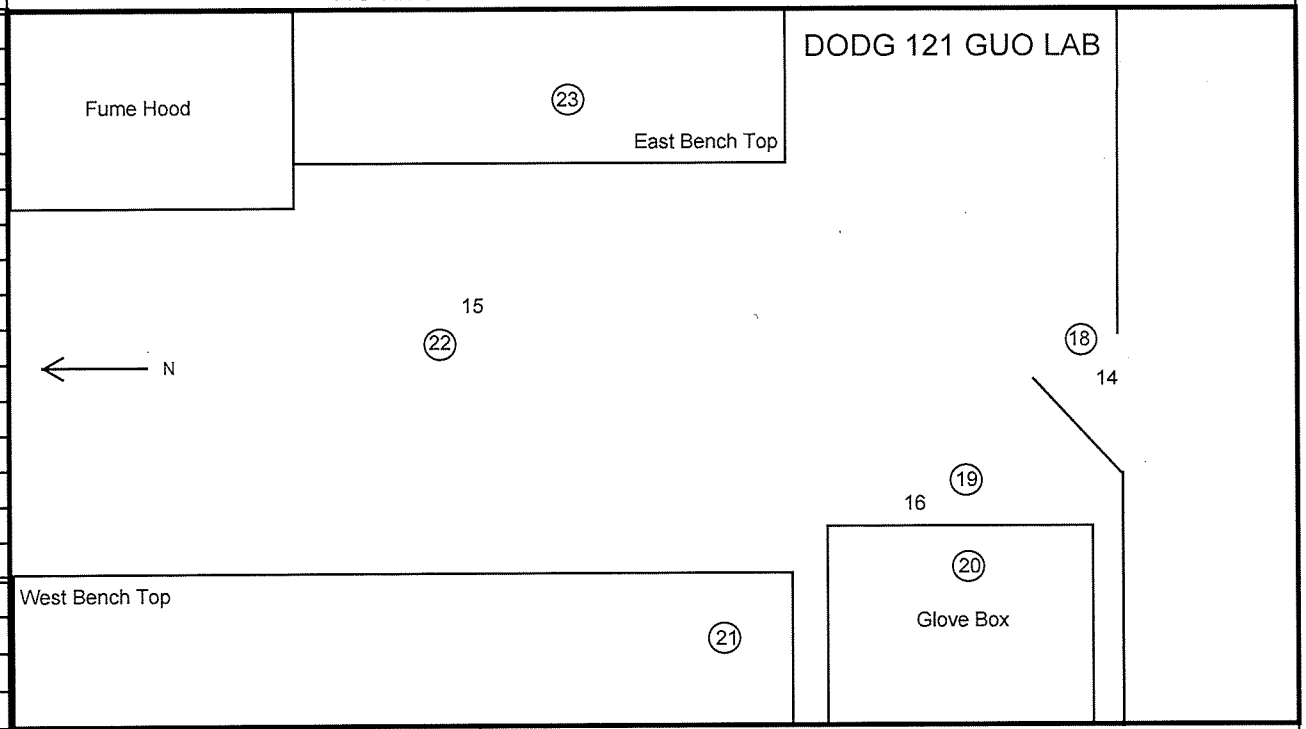
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	8/14/19	1638	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 8/14/2019

Survey #	Location	CPM
13	Background	80
14	121 Doorway	100
15	121 Center of lab	90
16	121 Glove Box	160

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	9/14/19	
Swiped By:	Date:	
BT	8/14/19	
Reviewed By:	Date:	
Modris Ohm	9/11/19	

M. Heine

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	34	Dates:	8/18/2019-8/24/2019	Counted On	8/20/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.90E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	26	**********	*********	
2.	BACKGROUND 2	28	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	31	M	M	
8.	B021 FENCED GATE	28	M	M	
9.	B021 RAM SAFE	28	M	M	
10.	B021 EAST FLOOR	24	M	M	
11.	B021 NORTH BENCH TOP	26	M	M	
12.	B021 WEST LAB FLOOR	30	M	M	
13.	B021 WORK PLATFORM	25	M	M	
14.	B021 CALORIMETER	29	M	M	
15.	B021 COMPUTERS	26	M	M	
16.	B021 DSC/TGA	31	M	M	
17.	B021 SOUTH BENCH TOP	23	M	M	
18.	121 DOORWAY	30	M	M	
19.	121 GLOVE BOX- FLOOR	30	M	M	
20.	121 GLOVE BOX	26	M	M	
21.	121 WEST BENCH TOP	23	M	M	
22.	121 CENTER OF LAB	28	M	M	
23.	122 EAST BENCH TOP	32	M	M	

^{36}Cl SOURCE 09/14/1971	49962	**********	**********	
	100.74%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 8/20/2019	SIGN/DATE: 8/21/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190820_1318
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190820_1318\20190820_1318.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	8/20/2019	1:19:30 PM	1	5.00	22	4	26	211.46	
1	8/20/2019	1:25:39 PM	2	5.00	22	6	28	290.73	
1	8/20/2019	1:31:57 PM	3	5.00	23	5	28	229.17	
1	8/20/2019	1:38:06 PM	4	5.00	26	6	32	216.13	
1	8/20/2019	1:44:21 PM	5	5.00	25	7	32	284.73	
1	8/20/2019	1:50:38 PM	6	5.00	26	5	31	224.41	
1	8/20/2019	1:56:57 PM	7	5.00	26	5	31	247.04	
1	8/20/2019	2:03:12 PM	8	5.00	23	5	28	214.68	
1	8/20/2019	2:09:29 PM	9	5.00	24	4	28	200.50	
1	8/20/2019	2:15:45 PM	10	5.00	19	5	24	277.64	
1	8/20/2019	2:21:59 PM	11	5.00	20	6	26	326.07	
1	8/20/2019	2:28:16 PM	12	5.00	24	6	30	231.97	

1	8/20/2019	2:34:36 PM	13	5.00	20	5	25	282.63
1	8/20/2019	2:40:50 PM	14	5.00	22	7	29	322.92
1	8/20/2019	2:47:00 PM	15	5.00	22	4	26	203.36
1	8/20/2019	2:53:13 PM	16	5.00	24	7	31	321.54
1	8/20/2019	2:59:31 PM	17	5.00	19	5	23	264.30
1	8/20/2019	3:05:47 PM	18	5.00	24	6	30	246.22
1	8/20/2019	3:12:05 PM	19	5.00	26	4	30	209.37
1	8/20/2019	3:18:23 PM	20	5.00	21	6	26	333.73
1	8/20/2019	3:24:32 PM	21	5.00	18	5	23	318.59
1	8/20/2019	3:30:43 PM	22	5.00	22	6	28	254.16
1	8/20/2019	3:37:01 PM	23	5.00	27	6	32	291.15
1	8/20/2019	3:42:41 PM	24	5.00	14492	35470	49962	1006.81

LABORATORY SURVEY

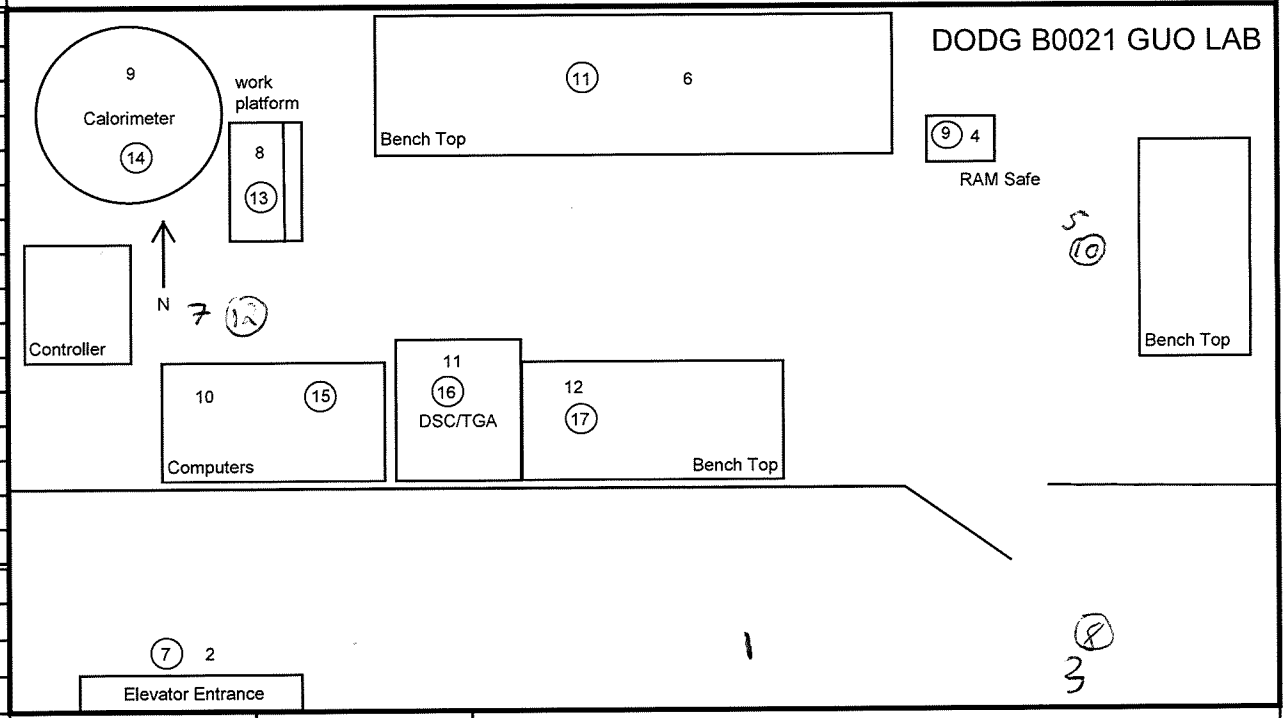
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	8/20/19	1110	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON [X] OFF [ ]					

LSC Printout Date: 8/20/20A

Survey #	Location	CPM
1	Background	90
2	Elevator Entrance	150
3	South Floor	120
4	RAM Safe	1200
5	East Lab Floor	80
6	North Bench Top	120
7	West Floor	90
8	Work Platform	100
9	Calorimeter	100
10	Computers	100
11	DSC/TGA	90
12	South Bench Top	130

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: JC	Date: 8/20/19	Notes
Swiped By: CMH	Date: 8/20/19	
Reviewed By: Madison Ohrie	Date: 8/21/19	

m. Heine

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

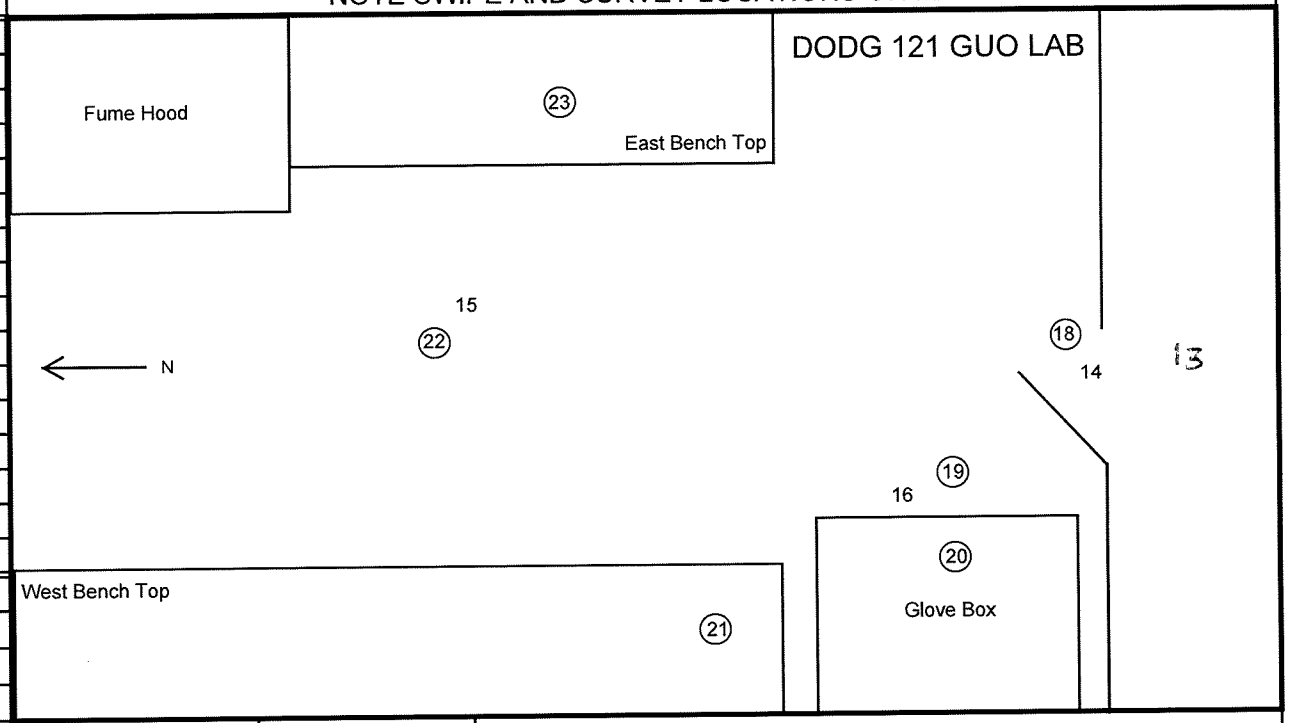
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	8/20/19	1130	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON [X] OFF [ ]					

LSC Printout Date: 8/20/2019

Survey #	Location	CPM
13	Background	110
14	121 Doorway	110
15	121 Center of lab	130
16	121 Glove Box	140

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: CMH	Date: 8/20/19	Notes
Swiped By: JC	Date: 8/20/19	
Reviewed By: Madison Heine M. Heine	Date: 8/21/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	35	Dates:	8/25/2019-8/31/2019	Counted On	8/27/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.81E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	22	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	25	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 RAM SAFE	27	M	M	
10.	B021 EAST FLOOR	32	M	M	
11.	B021 NORTH BENCH TOP	27	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	29	M	M	
14.	B021 CALORIMETER	25	M	M	
15.	B021 COMPUTERS	30	M	M	
16.	B021 DSC/TGA	26	M	M	
17.	B021 SOUTH BENCH TOP	30	M	M	
18.	121 DOORWAY	25	M	M	
19.	121 GLOVE BOX- FLOOR	29	M	M	
20.	121 GLOVE BOX	27	M	M	
21.	121 WEST BENCH TOP	26	M	M	
22.	121 CENTER OF LAB	28	M	M	
23.	122 EAST BENCH TOP	28	M	M	

^{36}Cl SOURCE 09/14/1971	50143	**********	**********	
	101.10%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 8/28/2019	SIGN/DATE: 8/28/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190827_1646
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190827_1646\20190827_1646.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	8/27/2019	4:48:10 PM	1	5.00	23	5	28	194.04	
1	8/27/2019	4:54:20 PM	2	5.00	19	8	27	388.45	
1	8/27/2019	5:00:38 PM	3	5.00	19	3	22	193.68	
1	8/27/2019	5:06:48 PM	4	5.00	27	5	32	241.85	
1	8/27/2019	5:13:04 PM	5	5.00	24	6	30	272.47	
1	8/27/2019	5:19:21 PM	6	5.00	25	6	31	232.66	
1	8/27/2019	5:25:41 PM	7	5.00	20	5	25	273.95	
1	8/27/2019	5:31:56 PM	8	5.00	21	6	27	362.28	
1	8/27/2019	5:38:13 PM	9	5.00	21	6	27	268.48	
1	8/27/2019	5:44:28 PM	10	5.00	24	8	32	258.76	
1	8/27/2019	5:50:43 PM	11	5.00	21	6	27	246.15	
1	8/27/2019	5:56:57 PM	12	5.00	23	6	29	255.68	

1	8/27/2019	6:03:18 PM	13	5.00	24	5	29	258.33
1	8/27/2019	6:09:33 PM	14	5.00	20	5	25	282.27
1	8/27/2019	6:15:42 PM	15	5.00	25	5	30	276.22
1	8/27/2019	6:21:55 PM	16	5.00	22	5	26	273.09
1	8/27/2019	6:28:06 PM	17	5.00	23	7	30	335.64
1	8/27/2019	6:34:17 PM	18	5.00	21	4	25	158.82
1	8/27/2019	6:40:38 PM	19	5.00	25	4	29	134.89
1	8/27/2019	6:46:52 PM	20	5.00	22	5	27	293.15
1	8/27/2019	6:53:10 PM	21	5.00	21	5	26	297.90
1	8/27/2019	6:59:29 PM	22	5.00	24	4	28	234.92
1	8/27/2019	7:05:40 PM	23	5.00	21	7	28	311.07
1	8/27/2019	7:11:20 PM	24	5.00	14423	35719	50143	1019.08

LABORATORY SURVEY

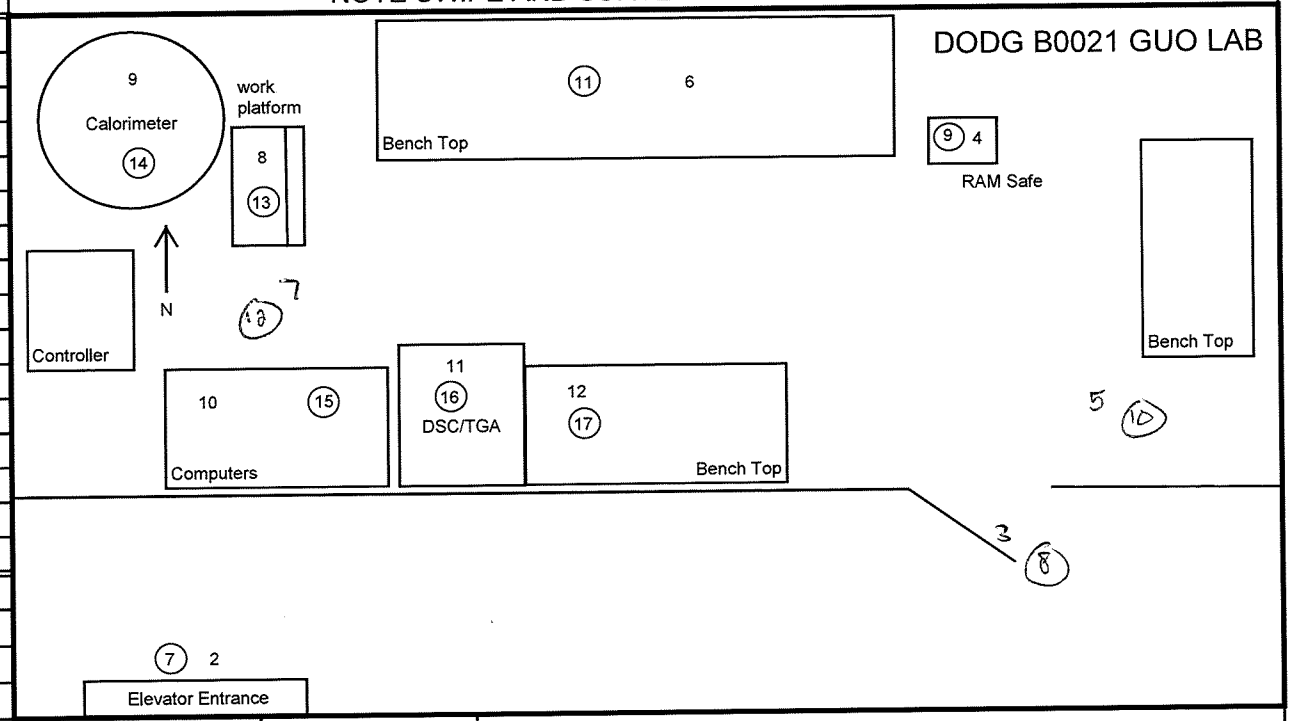
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	8/27/19	1439	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 8/27/2019

Survey #	Location	CPM
1	Background	≤100
2	Elevator Entrance	≤100
3	South Floor	≤100
4	RAM Safe	1500
5	East Lab Floor	≤100
6	North Bench Top	200
7	West Floor	≤100
8	Work Platform	≤100
9	Calorimeter	≤100
10	Computers	~~150~~ MJ ≤100
11	DSC/TGA	150
12	South Bench Top	150

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: MJ	Date: 8/27/19	Notes
Swiped By: MJ	Date: 8/27/19	
Reviewed By: Matthias Heine M. Heine	Date: 8/28/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

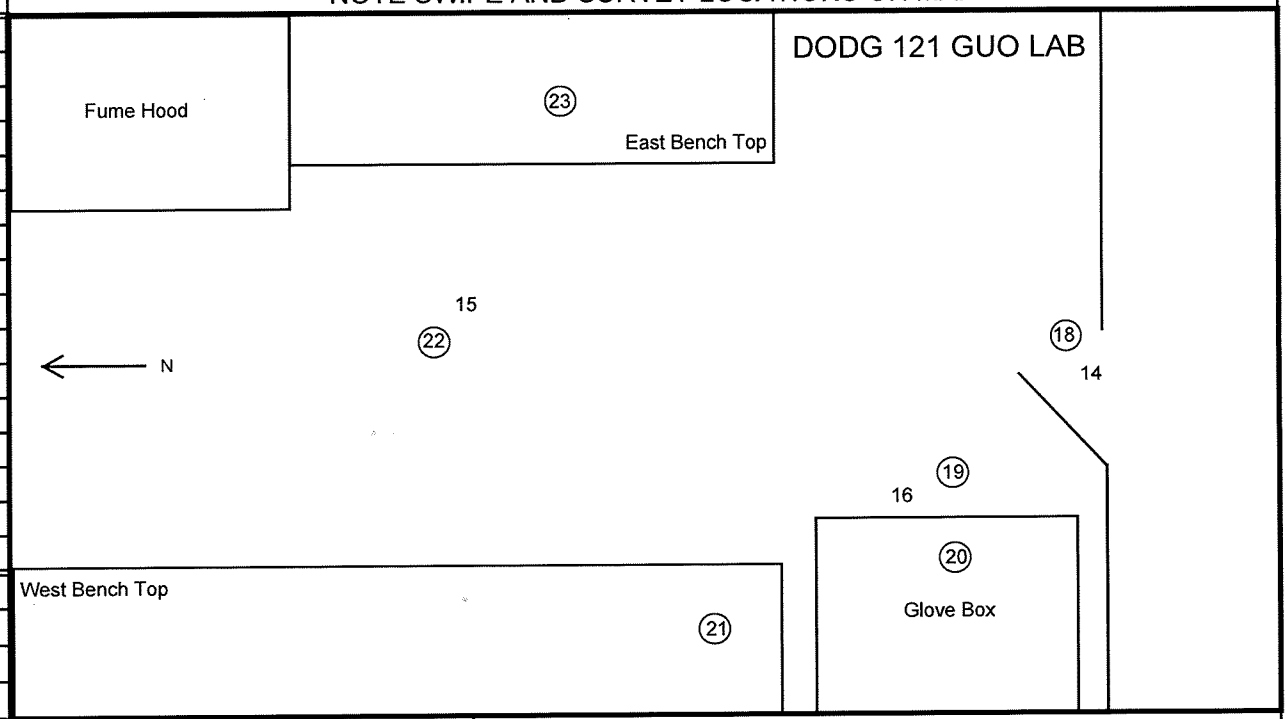
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	8/27/19	1508	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 8/27/2019

Survey #	Location	CPM
13	Background	<100
14	121 Doorway	<100
15	121 Center of lab	<100
16	121 Glove Box	120

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: LD	Date: 8/27/19	Notes
Swiped By: MS	Date: 8/27/19	
Reviewed By: Maddison Heine M. Heine	Date: 8/28/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	36	Dates:	9/01/2019-9/07/2019	Counted On	9/3/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.97E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	31	**********	*********	
4.	BACKGROUND 4	32	**********	*********	
5.	BACKGROUND 5	27	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	35	M	M	
8.	B021 FENCED GATE	36	M	M	
9.	B021 RAM SAFE	26	M	M	
10.	B021 EAST FLOOR	31	M	M	
11.	B021 NORTH BENCH TOP	28	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	35	M	M	
14.	B021 CALORIMETER	29	M	M	
15.	B021 COMPUTERS	29	M	M	
16.	B021 DSC/TGA	33	M	M	
17.	B021 SOUTH BENCH TOP	32	M	M	
18.	121 DOORWAY	39	1.21E-05	1.21E-07	
19.	121 GLOVE BOX- FLOOR	32	M	M	
20.	121 GLOVE BOX	28	M	M	
21.	121 WEST BENCH TOP	26	M	M	
22.	121 CENTER OF LAB	26	M	M	
23.	122 EAST BENCH TOP	32	M	M	

^{36}Cl SOURCE 09/14/1971	50092	**********	**********	
	101.00%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 9/4/2019	SIGN/DATE: 9/4/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190903_1203
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190903_1203\20190903_1203.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	9/3/2019	12:08:11 PM	1	5.00	28	3	31	96.71	
1	9/3/2019	12:14:41 PM	2	5.00	23	5	29	250.03	
1	9/3/2019	12:20:58 PM	3	5.00	24	7	31	274.24	
1	9/3/2019	12:27:15 PM	4	5.00	25	7	32	234.64	
1	9/3/2019	12:33:33 PM	5	5.00	21	6	27	306.94	
1	9/3/2019	12:39:51 PM	6	5.00	26	5	32	240.13	
1	9/3/2019	12:46:11 PM	7	5.00	27	8	35	258.03	
1	9/3/2019	12:52:33 PM	8	5.00	26	10	36	260.09	
1	9/3/2019	12:58:53 PM	9	5.00	21	6	26	223.33	
1	9/3/2019	1:05:05 PM	10	5.00	26	5	31	193.09	
1	9/3/2019	1:11:21 PM	11	5.00	23	5	28	212.65	
1	9/3/2019	1:17:42 PM	12	5.00	23	6	29	218.64	

1	9/3/2019	1:24:05 PM	13	5.00	29	6	35	222.18
1	9/3/2019	1:30:24 PM	14	5.00	22	8	29	242.16
1	9/3/2019	1:36:36 PM	15	5.00	25	5	29	222.93
1	9/3/2019	1:42:47 PM	16	5.00	25	8	33	207.27
1	9/3/2019	1:49:04 PM	17	5.00	25	7	32	265.60
1	9/3/2019	1:55:26 PM	18	5.00	26	13	39	284.72
1	9/3/2019	2:01:46 PM	19	5.00	26	7	32	210.78
1	9/3/2019	2:08:06 PM	20	5.00	22	6	28	254.47
1	9/3/2019	2:14:24 PM	21	5.00	20	6	26	246.04
1	9/3/2019	2:20:36 PM	22	5.00	21	5	26	203.49
1	9/3/2019	2:26:55 PM	23	5.00	26	5	32	160.89
1	9/3/2019	2:32:36 PM	24	5.00	14556	35536	50092	1016.23

LABORATORY SURVEY

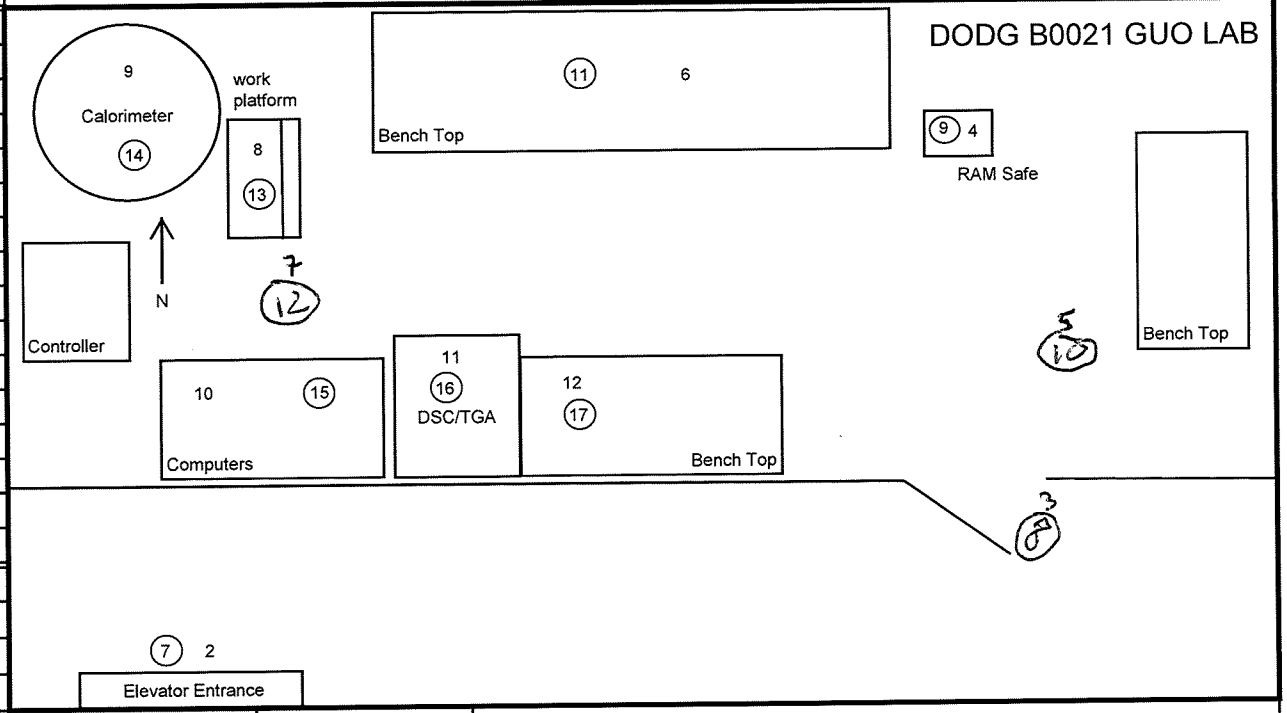
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 9/3/2019	Time: 1134	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 9/3/2019

Survey #	Location	CPM
1	Background	100
2	Elevator Entrance	100
3	South Floor	100
4	RAM Safe	900
5	East Lab Floor	150
6	North Bench Top	150
7	West Floor	100
8	Work Platform	100
9	Calorimeter	100
10	Computers	50
11	DSC/TGA	100
12	South Bench Top	50

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	and Locations		
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: JS	Date: 9/3/19	Notes
Swiped By: CS	Date: 9/3/2019	
Reviewed By: Maddison Heine m. Heine	Date: 9/4/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

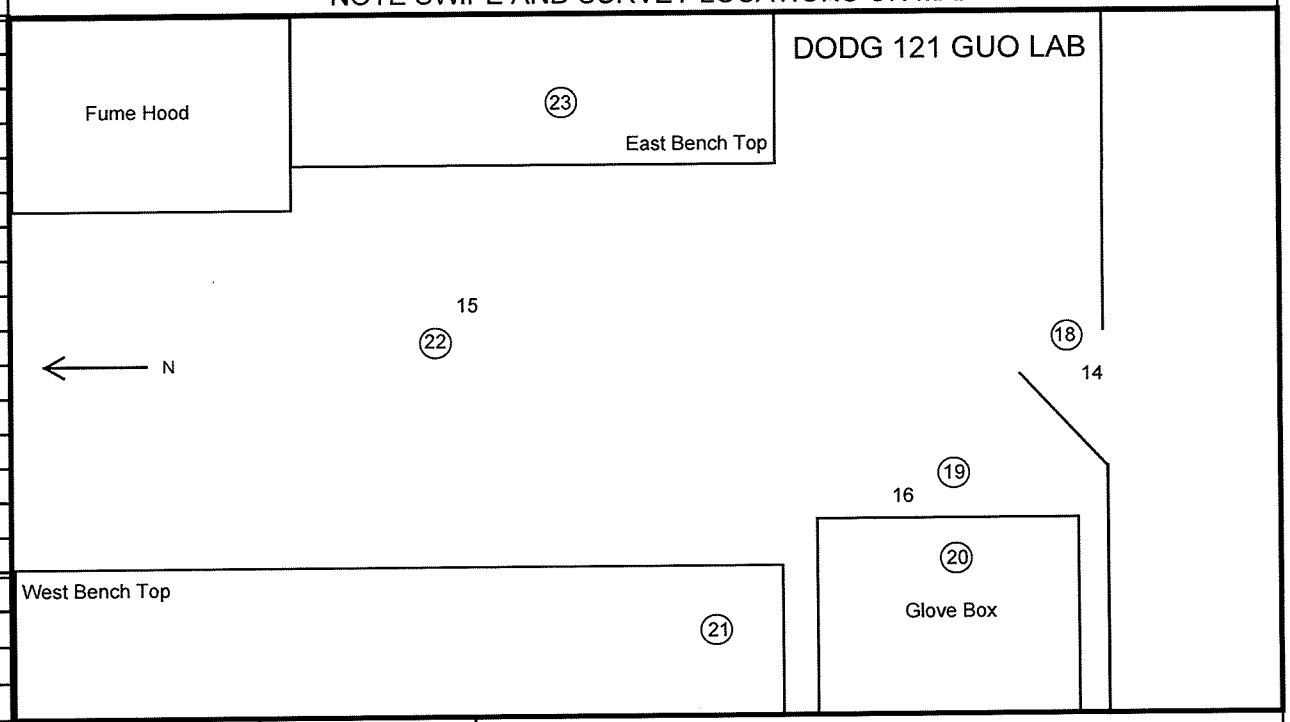
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 9/3/2019	Time: 1151	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 9/3/2019

Survey #	Location	CPM
13	Background	80 JS 100
14	121 Doorway	100
15	121 Center of lab	100
16	121 Glove Box	150

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
JS	9/3/19	
Swiped By: CS	Date: 9/3/2019	
Reviewed By: Maddison Heine M. Heine	Date: 9/4/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	37	Dates:	9/08/2019-9/14/2019	Counted On	9/10/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.71E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	30	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	26	**********	*********	
4.	BACKGROUND 4	31	**********	*********	
5.	BACKGROUND 5	23	**********	*********	
6.	BACKGROUND 6	25	**********	*********	
7.	B021 ELEVATOR ENTRANCE	26	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 RAM SAFE	28	M	M	
10.	B021 EAST FLOOR	30	M	M	
11.	B021 NORTH BENCH TOP	28	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	25	M	M	
14.	B021 CALORIMETER	25	M	M	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	25	M	M	
18.	121 DOORWAY	32	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	31	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	23	M	M	

^{36}Cl SOURCE 09/14/1971	50265	**********	*********	
	101.35%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: [signature] / 9/10/2019	SIGN/DATE: [signature] 9/11/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190910_0856
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190910_0856\20190910_0856.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	9/10/2019	8:57:40 AM	1	5.00	25	6	30	251.27	
1	9/10/2019	9:03:58 AM	2	5.00	21	6	27	279.98	
1	9/10/2019	9:10:14 AM	3	5.00	20	6	26	337.17	
1	9/10/2019	9:16:29 AM	4	5.00	26	5	31	262.34	
1	9/10/2019	9:22:47 AM	5	5.00	20	3	23	218.53	
1	9/10/2019	9:29:03 AM	6	5.00	21	5	25	251.27	
1	9/10/2019	9:35:19 AM	7	5.00	19	6	26	340.90	
1	9/10/2019	9:41:38 AM	8	5.00	22	6	27	236.22	
1	9/10/2019	9:47:56 AM	9	5.00	22	7	28	319.08	
1	9/10/2019	9:54:06 AM	10	5.00	25	5	30	204.48	
1	9/10/2019	10:00:22 AM	11	5.00	23	5	28	195.64	
1	9/10/2019	10:06:42 AM	12	5.00	25	4	29	174.56	

1	9/10/2019	10:13:02 AM	13	5.00	21	4	25	259.11
1	9/10/2019	10:19:20 AM	14	5.00	20	5	25	252.87
1	9/10/2019	10:25:39 AM	15	5.00	27	4	31	242.08
1	9/10/2019	10:31:51 AM	16	5.00	24	5	29	285.17
1	9/10/2019	10:38:09 AM	17	5.00	19	6	25	263.10
1	9/10/2019	10:44:30 AM	18	5.00	25	7	32	167.79
1	9/10/2019	10:50:50 AM	19	5.00	23	4	28	147.81
1	9/10/2019	10:57:05 AM	20	5.00	21	3	25	161.37
1	9/10/2019	11:03:24 AM	21	5.00	23	7	31	214.75
1	9/10/2019	11:09:44 AM	22	5.00	25	5	30	262.19
1	9/10/2019	11:15:55 AM	23	5.00	19	5	23	269.85
1	9/10/2019	11:21:36 AM	24	5.00	14554	35711	50265	1012.03

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 9/10/19	Time: 0832	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma

Reactor Status (Check One)
ON ☒ OFF ☐

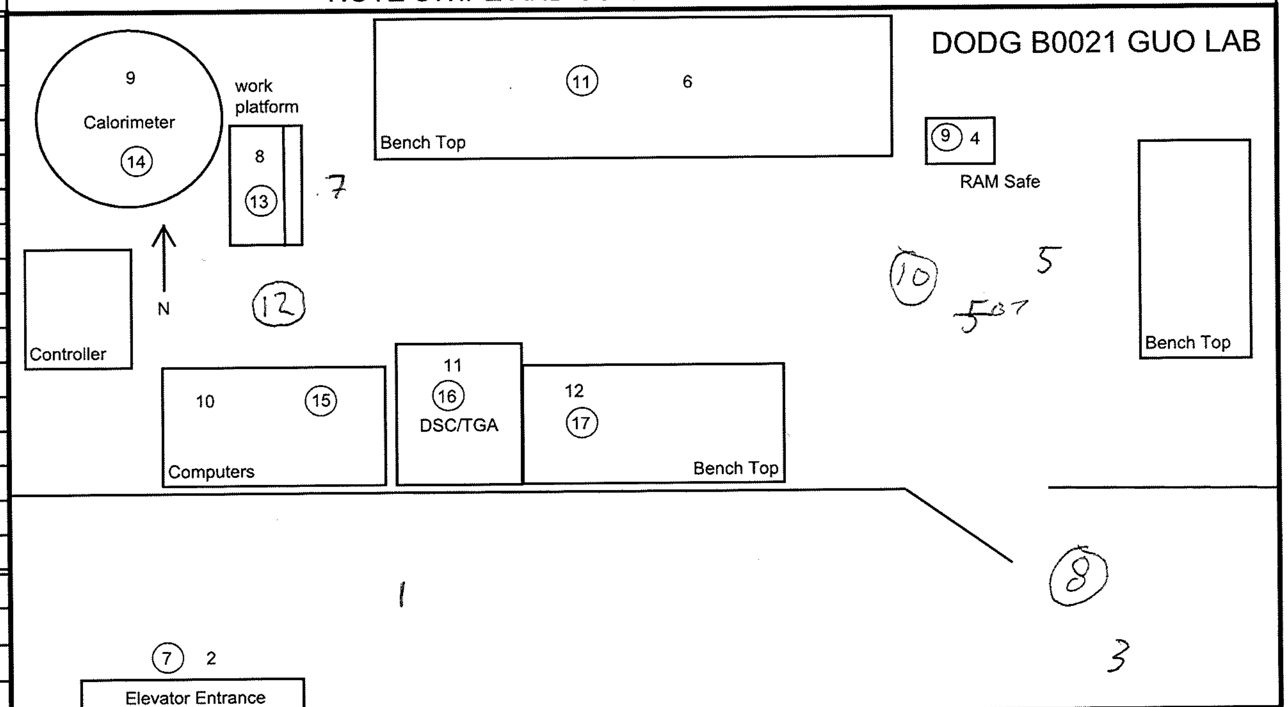
LSC Printout Date: 9/10/2019

Survey #	Location	CPM
1	Background	100
2	Elevator Entrance	80
3	South Floor	120
4	RAM Safe	900
5	East Lab Floor	110
6	North Bench Top	110
7	West Floor	140
8	Work Platform	120
9	Calorimeter	110
10	Computers	140
11	DSC/TGA	116
12	South Bench Top	130

Swipe # and Locations

Swipe #	Location	Swipe #	Location
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: JC	Date: 9/10/19	Notes
Swiped By: BT	Date: 9/10/2019	
Reviewed By: [signature] M. Heine	Date: 9/11/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

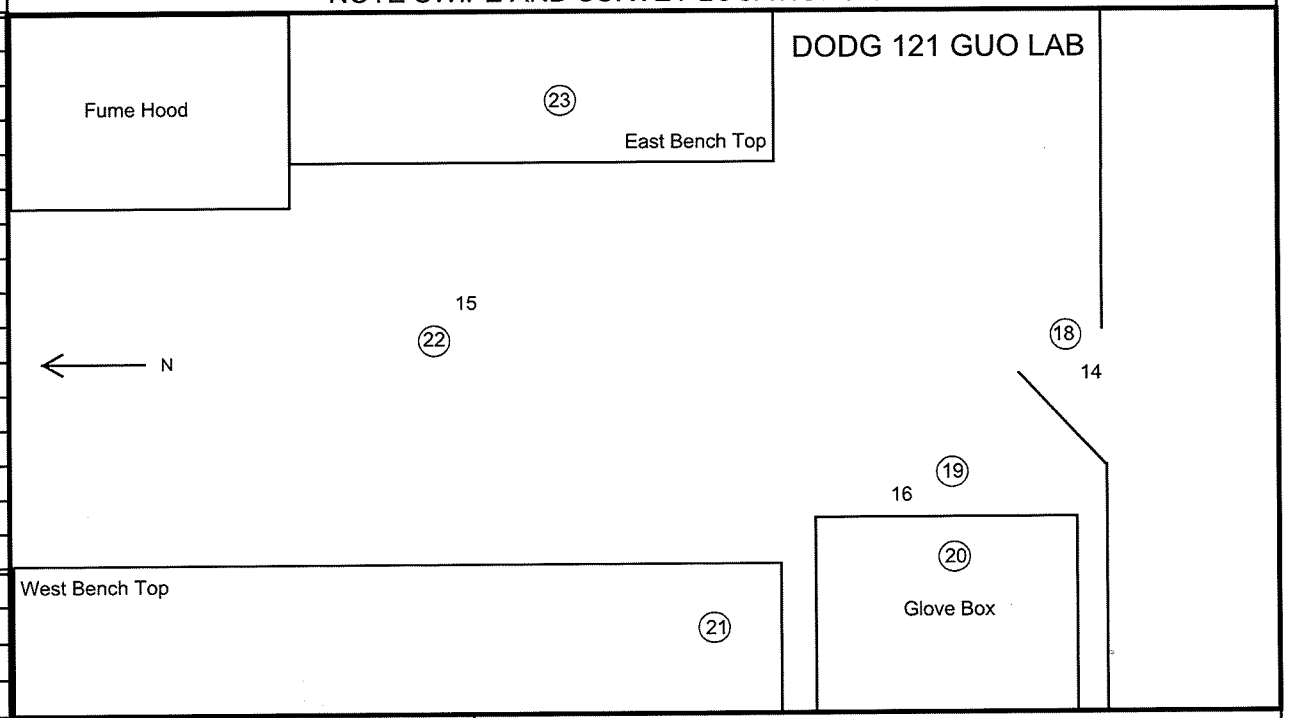
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	9/10/2019	0849	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 9/10/2019

Survey #	Location	CPM
13	Background	110
14	121 Doorway	120
15	121 Center of lab	100
16	121 Glove Box	130

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By: BT	Date: 9/10/2019	Notes
Swiped By: JC	Date: 9/10/2019	
Reviewed By: Madison Ahrens M. Heine	Date: 9/11/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	38	Dates:	9/15/2019-9/21/2019	Counted On	9/20/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	9.26E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	39	**********	*********	
2.	BACKGROUND 2	33	**********	*********	
3.	BACKGROUND 3	40	**********	*********	
4.	BACKGROUND 4	37	**********	*********	
5.	BACKGROUND 5	32	**********	*********	
6.	BACKGROUND 6	27	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	26	M	M	
9.	B021 RAM SAFE	26	M	M	
10.	B021 EAST FLOOR	28	M	M	
11.	B021 NORTH BENCH TOP	25	M	M	
12.	B021 WEST LAB FLOOR	27	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	28	M	M	
15.	B021 COMPUTERS	30	M	M	
16.	B021 DSC/TGA	24	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	30	M	M	
19.	121 GLOVE BOX- FLOOR	29	M	M	
20.	121 GLOVE BOX	28	M	M	
21.	121 WEST BENCH TOP	31	M	M	
22.	121 CENTER OF LAB	33	M	M	
23.	122 EAST BENCH TOP	30	M	M	

^{36}Cl SOURCE 09/14/1971	50155	**********	**********	
	101.13%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 9/24/19	SIGN/DATE: 9/24/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190920_1051
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190920_1051\20190920_1051.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	9/20/2019	10:53:04 AM	1	5.00	32	8	39	289.40	
1	9/20/2019	10:59:13 AM	2	5.00	27	6	33	269.04	
1	9/20/2019	11:05:30 AM	3	5.00	34	5	40	226.15	
1	9/20/2019	11:11:40 AM	4	5.00	32	5	37	183.82	
1	9/20/2019	11:17:59 AM	5	5.00	25	7	32	316.01	
1	9/20/2019	11:24:16 AM	6	5.00	23	4	27	194.61	
1	9/20/2019	11:30:35 AM	7	5.00	22	5	27	219.47	
1	9/20/2019	11:36:51 AM	8	5.00	20	7	26	295.11	
1	9/20/2019	11:43:09 AM	9	5.00	21	5	26	237.48	
1	9/20/2019	11:49:23 AM	10	5.00	22	5	28	231.26	
1	9/20/2019	11:55:39 AM	11	5.00	19	6	25	238.09	
1	9/20/2019	12:01:55 PM	12	5.00	22	5	27	231.24	

1	9/20/2019	12:08:15 PM	13	5.00	22	5	27	183.03
1	9/20/2019	12:14:33 PM	14	5.00	22	6	28	231.55
1	9/20/2019	12:20:51 PM	15	5.00	23	6	30	247.82
1	9/20/2019	12:27:07 PM	16	5.00	21	3	24	182.89
1	9/20/2019	12:33:23 PM	17	5.00	20	7	27	293.45
1	9/20/2019	12:39:43 PM	18	5.00	24	7	30	232.74
1	9/20/2019	12:46:01 PM	19	5.00	24	5	29	237.84
1	9/20/2019	12:52:15 PM	20	5.00	23	5	28	236.69
1	9/20/2019	12:58:34 PM	21	5.00	25	6	31	254.50
1	9/20/2019	1:04:51 PM	22	5.00	27	6	33	201.05
1	9/20/2019	1:11:02 PM	23	5.00	25	5	30	131.81
1	9/20/2019	1:16:44 PM	24	5.00	14611	35544	50155	1008.71

LABORATORY SURVEY

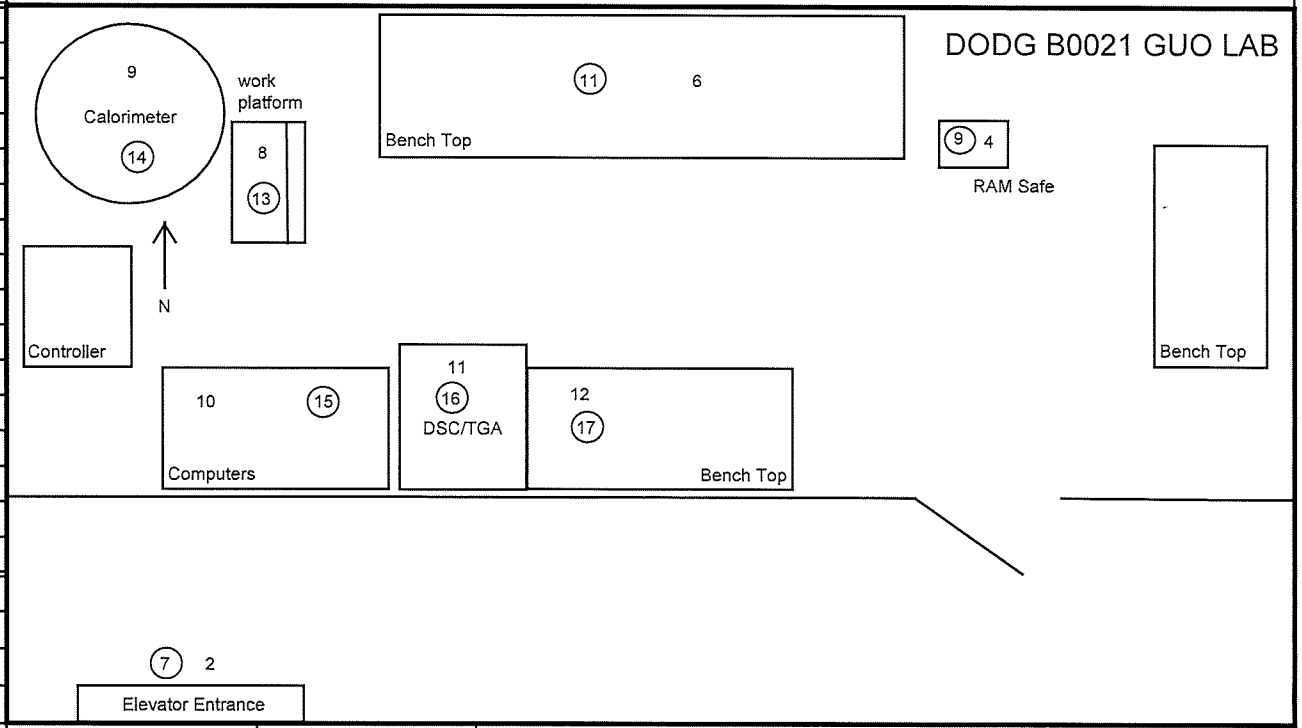
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	9/17/2019	1003	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 9/20/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	120
3	South Floor	116
4	RAM Safe	1000
5	East Lab Floor	100
6	North Bench Top	76
7	West Floor	100
8	Work Platform	116
9	Calorimeter	120
10	Computers	80
11	DSC/TGA	80
12	South Bench Top	120

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: CMH	Date: 9/17/2019
Swiped By: BT	Date: 9/20/19
Reviewed By: Mookdieu Thin M Heine	Date: 9/24/19

Notes: SWIPES TAKEN WITH REACTOR OFF ON 9/20/19 AT 1038.

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

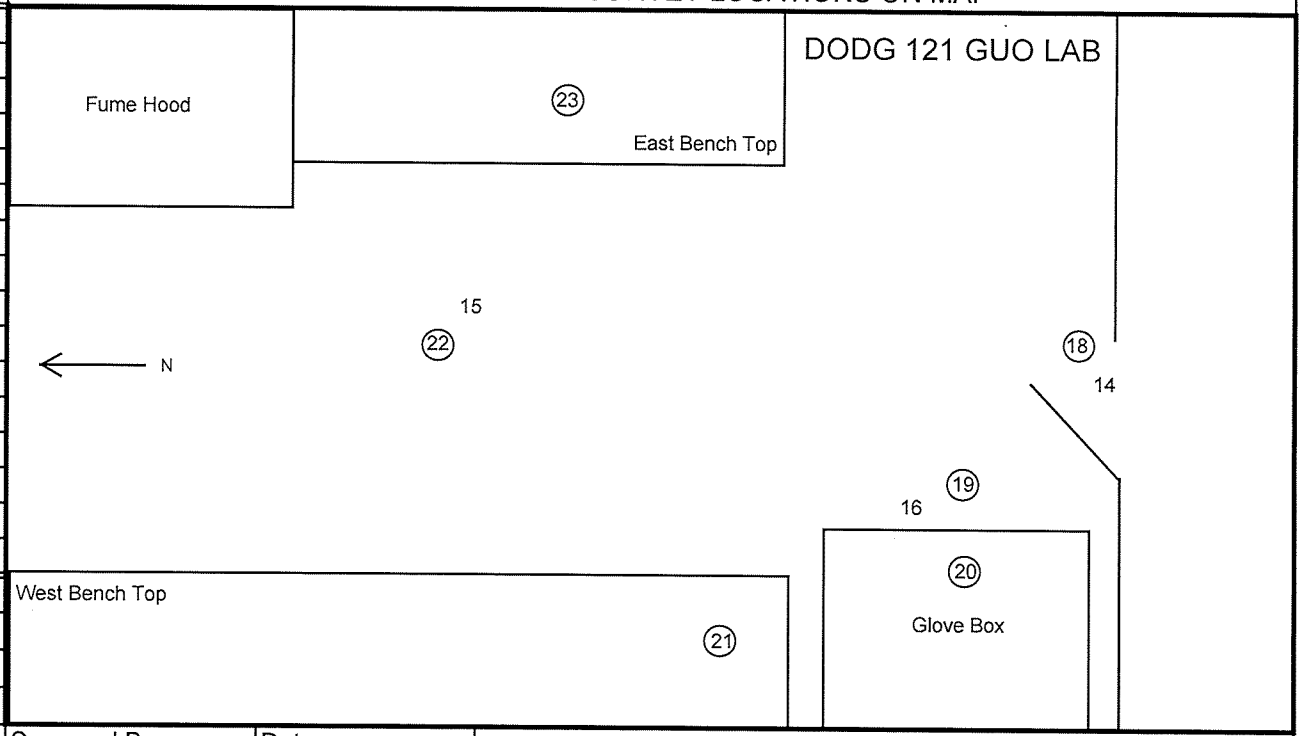
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 9/17/19	Time: ~~1003~~ BT 1018	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One): ON ☒ OFF ☐					

LSC Printout Date: 9/20/2019

Survey #	Location	CPM
13	Background	80
14	121 Doorway	140
15	121 Center of lab	100
16	121 Glove Box	120

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

Surveyed By: BT	Date: 9/17/19
Swiped By: BT	Date: 9/20/19
Reviewed By: Madison Heim M. Heim	Date: 9/24/19

Notes: SWIPES TAKEN WITH REACTOR OFF ON 9/20/19 AT 1046.

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 39	Dates: 9/22/2019-9/28/2019	Counted On 9/25/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.83E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	27	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	31	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	26	**********	*********	
7.	B021 ELEVATOR ENTRANCE	26	M	M	
8.	B021 FENCED GATE	27	M	M	
9.	B021 RAM SAFE	24	M	M	
10.	B021 EAST FLOOR	25	M	M	
11.	B021 NORTH BENCH TOP	30	M	M	
12.	B021 WEST LAB FLOOR	27	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	24	M	M	
15.	B021 COMPUTERS	26	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	26	M	M	
18.	121 DOORWAY	28	M	M	
19.	121 GLOVE BOX- FLOOR	27	M	M	
20.	121 GLOVE BOX	29	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	26	M	M	
23.	122 EAST BENCH TOP	30	M	M	
	^{36}Cl SOURCE 09/14/1971	50154	**********	**********	
		101.13%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: [signature] 9/26/19	SIGN/DATE: [signature] 9/26/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190925_1337
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20190925_1337\20190925_1337.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	9/25/2019	1:38:58 PM	1	5.00	23	4	27	174.43	
1	9/25/2019	1:45:05 PM	2	5.00	26	5	30	167.78	
1	9/25/2019	1:51:20 PM	3	5.00	22	5	27	233.93	
1	9/25/2019	1:57:28 PM	4	5.00	25	6	31	167.87	
1	9/25/2019	2:03:42 PM	5	5.00	27	3	30	197.21	
1	9/25/2019	2:09:58 PM	6	5.00	21	5	26	212.18	
1	9/25/2019	2:16:17 PM	7	5.00	21	5	26	158.08	
1	9/25/2019	2:22:31 PM	8	5.00	22	5	27	260.51	
1	9/25/2019	2:28:48 PM	9	5.00	20	4	24	189.27	
1	9/25/2019	2:35:01 PM	10	5.00	20	5	25	211.84	
1	9/25/2019	2:41:17 PM	11	5.00	24	6	30	210.77	
1	9/25/2019	2:47:32 PM	12	5.00	23	3	27	141.09	

1	9/25/2019	2:53:51 PM	13	5.00	22	6	28	190.94
1	9/25/2019	3:00:07 PM	14	5.00	20	3	24	180.33
1	9/25/2019	3:06:25 PM	15	5.00	21	5	26	224.05
1	9/25/2019	3:12:39 PM	16	5.00	21	5	27	221.55
1	9/25/2019	3:18:55 PM	17	5.00	21	5	26	184.37
1	9/25/2019	3:25:14 PM	18	5.00	24	4	28	171.88
1	9/25/2019	3:31:30 PM	19	5.00	22	4	27	277.23
1	9/25/2019	3:37:44 PM	20	5.00	24	5	29	209.44
1	9/25/2019	3:44:00 PM	21	5.00	23	6	29	260.95
1	9/25/2019	3:50:14 PM	22	5.00	20	6	26	269.12
1	9/25/2019	3:56:24 PM	23	5.00	24	6	30	106.03
1	9/25/2019	4:02:10 PM	24	5.00	14484	35670	50154	1011.96

LABORATORY SURVEY

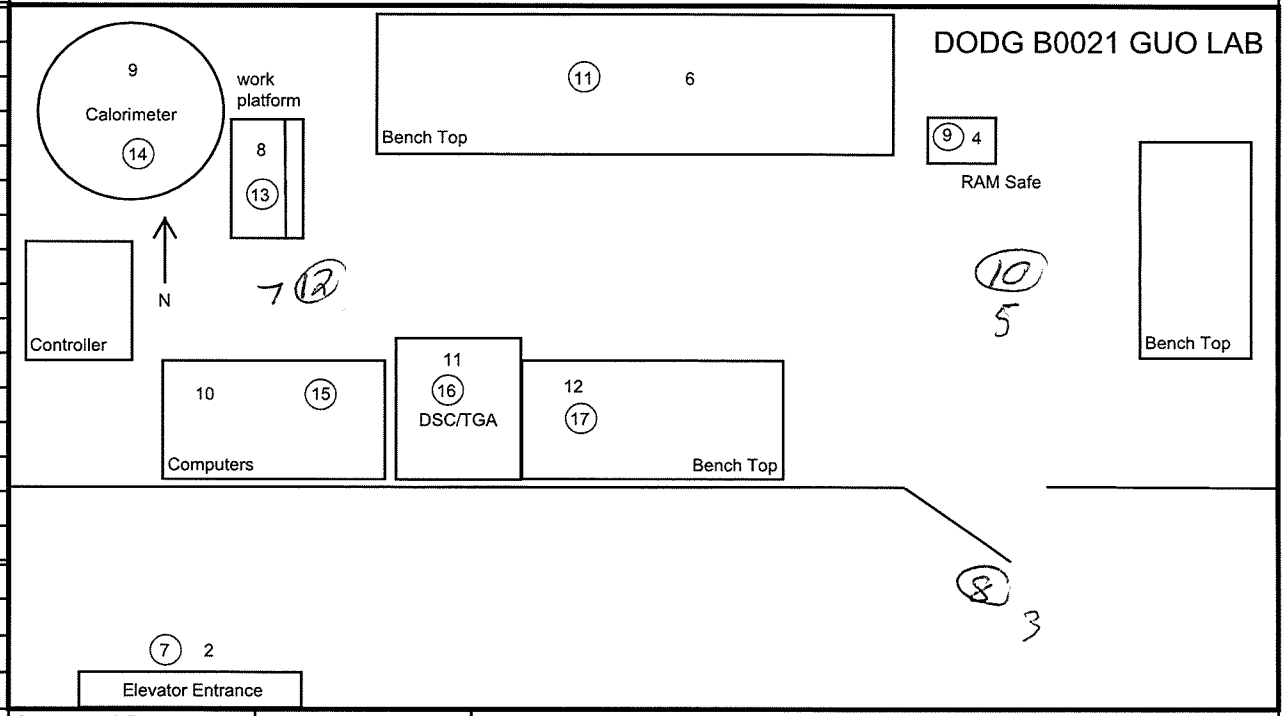
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	9/24/19	0938	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☑ OFF ☐					

LSC Printout Date: 9/25/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	100
3	South Floor	80
4	RAM Safe	1300
5	East Lab Floor	80
6	North Bench Top	1100
7	West Floor	80
8	Work Platform	100
9	Calorimeter	80
10	Computers	80
11	DSC/TGA	110
12	South Bench Top	140

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: DT	Date: 9/24/19	Notes: RADIOACTIVE SAMPLE ON NORTH BENCH TOP IN DESIGNATED AREA. REST OF BENCH TOP AT BACKGROUND.
Swiped By: AG	Date: 9/24/19	
Reviewed By: Madhuri Rai	Date: 9/26/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

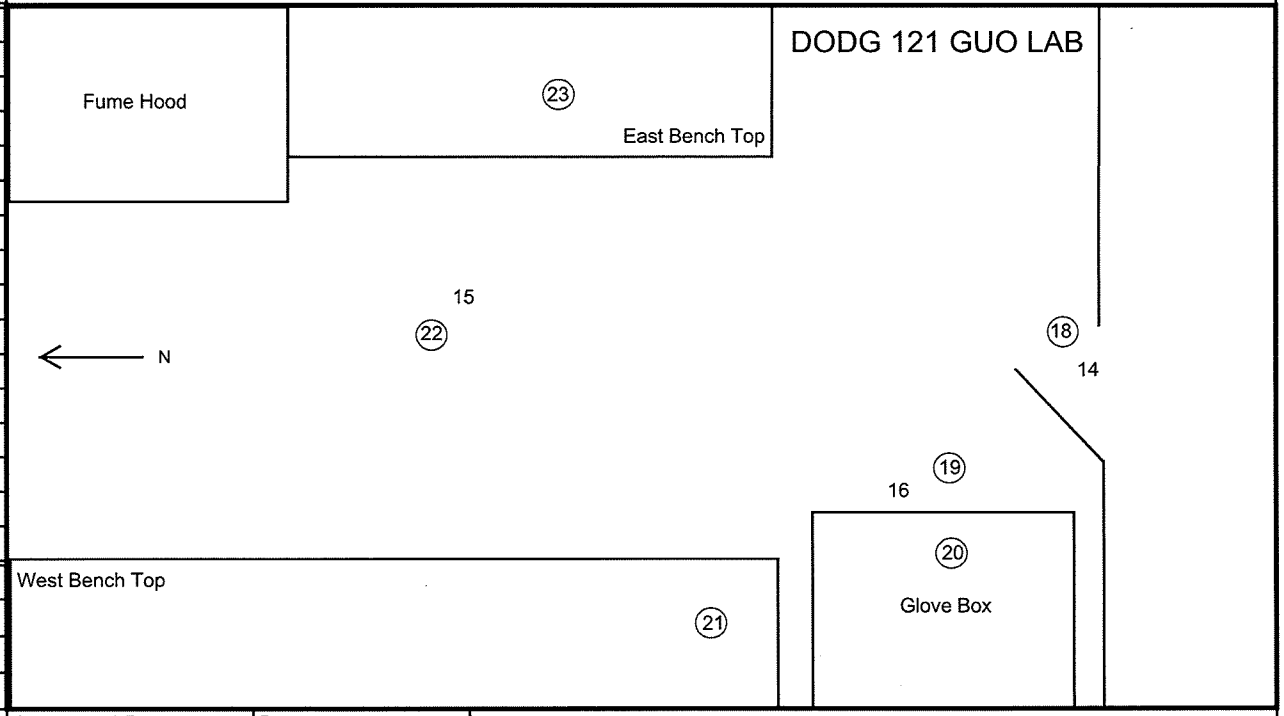
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	9/24/19	0946	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 9/25/2019

Survey #	Location	CPM
13	Background	≤100
14	121 Doorway	≤100
15	121 Center of lab	≤100
16	121 Glove Box	1100

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
AG	9/24/19	
Swiped By:	**Date:**	
BT	9/24/19	
Reviewed By:	**Date:**	
Moddisen Heine	9/26/19	

M. Heine

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	40	Dates:	9/29/2019-10/05/2019	Counted On	10/2/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	9.14E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	37	**********	*********	
2.	BACKGROUND 2	34	**********	*********	
3.	BACKGROUND 3	29	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	36	**********	*********	
6.	BACKGROUND 6	31	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	45	1.70E-05	1.70E-07	
9.	B021 RAM SAFE	31	M	M	
10.	B021 EAST FLOOR	25	M	M	
11.	B021 NORTH BENCH TOP	30	M	M	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	23	M	M	
14.	B021 CALORIMETER	27	M	M	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	38	M	M	
17.	B021 SOUTH BENCH TOP	32	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	30	M	M	
20.	121 GLOVE BOX	22	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	31	M	M	

^{36}Cl SOURCE 09/14/1971	50026	**********	**********	
	100.87%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 10/3/2019	SIGN/DATE: 10/3/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191002_1659
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191002_1659\20191002_1659.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	10/2/2019	5:00:40 PM	1	5.00	33	5	37	232.92	
1	10/2/2019	5:06:50 PM	2	5.00	27	7	34	252.81	
1	10/2/2019	5:13:08 PM	3	5.00	24	5	29	285.50	
1	10/2/2019	5:19:19 PM	4	5.00	23	7	30	377.48	
1	10/2/2019	5:25:35 PM	5	5.00	30	6	36	275.60	
1	10/2/2019	5:31:52 PM	6	5.00	23	8	31	230.38	
1	10/2/2019	5:38:11 PM	7	5.00	23	5	28	237.79	
1	10/2/2019	5:44:26 PM	8	5.00	30	15	45	354.58	
1	10/2/2019	5:50:45 PM	9	5.00	25	6	31	269.77	
1	10/2/2019	5:57:01 PM	10	5.00	21	4	25	241.26	
1	10/2/2019	6:03:17 PM	11	5.00	23	7	30	372.87	
1	10/2/2019	6:09:33 PM	12	5.00	24	4	28	153.24	

1	10/2/2019	6:15:53 PM	13	5.00	18	5	23	272.22
1	10/2/2019	6:22:11 PM	14	5.00	23	5	27	284.87
1	10/2/2019	6:28:29 PM	15	5.00	24	6	31	230.49
1	10/2/2019	6:34:43 PM	16	5.00	28	11	38	330.65
1	10/2/2019	6:41:01 PM	17	5.00	27	5	32	256.55
1	10/2/2019	6:47:19 PM	18	5.00	25	4	29	237.57
1	10/2/2019	6:53:39 PM	19	5.00	24	5	30	221.40
1	10/2/2019	6:59:54 PM	20	5.00	17	5	22	321.67
1	10/2/2019	7:06:13 PM	21	5.00	25	4	29	186.36
1	10/2/2019	7:12:30 PM	22	5.00	24	6	30	242.54
1	10/2/2019	7:18:48 PM	23	5.00	28	3	31	110.58
1	10/2/2019	7:24:28 PM	24	5.00	14458	35568	50026	1020.88

LABORATORY SURVEY

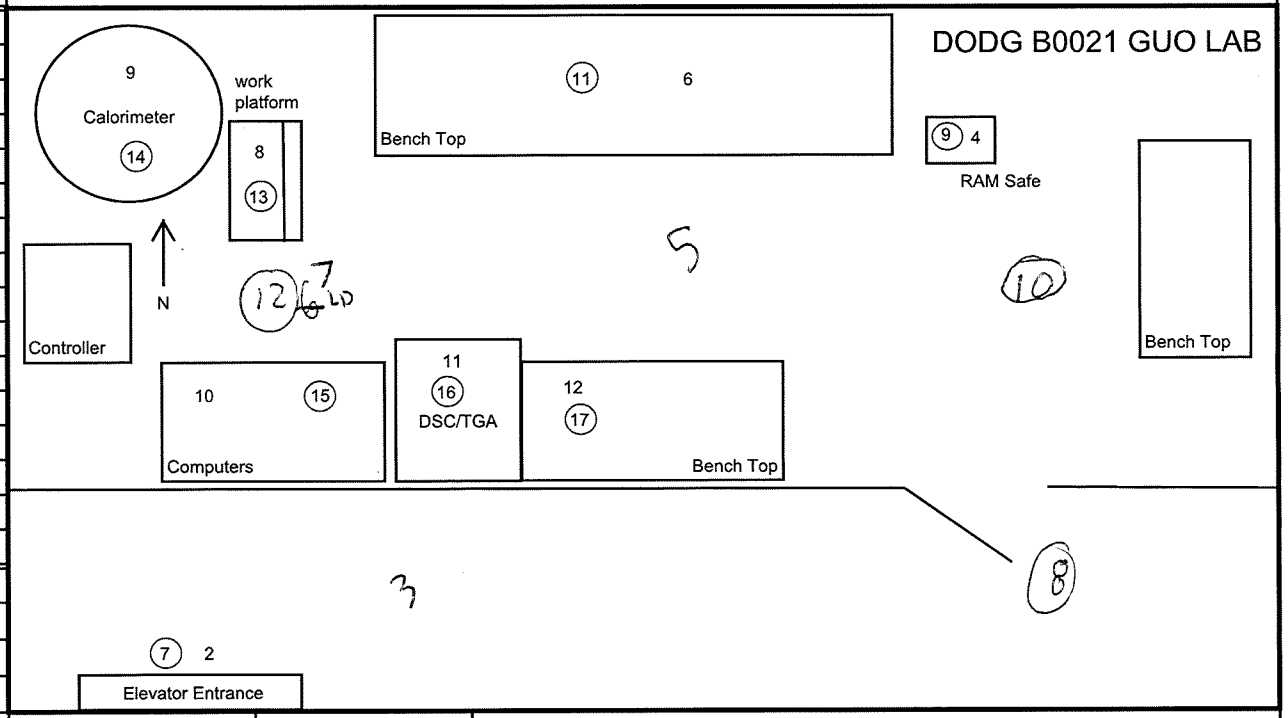
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	10/2/2019	1632	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10/2/2019

Survey #	Location	CPM
1	Background	<100
2	Elevator Entrance	<100
3	South Floor	120
4	RAM Safe	900
5	East Lab Floor	<100
6	North Bench Top	<100
7	West Floor	<100
8	Work Platform	110
9	Calorimeter	<100
10	Computers	<100
11	DSC/TGA	~~100~~ 200
12	South Bench Top	<100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: LD	Date: 10/2/2019	Notes
Swiped By: BT	Date: 10/2/2019	
Reviewed By: Madeline Heine M. Heine	Date: 10/3/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

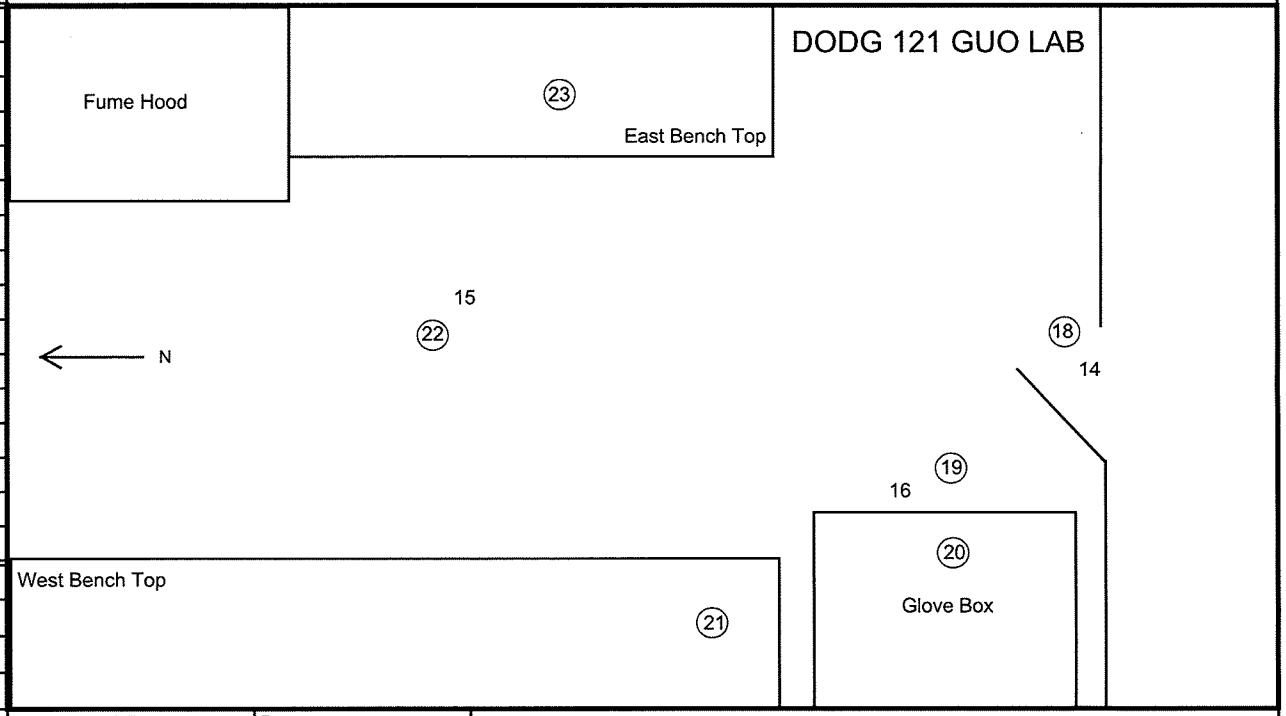
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	10/02/19	1650	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10 / 2 / 2019

Survey #	Location	CPM
13	Background	<100
14	121 Doorway	<100
15	121 Center of lab	<100
16	121 Glove Box	140

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
LD	10/2/19	
Swiped By:	Date:	
JC	10/2/19	
Reviewed By: Madison Heire M. Heire	Date: 10/3/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	41	Dates:	10/06/2019-10/12/2019	Counted On	10/8/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.85E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	29	**********	*********	
2.	BACKGROUND 2	30	**********	*********	
3.	BACKGROUND 3	30	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	33	M	M	
9.	B021 RAM SAFE	23	M	M	
10.	B021 EAST FLOOR	28	M	M	
11.	B021 NORTH BENCH TOP	24	M	M	
12.	B021 WEST LAB FLOOR	25	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	27	M	M	
15.	B021 COMPUTERS	30	M	M	
16.	B021 DSC/TGA	28	M	M	
17.	B021 SOUTH BENCH TOP	26	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	30	M	M	
20.	121 GLOVE BOX	30	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	30	M	M	
23.	122 EAST BENCH TOP	30	M	M	
	^{36}Cl SOURCE 09/14/1971	50233	**********	*********	
		101.28%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 10/9/19	SIGN/DATE: 10/10/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191008_1409
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191008_1409\20191008_1409.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	10/8/2019	2:10:28 PM	1	5.00	23	6	29	358.50	
1	10/8/2019	2:16:38 PM	2	5.00	26	4	30	212.69	
1	10/8/2019	2:22:55 PM	3	5.00	24	6	30	327.61	
1	10/8/2019	2:29:03 PM	4	5.00	21	5	26	317.71	
1	10/8/2019	2:35:19 PM	5	5.00	22	4	26	236.87	
1	10/8/2019	2:41:36 PM	6	5.00	28	4	32	180.74	
1	10/8/2019	2:47:55 PM	7	5.00	22	6	27	209.34	
1	10/8/2019	3:16:31 PM	8	5.00	27	6	33	201.46	
1	10/8/2019	3:22:50 PM	9	5.00	18	6	23	263.20	
1	10/8/2019	3:29:07 PM	10	5.00	24	4	28	262.39	
1	10/8/2019	3:35:19 PM	11	5.00	18	5	24	299.45	
1	10/8/2019	3:41:34 PM	12	5.00	20	4	25	249.27	

1	10/8/2019	3:47:50 PM	13	5.00	22	6	28	310.23
1	10/8/2019	3:54:06 PM	14	5.00	22	4	27	248.26
1	10/8/2019	4:00:14 PM	15	5.00	24	6	30	307.66
1	10/8/2019	4:06:28 PM	16	5.00	23	6	28	266.63
1	10/8/2019	4:12:43 PM	17	5.00	21	4	26	200.90
1	10/8/2019	4:19:00 PM	18	5.00	22	7	29	263.96
1	10/8/2019	4:25:19 PM	19	5.00	25	5	30	222.93
1	10/8/2019	4:31:36 PM	20	5.00	24	6	30	236.99
1	10/8/2019	4:37:54 PM	21	5.00	24	5	29	234.38
1	10/8/2019	4:44:08 PM	22	5.00	24	5	30	194.58
1	10/8/2019	4:50:31 PM	23	5.00	25	5	30	173.45
1	10/8/2019	4:56:11 PM	24	5.00	14609	35624	50233	1012.76

LABORATORY SURVEY

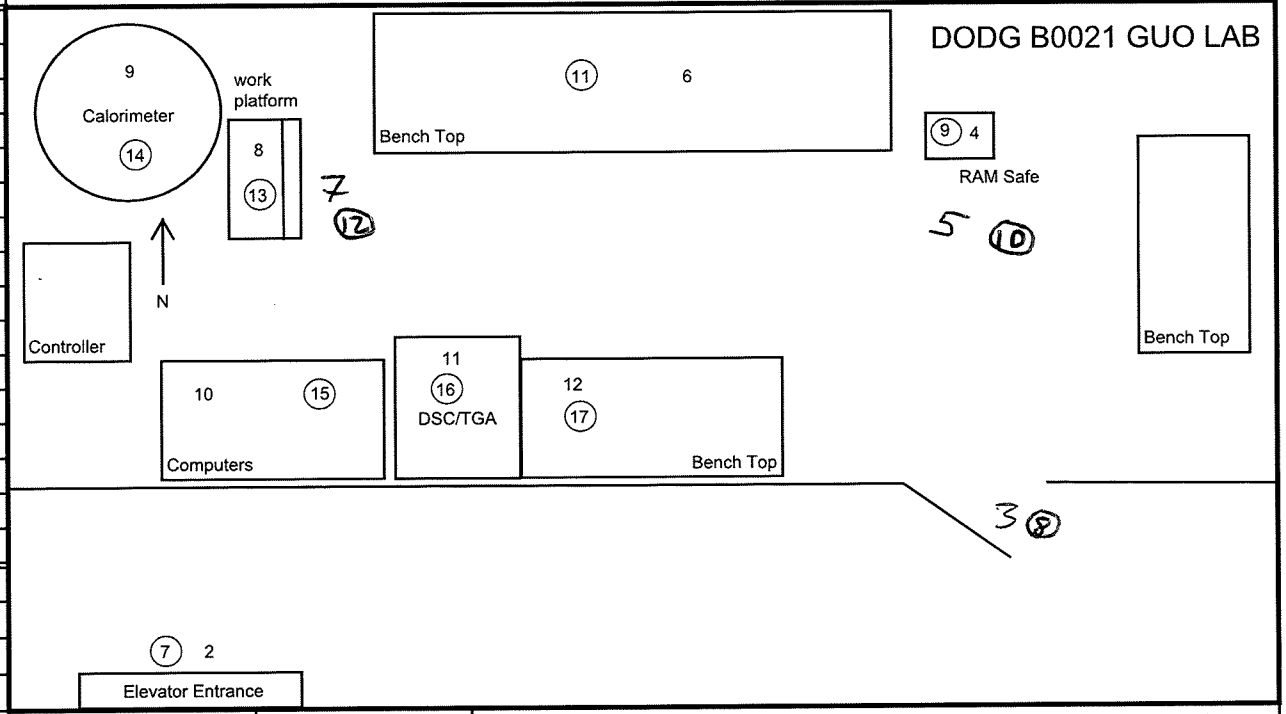
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	10/8/19	1096	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 10/8/2019

Survey #	Location	CPM
1	Background	≤100
2	Elevator Entrance	≤100
3	South Floor	≤100
4	RAM Safe	1200
5	East Lab Floor	≤100
6	North Bench Top	1100
7	West Floor	≤100
8	Work Platform	≤100
9	Calorimeter	≤100
10	Computers	≤100
11	DSC/TGA	≤100
12	South Bench Top	≤100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: AG	Date: 10/8/19
Swiped By: JS	Date: 10/8/19
Reviewed By: Madison Heine m. Heine	Date: 10/10/19

Notes: Survey #6 has high CPM due to radioactive samples on bench top

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

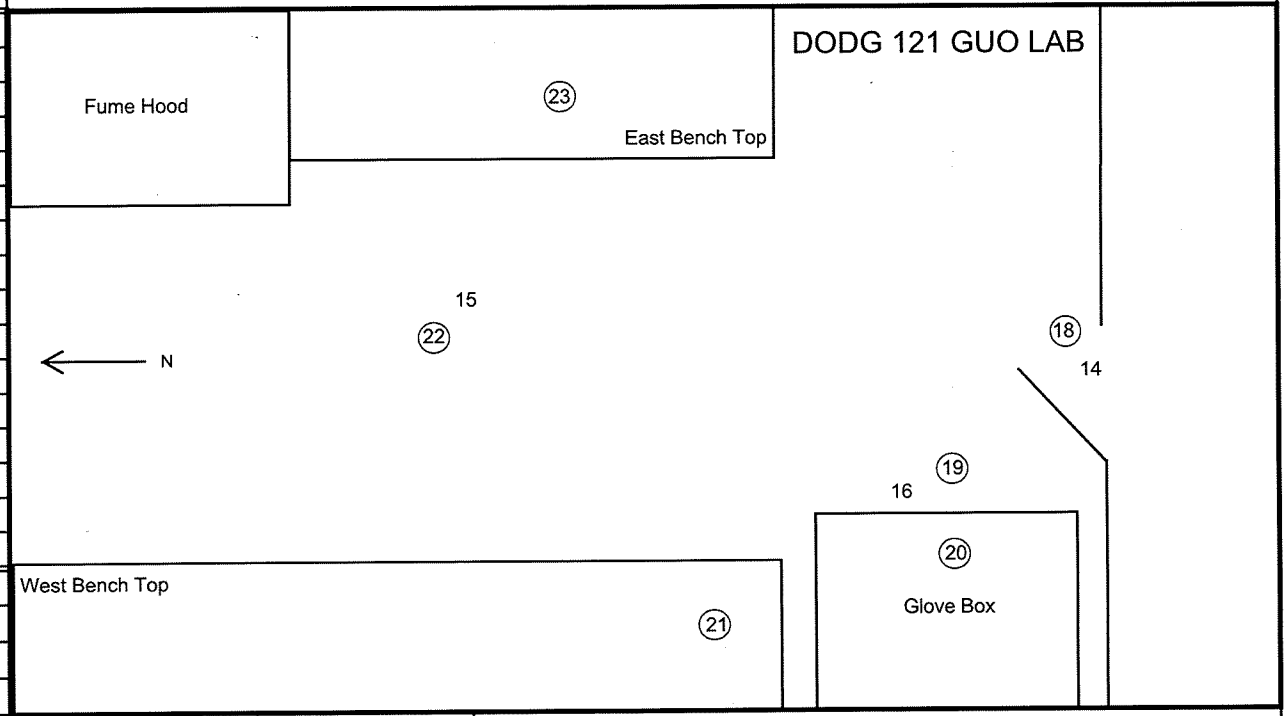
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	10/8/19	1100	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☑					

LSC Printout Date: 10/8/2019

Survey #	Location	CPM
13	Background	≤ 100
14	121 Doorway	≤ 100
15	121 Center of lab	≤ 100
16	121 Glove Box	≤ 100

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
JS	10/8/19	
Swiped By: AG/JS	Date: 10/8/19	
Reviewed By: Maddy Heine m.Heine	Date: 10/10/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 42	Dates: 10/13/2019-10/19/2019	Counted On 10/15/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.11E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	30	**********	*********	
2.	BACKGROUND 2	38	**********	*********	
3.	BACKGROUND 3	33	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	34	**********	*********	
6.	BACKGROUND 6	32	**********	*********	
7.	B021 ELEVATOR ENTRANCE	45	1.77E-05	1.77E-07	
8.	B021 FENCED GATE	53	2.89E-05	2.89E-07	
9.	B021 RAM SAFE	37	M	M	
10.	B021 EAST FLOOR	50	2.47E-05	2.47E-07	
11.	B021 NORTH BENCH TOP	31	M	M	
12.	B021 WEST LAB FLOOR	56	3.31E-05	3.31E-07	
13.	B021 WORK PLATFORM	37	M	M	
14.	B021 CALORIMETER	35	M	M	
15.	B021 COMPUTERS	36	M	M	
16.	B021 DSC/TGA	31	M	M	
17.	B021 SOUTH BENCH TOP	35	M	M	
18.	121 DOORWAY	52	2.75E-05	2.75E-07	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	32	M	M	
21.	121 WEST BENCH TOP	30	M	M	
22.	121 CENTER OF LAB	40	1.07E-05	1.07E-07	
23.	122 EAST BENCH TOP	33	M	M	

^{36}Cl SOURCE 09/14/1971	50131	**********	**********	
	101.08%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: Brent J / 10/16/2019	SIGN/DATE: Madelaine Heine 10/23/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191015_1341
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191015_1341\20191015_1341.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	10/15/2019	1:43:04 PM	1	5.00	25	5	30	226.48	
1	10/15/2019	1:49:14 PM	2	5.00	33	6	38	186.61	
1	10/15/2019	1:55:34 PM	3	5.00	26	7	33	301.87	
1	10/15/2019	2:01:45 PM	4	5.00	22	5	27	257.77	
1	10/15/2019	2:08:01 PM	5	5.00	28	6	34	213.57	
1	10/15/2019	2:14:17 PM	6	5.00	26	6	32	253.76	
1	10/15/2019	2:20:40 PM	7	5.00	34	11	45	191.43	
1	10/15/2019	2:26:56 PM	8	5.00	43	10	53	111.92	
1	10/15/2019	2:33:22 PM	9	5.00	27	10	37	245.11	
1	10/15/2019	2:39:42 PM	10	5.00	36	15	50	210.59	
1	10/15/2019	2:45:58 PM	11	5.00	24	7	31	294.09	
1	10/15/2019	2:52:18 PM	12	5.00	46	9	56	120.21	

1	10/15/2019	2:58:36 PM	13	5.00	29	8	37	186.55
1	10/15/2019	3:04:55 PM	14	5.00	26	9	35	307.60
1	10/15/2019	3:11:06 PM	15	5.00	29	7	36	176.60
1	10/15/2019	3:17:21 PM	16	5.00	24	7	31	307.26
1	10/15/2019	3:23:35 PM	17	5.00	27	8	35	287.06
1	10/15/2019	3:29:54 PM	18	5.00	36	15	52	251.32
1	10/15/2019	3:36:14 PM	19	5.00	24	5	28	165.85
1	10/15/2019	3:42:35 PM	20	5.00	26	6	32	210.26
1	10/15/2019	3:48:57 PM	21	5.00	23	7	30	210.27
1	10/15/2019	3:55:12 PM	22	5.00	32	8	40	117.11
1	10/15/2019	4:01:36 PM	23	5.00	27	6	33	190.54
1	10/15/2019	4:07:15 PM	24	5.00	14481	35650	50131	1014.49

LABORATORY SURVEY

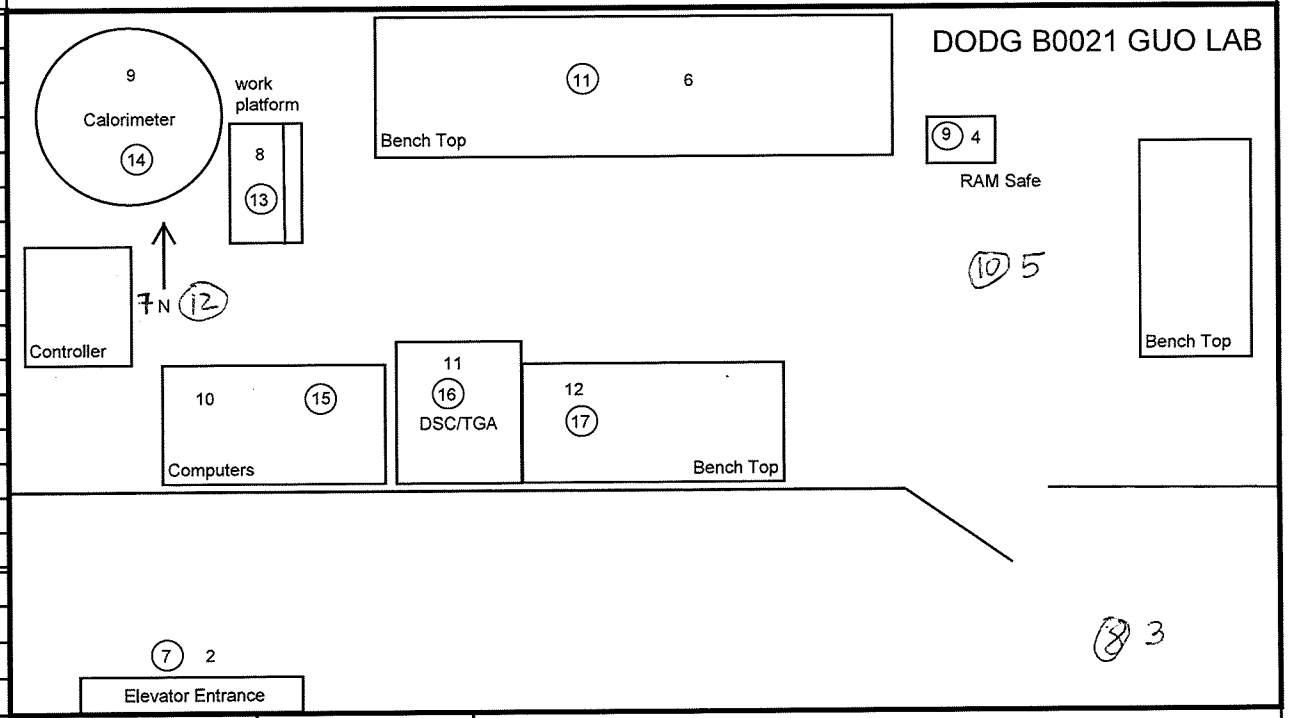
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	10/15/19	1322	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON [X] OFF [ ]					

LSC Printout Date: 10/15/19

Survey #	Location	CPM
1	Background	60
2	Elevator Entrance	50
3	South Floor	100
4	RAM Safe	210
5	East Lab Floor	100
6	North Bench Top	120
7	West Floor	120
8	Work Platform	80
9	Calorimeter	70
10	Computers	100
11	DSC/TGA	70
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: AH	Date: 10/15/2019	Notes
Swiped By: ~~AH~~ ~~AH~~ CS	Date: 10/15/2019	
Reviewed By: MH ~~10/23/2019~~ Modalisa Heine m. Heine	Date: 10/23/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

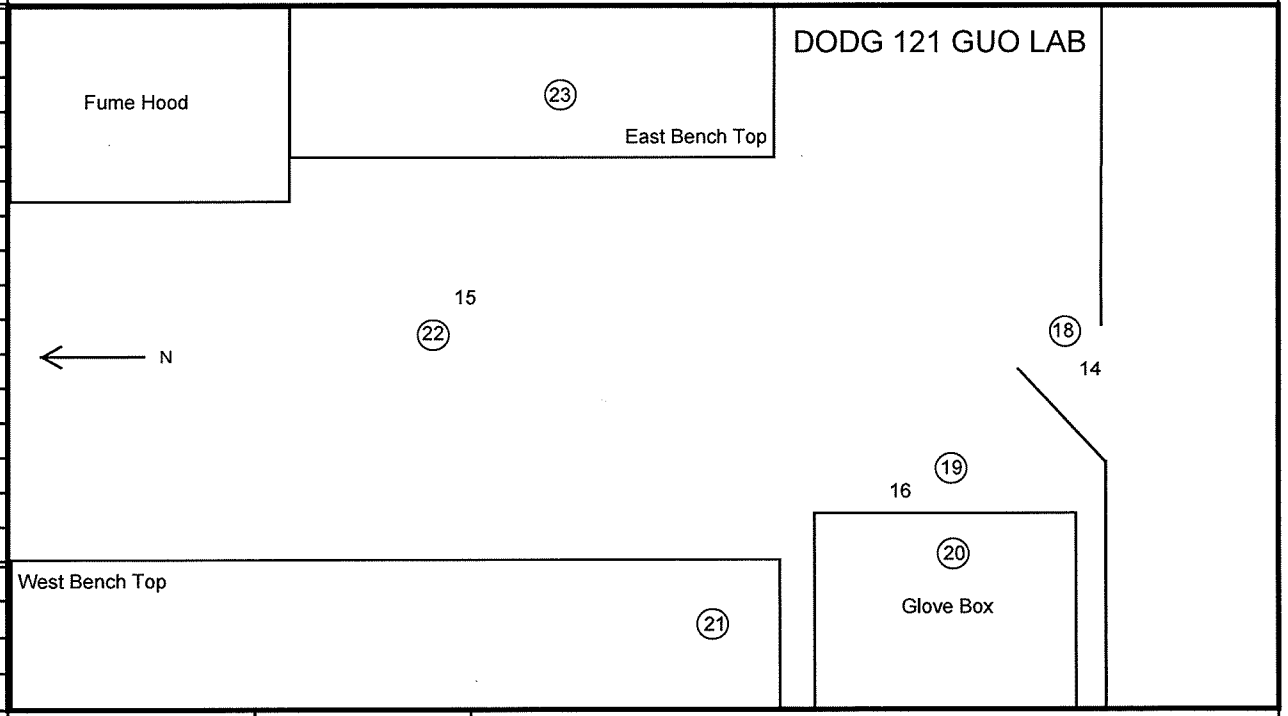
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	10/15/19	1335	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 10/15/19

Survey #	Location	CPM
13	Background	120
14	121 Doorway	100
15	121 Center of lab	100
16	121 Glove Box	180

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

Surveyed By: AH	Date: 10/15/2019	Notes
Swiped By: CS	Date: 10/15/2019	
Reviewed By: Maddison Ihrie M. Heine	Date: 10/23/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 43	Dates: 10/20/2019-10/26/2019	Counted On 10/23/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	8.93E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	29	**********	*********	
2.	BACKGROUND 2	37	**********	*********	
3.	BACKGROUND 3	35	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	26	**********	*********	
7.	B021 ELEVATOR ENTRANCE	32	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 RAM SAFE	28	M	M	
10.	B021 EAST FLOOR	30	M	M	
11.	B021 NORTH BENCH TOP	29	M	M	
12.	B021 WEST LAB FLOOR	31	M	M	
13.	B021 WORK PLATFORM	33	M	M	
14.	B021 CALORIMETER	27	M	M	
15.	B021 COMPUTERS	26	M	M	
16.	B021 DSC/TGA	31	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	32	M	M	
20.	121 GLOVE BOX	28	M	M	
21.	121 WEST BENCH TOP	29	M	M	
22.	121 CENTER OF LAB	27	M	M	
23.	122 EAST BENCH TOP	23	M	M	

^{36}Cl SOURCE 09/14/1971	50165	**********	**********	
	101.15%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 10/23/19	SIGN/DATE: 10/23/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191023_1046
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191023_1046\20191023_1046.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	10/23/2019	10:47:22 AM	1	5.00	23	6	29	286.31	
1	10/23/2019	10:53:40 AM	2	5.00	32	5	37	189.57	
1	10/23/2019	10:59:58 AM	3	5.00	31	4	35	195.18	
1	10/23/2019	11:06:12 AM	4	5.00	23	5	27	248.32	
1	10/23/2019	11:12:32 AM	5	5.00	23	4	26	205.58	
1	10/23/2019	11:18:50 AM	6	5.00	22	4	26	267.43	
1	10/23/2019	11:25:10 AM	7	5.00	26	6	32	213.35	
1	10/23/2019	11:31:28 AM	8	5.00	25	6	31	188.95	
1	10/23/2019	11:37:46 AM	9	5.00	23	5	28	241.25	
1	10/23/2019	11:44:02 AM	10	5.00	25	5	30	190.79	
1	10/23/2019	11:50:12 AM	11	5.00	24	5	29	276.13	
1	10/23/2019	11:56:31 AM	12	5.00	25	6	31	164.56	

1	10/23/2019	12:02:48 PM	13	5.00	28	6	33	237.23
1	10/23/2019	12:09:06 PM	14	5.00	22	5	27	256.21
1	10/23/2019	12:15:16 PM	15	5.00	21	5	26	259.45
1	10/23/2019	12:21:31 PM	16	5.00	22	8	31	305.44
1	10/23/2019	12:27:45 PM	17	5.00	20	7	27	298.25
1	10/23/2019	12:34:02 PM	18	5.00	25	4	29	182.87
1	10/23/2019	12:40:21 PM	19	5.00	25	7	32	214.51
1	10/23/2019	12:46:39 PM	20	5.00	23	5	28	220.45
1	10/23/2019	12:52:55 PM	21	5.00	25	5	29	256.35
1	10/23/2019	12:59:12 PM	22	5.00	22	5	27	140.67
1	10/23/2019	1:05:28 PM	23	5.00	18	5	23	263.79
1	10/23/2019	1:11:08 PM	24	5.00	14257	35908	50165	1023.25

LABORATORY SURVEY

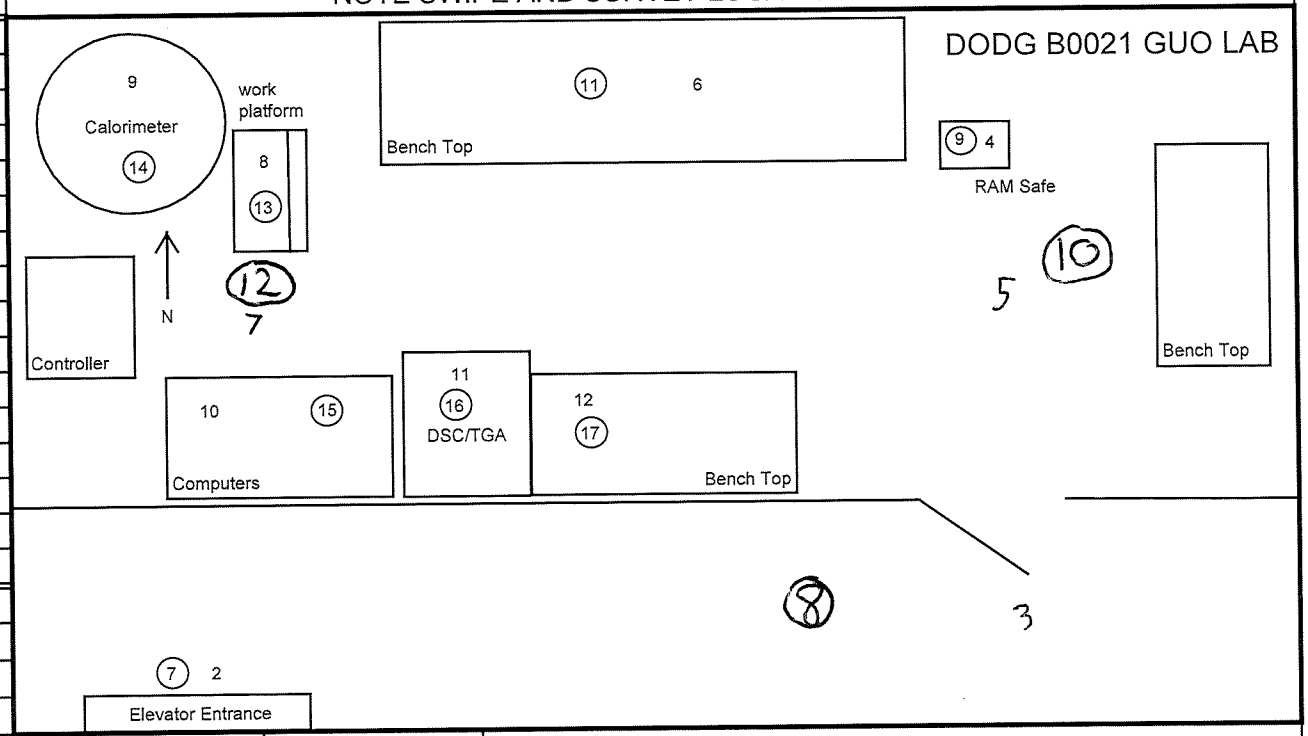
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building: Dodgen Research Facility	Room: B0021 - GUO	Lab Class: D	Survey Instrument: GM Detector Model 3	Serial No.: 58680	Radiation Detected: Gamma
Authorized User: Xiaofeng Guo	Date: 10/23/2019	Time: 1015	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10/23/2019

Survey #	Location	CPM
1	Background	60
2	Elevator Entrance	120
3	South Floor	100
4	RAM Safe	900
5	East Lab Floor	80
6	North Bench Top	100
7	West Floor	60
8	Work Platform	80
9	Calorimeter	80
10	Computers	60
11	DSC/TGA	100
12	South Bench Top	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 10/23/19	Notes
Swiped By: LL	Date: 10/23/19	
Reviewed By: Madeline Heine m.Heine	Date: 10/23/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

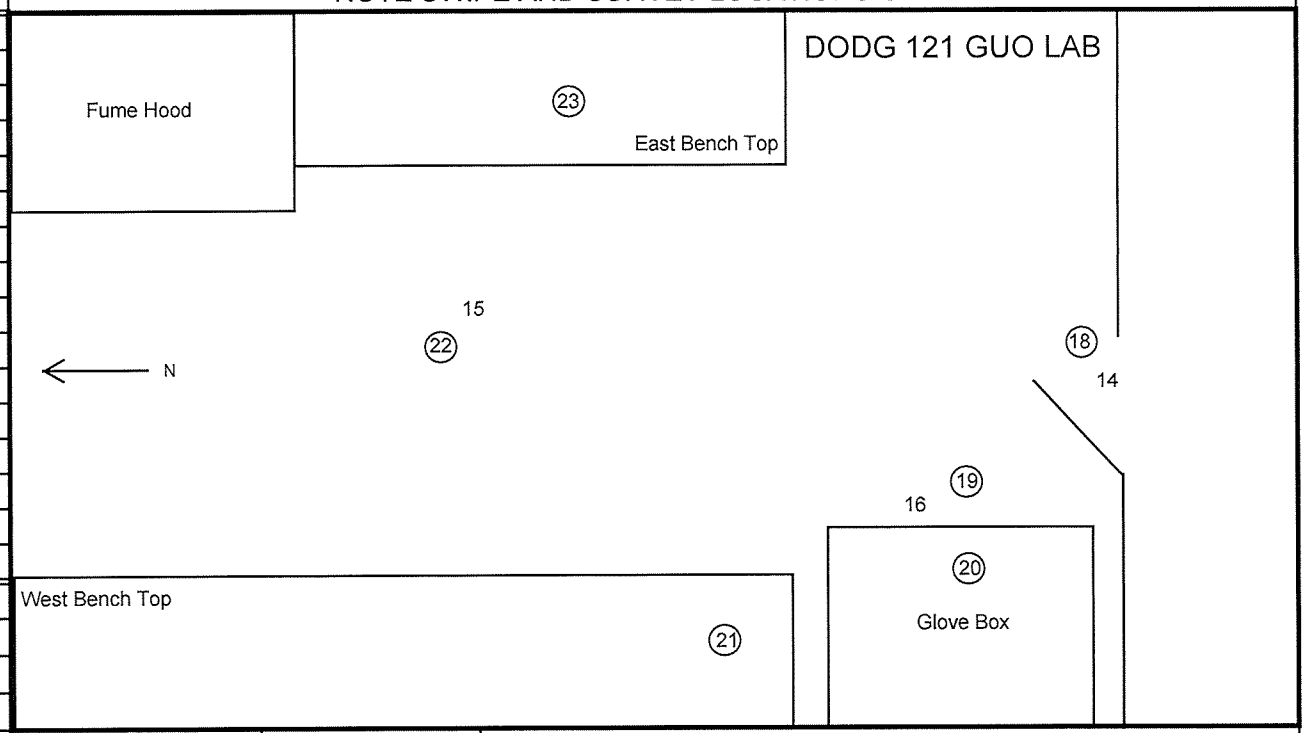
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 10/23/19	Time: 1032	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10/23/2019

Survey #	Location	CPM
13	Background	50
14	121 Doorway	60
15	121 Center of lab	60
16	121 Glove Box	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

Surveyed By: LL	Date: 10-23-19	Notes
Swiped By: PW	Date: 10-23-19	
Reviewed By: Madeleine Heine m.Heine	Date: 10/23/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	44	Dates:	10/27/2019-11/2/2019	Counted On	10/28/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	9.17E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	40	**********	*********	
2.	BACKGROUND 2	36	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	28	**********	*********	
5.	BACKGROUND 5	31	**********	*********	
6.	BACKGROUND 6	38	**********	*********	
7.	B021 ELEVATOR ENTRANCE	36	M	M	
8.	B021 FENCED GATE	34	M	M	
9.	B021 RAM SAFE	29	M	M	
10.	B021 EAST FLOOR	30	M	M	
11.	B021 NORTH BENCH TOP	27	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	28	M	M	
14.	B021 CALORIMETER	32	M	M	
15.	B021 COMPUTERS	31	M	M	
16.	B021 DSC/TGA	24	M	M	
17.	B021 SOUTH BENCH TOP	30	M	M	
18.	121 DOORWAY	27	M	M	
19.	121 GLOVE BOX- FLOOR	24	M	M	
20.	121 GLOVE BOX	30	M	M	
21.	121 WEST BENCH TOP	25	M	M	
22.	121 CENTER OF LAB	25	M	M	
23.	122 EAST BENCH TOP	31	M	M	

^{36}Cl SOURCE 09/14/1971	50112	**********	*********	
	101.04%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: A. Gomez	REVIEWED BY: M. Heine
SIGN/DATE: [signature] / 10-30-2019	SIGN/DATE: [signature] / 10/30/2019

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191028_1507
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191028_1507\20191028_1507.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	10/28/2019	3:08:34 PM	1	5.00	31	9	40	275.45	
1	10/28/2019	3:14:47 PM	2	5.00	28	7	36	261.67	
1	10/28/2019	3:21:03 PM	3	5.00	23	4	27	252.98	
1	10/28/2019	3:27:19 PM	4	5.00	21	6	28	272.78	
1	10/28/2019	3:33:38 PM	5	5.00	25	5	31	317.94	
1	10/28/2019	3:39:57 PM	6	5.00	33	6	38	218.06	
1	10/28/2019	3:46:14 PM	7	5.00	30	6	36	251.50	
1	10/28/2019	3:52:28 PM	8	5.00	28	6	34	299.06	
1	10/28/2019	3:58:44 PM	9	5.00	22	7	29	352.75	
1	10/28/2019	4:05:00 PM	10	5.00	23	7	30	337.18	
1	10/28/2019	4:11:10 PM	11	5.00	21	6	27	280.70	
1	10/28/2019	4:17:26 PM	12	5.00	22	7	29	319.11	

1	10/28/2019	4:23:50 PM	13	5.00	22	7	28	295.75
1	10/28/2019	4:30:08 PM	14	5.00	26	6	32	336.23
1	10/28/2019	4:36:25 PM	15	5.00	26	5	31	258.54
1	10/28/2019	4:42:39 PM	16	5.00	19	5	24	324.57
1	10/28/2019	4:48:55 PM	17	5.00	23	7	30	314.36
1	10/28/2019	4:55:10 PM	18	5.00	22	5	27	279.77
1	10/28/2019	5:01:25 PM	19	5.00	18	6	24	303.00
1	10/28/2019	5:07:42 PM	20	5.00	25	5	30	299.59
1	10/28/2019	5:14:00 PM	21	5.00	20	5	25	276.32
1	10/28/2019	5:20:16 PM	22	5.00	21	4	25	280.34
1	10/28/2019	5:26:33 PM	23	5.00	27	4	31	236.85
1	10/28/2019	5:32:14 PM	24	5.00	14163	35949	50112	1034.79

LABORATORY SURVEY

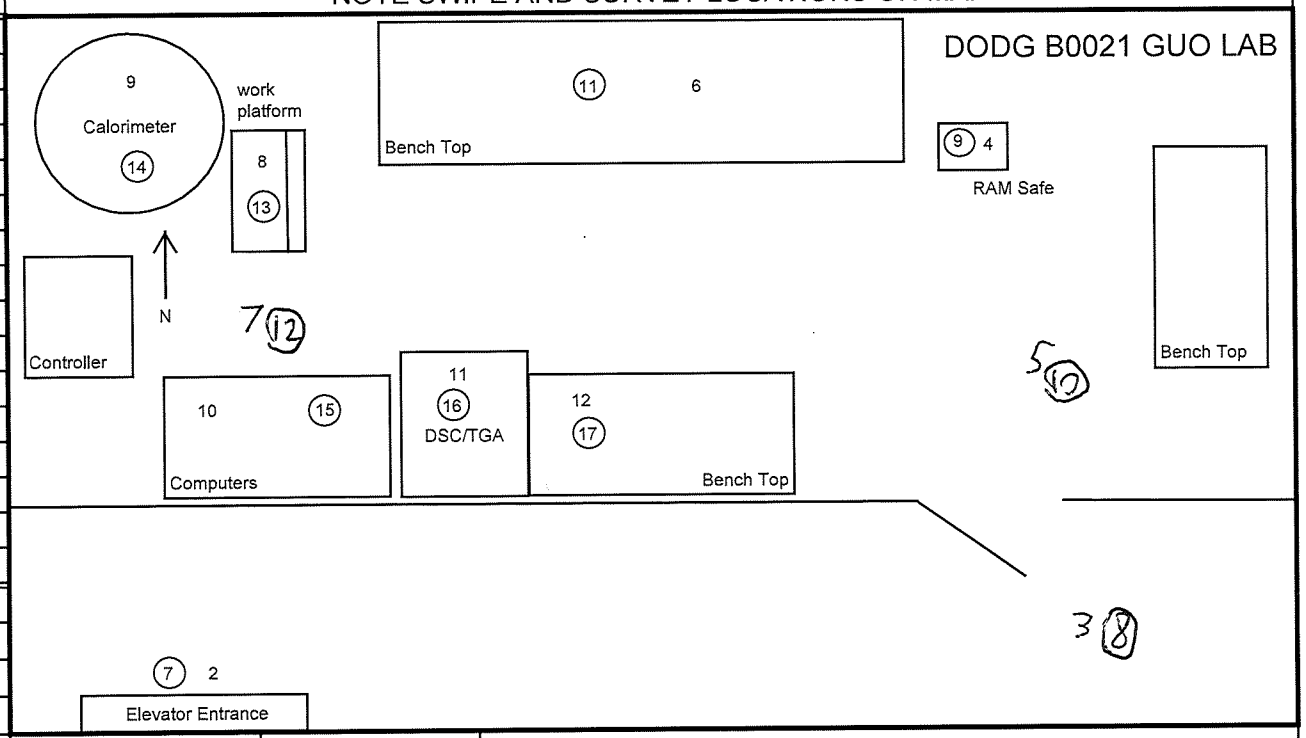
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 10/28/19	Time: 15:34	Swipe Instrument: Quantasmart	Serial No.: 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10/28/19

Survey #	Location	CPM
1	Background	30
2	Elevator Entrance	80
3	South Floor	100
4	RAM Safe	450
5	East Lab Floor	80
6	North Bench Top	120
7	West Floor	80
8	Work Platform	80
9	Calorimeter	100
10	Computers	80
11	DSC/TGA	100
12	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 10/28/19	Notes
Swiped By: TN	Date: 10/28/19	
Reviewed By: Madeleine Heine M. Heine	Date: 10/30/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

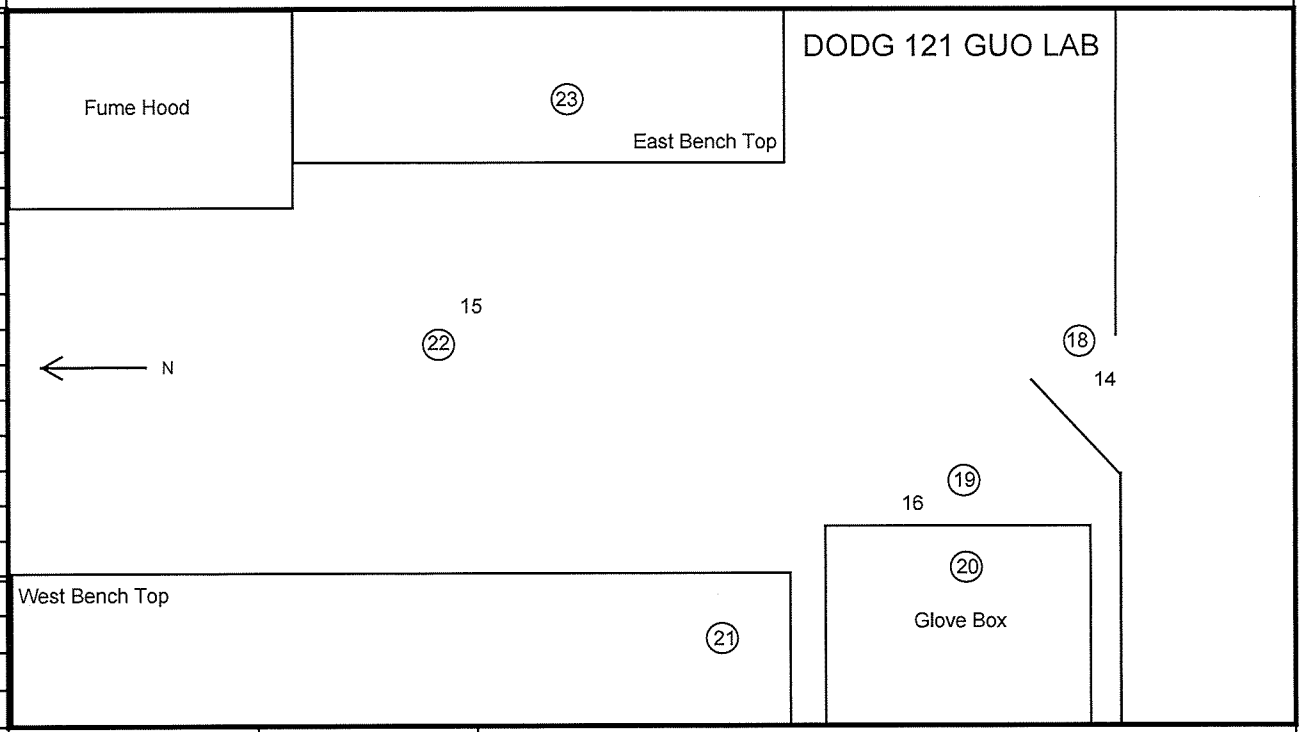
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	10/28/19	1553	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 10/28/19

Survey #	Location	CPM
13	Background	80
14	121 Doorway	80
15	121 Center of lab	140
16	121 Glove Box	100

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	10/28/19	
Swiped By:	Date:	
TN	10/28/19	
Reviewed By: Maddison Heine m.Heine	Date: 10/30/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	45	Dates:	11/3/2019-11/9/2019	Counted On	11/5/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.75E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	28	**********	*********	
2.	BACKGROUND 2	27	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	29	**********	*********	
7.	B021 ELEVATOR ENTRANCE	27	M	M	
8.	B021 FENCED GATE	25	M	M	
9.	B021 RAM SAFE	30	M	M	
10.	B021 EAST FLOOR	25	M	M	
11.	B021 NORTH BENCH TOP	30	M	M	
12.	B021 WEST LAB FLOOR	28	M	M	
13.	B021 WORK PLATFORM	29	M	M	
14.	B021 CALORIMETER	22	M	M	
15.	B021 COMPUTERS	25	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	25	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	31	M	M	
22.	121 CENTER OF LAB	32	M	M	
23.	122 EAST BENCH TOP	26	M	M	

^{36}Cl SOURCE 09/14/1971	50121	**********	**********	
	101.06%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 11/5/2019	SIGN/DATE: 11/12/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191105_1321
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191105_1321\20191105_1321.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	11/5/2019	1:22:46 PM	1	5.00	22	7	28	258.88	
1	11/5/2019	1:29:04 PM	2	5.00	21	6	27	270.55	
1	11/5/2019	1:35:23 PM	3	5.00	22	6	28	290.46	
1	11/5/2019	1:41:39 PM	4	5.00	21	6	27	304.61	
1	11/5/2019	1:47:58 PM	5	5.00	20	6	26	327.01	
1	11/5/2019	1:54:18 PM	6	5.00	25	5	29	269.17	
1	11/5/2019	2:00:36 PM	7	5.00	21	7	27	276.26	
1	11/5/2019	2:06:52 PM	8	5.00	21	4	25	253.79	
1	11/5/2019	2:13:10 PM	9	5.00	23	7	30	261.91	
1	11/5/2019	2:19:27 PM	10	5.00	20	5	25	277.33	
1	11/5/2019	2:25:36 PM	11	5.00	24	6	30	319.26	
1	11/5/2019	2:31:54 PM	12	5.00	22	6	28	234.23	

1	11/5/2019	2:38:14 PM	13	5.00	25	4	29	217.36
1	11/5/2019	2:44:32 PM	14	5.00	18	4	22	263.30
1	11/5/2019	2:50:43 PM	15	5.00	21	4	25	223.64
1	11/5/2019	2:56:53 PM	16	5.00	22	5	27	305.77
1	11/5/2019	3:03:11 PM	17	5.00	22	5	27	313.52
1	11/5/2019	3:09:29 PM	18	5.00	23	6	29	260.83
1	11/5/2019	3:15:48 PM	19	5.00	20	5	25	260.31
1	11/5/2019	3:22:07 PM	20	5.00	19	5	25	346.86
1	11/5/2019	3:28:27 PM	21	5.00	24	7	31	297.44
1	11/5/2019	3:34:39 PM	22	5.00	27	5	32	190.22
1	11/5/2019	3:40:56 PM	23	5.00	22	4	26	173.29
1	11/5/2019	3:46:37 PM	24	5.00	14605	35516	50121	1014.84

LABORATORY SURVEY

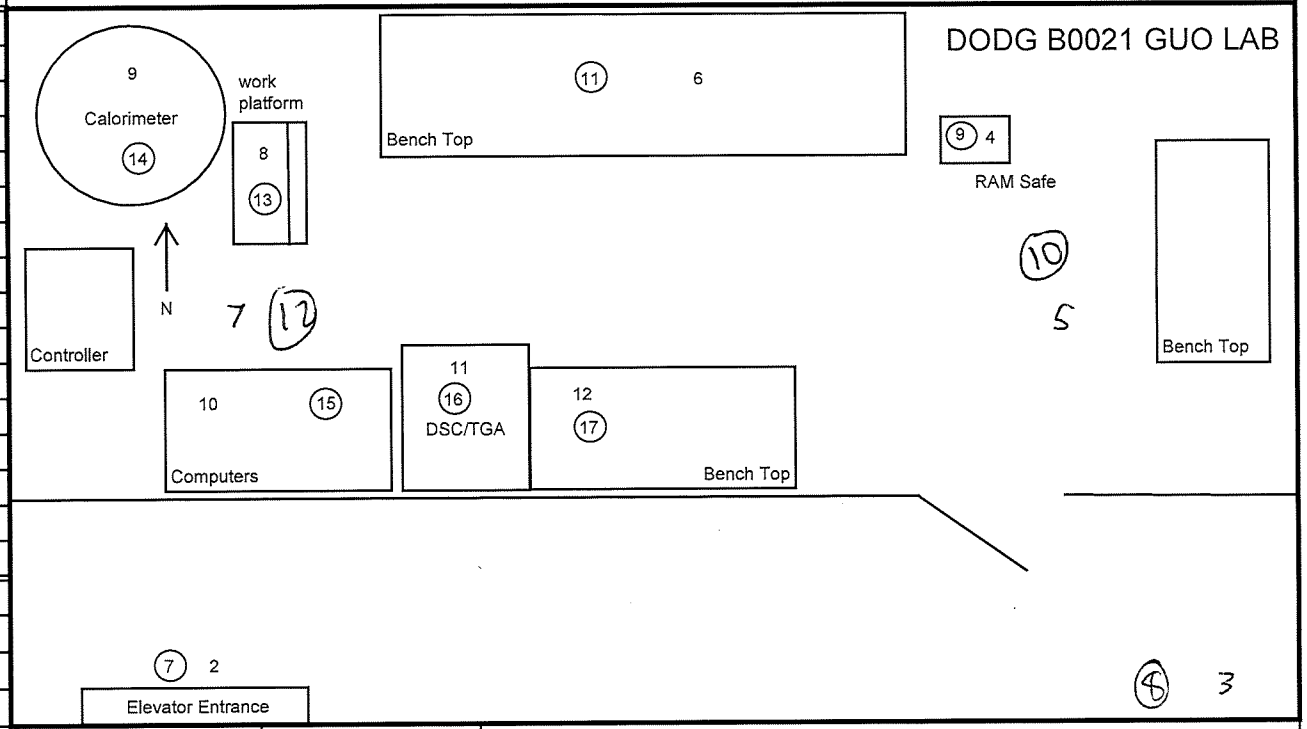
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	11/5/2019	1122	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/5/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	80
3	South Floor	120
4	RAM Safe	700
5	East Lab Floor	80
6	North Bench Top	80
7	West Floor	60
8	Work Platform	100
9	Calorimeter	80
10	Computers	80
11	DSC/TGA	100
12	South Bench Top	90

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 11/5/19	Notes
Swiped By: AB	Date: 11/05/19	
Reviewed By: Madeleine Heine M. Heine	Date: 11/12/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

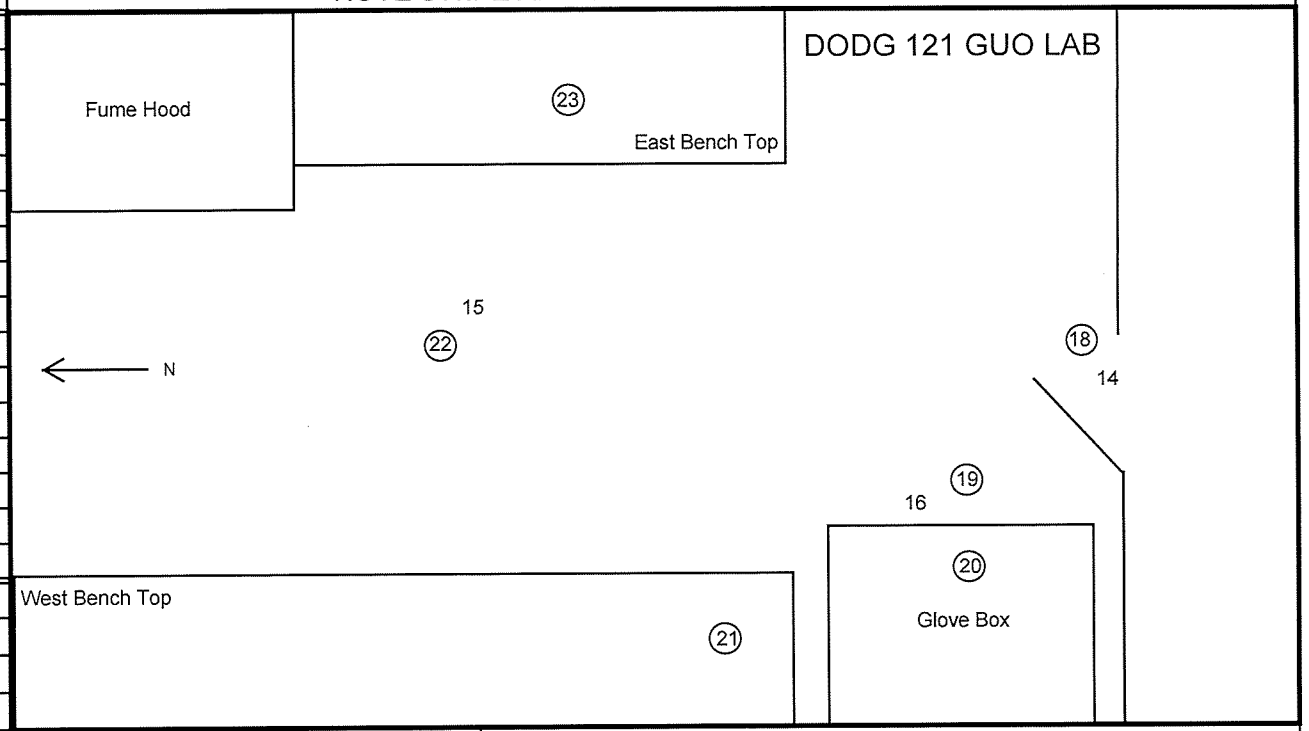
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	11-05-19	1136	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/5/2019

Survey #	Location	CPM
13	Background	100
14	121 Doorway	120
15	121 Center of lab	100
16	121 Glove Box	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

Surveyed By: BT	Date: 11/5/19	Notes
Swiped By: AB	Date: 11-05-19	
Reviewed By: Monitoring Officer M. Heine	Date: 11/12/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	46	Dates:	11/10/2019-11/16/2019	Counted On	11/12/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.90E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	28	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	29	**********	*********	
5.	BACKGROUND 5	27	**********	*********	
6.	BACKGROUND 6	34	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	29	M	M	
9.	B021 RAM SAFE	29	M	M	
10.	B021 EAST FLOOR	29	M	M	
11.	B021 NORTH BENCH TOP	27	M	M	
12.	B021 WEST LAB FLOOR	31	M	M	
13.	B021 WORK PLATFORM	30	M	M	
14.	B021 CALORIMETER	30	M	M	
15.	B021 COMPUTERS	28	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	28	M	M	
18.	121 DOORWAY	31	M	M	
19.	121 GLOVE BOX- FLOOR	29	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	26	M	M	
22.	121 CENTER OF LAB	28	M	M	
23.	122 EAST BENCH TOP	28	M	M	

^{36}Cl SOURCE 09/14/1971	50193	**********	**********	
	101.20%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 11/12/19	SIGN/DATE: 11/14/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191112_1335
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191112_1335\20191112_1335.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	11/12/2019	1:36:19 PM	1	5.00	24	7	31	266.80	
1	11/12/2019	1:42:29 PM	2	5.00	23	5	28	203.59	
1	11/12/2019	1:48:45 PM	3	5.00	23	5	28	256.55	
1	11/12/2019	1:54:53 PM	4	5.00	24	5	29	256.73	
1	11/12/2019	2:01:08 PM	5	5.00	23	5	27	231.88	
1	11/12/2019	2:07:24 PM	6	5.00	26	8	34	273.40	
1	11/12/2019	2:13:41 PM	7	5.00	21	6	28	281.71	
1	11/12/2019	2:19:54 PM	8	5.00	24	5	29	251.84	
1	11/12/2019	2:26:11 PM	9	5.00	23	5	29	191.45	
1	11/12/2019	2:32:27 PM	10	5.00	23	6	29	240.24	
1	11/12/2019	2:38:40 PM	11	5.00	20	7	27	281.23	
1	11/12/2019	2:44:57 PM	12	5.00	25	6	31	222.20	

1	11/12/2019	2:51:16 PM	13	5.00	24	6	30	298.35
1	11/12/2019	2:57:31 PM	14	5.00	24	5	30	281.05
1	11/12/2019	3:03:39 PM	15	5.00	25	3	28	195.20
1	11/12/2019	3:09:52 PM	16	5.00	22	5	27	212.05
1	11/12/2019	3:16:05 PM	17	5.00	22	5	28	289.82
1	11/12/2019	3:22:15 PM	18	5.00	25	5	31	257.83
1	11/12/2019	3:28:30 PM	19	5.00	22	7	29	302.62
1	11/12/2019	3:34:44 PM	20	5.00	22	3	25	235.49
1	11/12/2019	3:41:00 PM	21	5.00	22	4	26	212.43
1	11/12/2019	3:47:17 PM	22	5.00	22	5	28	221.86
1	11/12/2019	3:53:25 PM	23	5.00	23	6	28	271.48
1	11/12/2019	3:59:05 PM	24	5.00	14561	35632	50193	1018.49

LABORATORY SURVEY

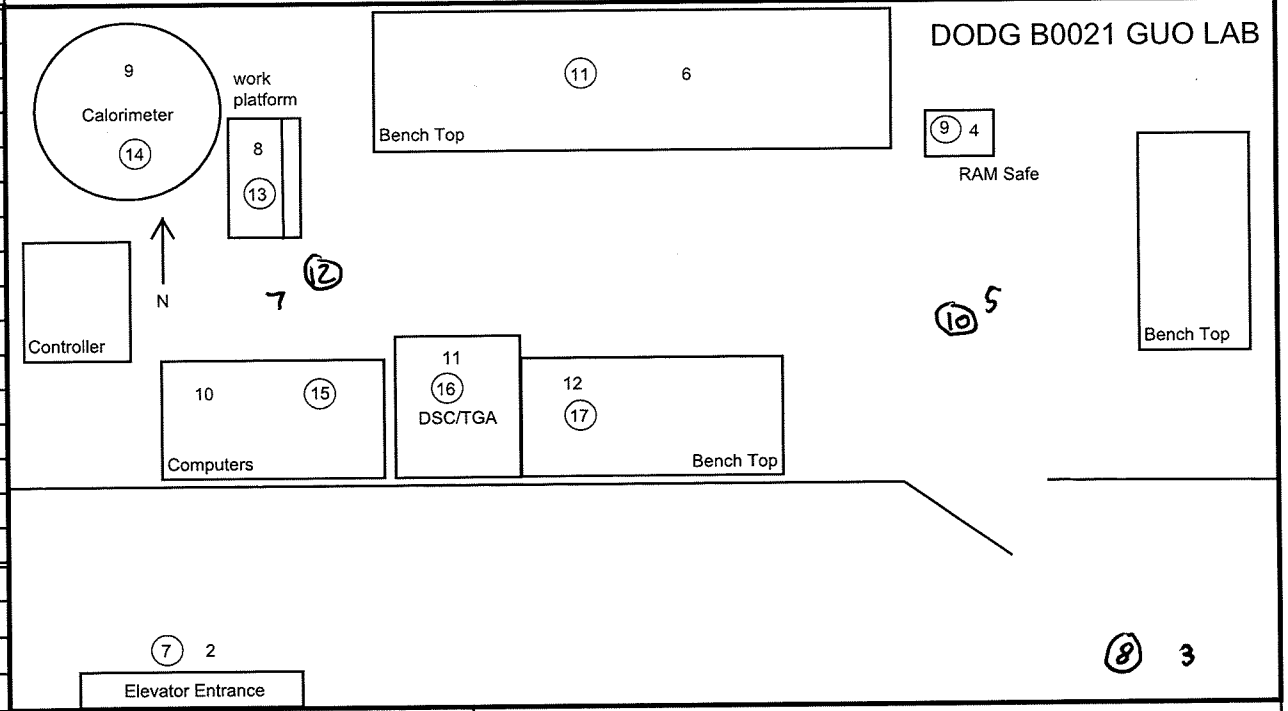
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 11/12/2019	Time: 0817	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/12/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	80
3	South Floor	80
4	RAM Safe	1500
5	East Lab Floor	90
6	North Bench Top	100
7	West Floor	80
8	Work Platform	60
9	Calorimeter	100
10	Computers	80
11	DSC/TGA	80
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 11/12/19	Notes
Swiped By: JS	Date: 11/12/19	
Reviewed By: Madison Tofin M. Heine	Date: 11/14/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

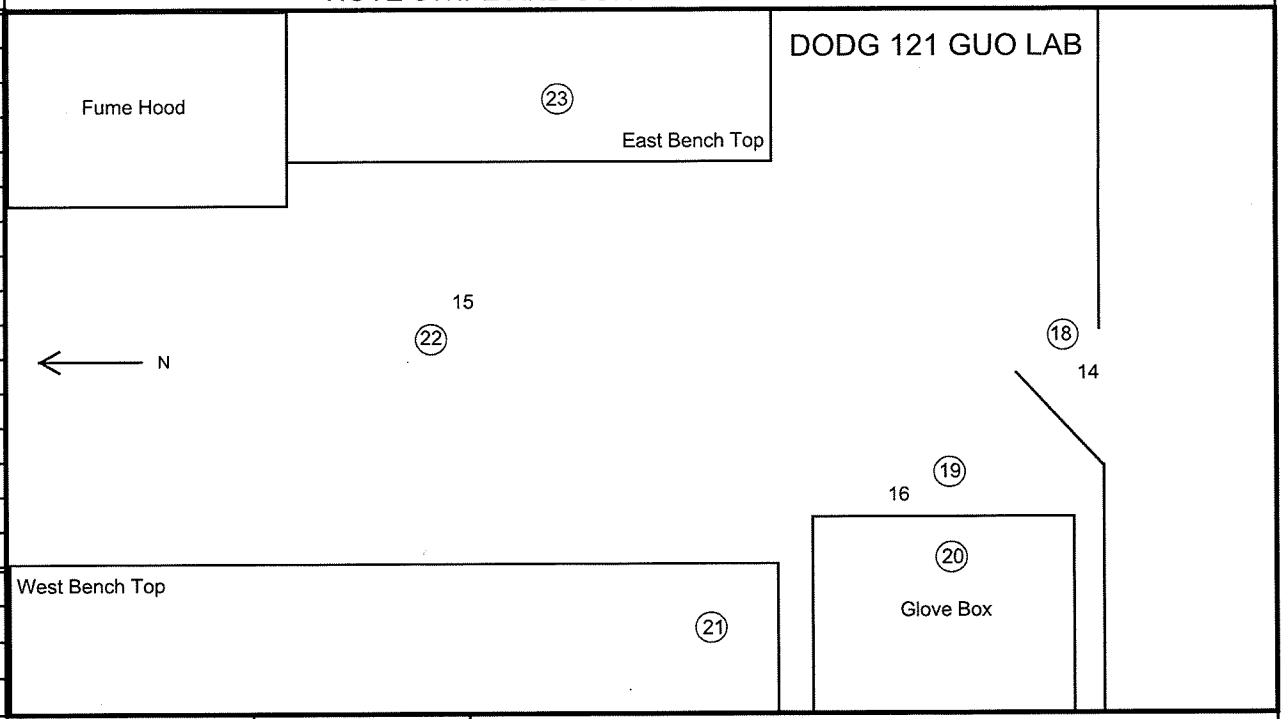
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 11/12/2019	Time: 0826	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/12/2019

Survey #	Location	CPM
13	Background	70
14	121 Doorway	60
15	121 Center of lab	60
16	121 Glove Box	120

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
JS	11/12/19	
Swiped By: BT	Date: 11/12/19	
Reviewed By: Maddison Heine m.Heine	Date: 11/14/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	47	Dates:	11/17/2019-11/23/2019	Counted On	11/20/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.99E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	37	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	28	**********	*********	
4.	BACKGROUND 4	30	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	28	**********	*********	
7.	B021 ELEVATOR ENTRANCE	33	M	M	
8.	B021 FENCED GATE	31	M	M	
9.	B021 RAM SAFE	23	M	M	
10.	B021 EAST FLOOR	25	M	M	
11.	B021 NORTH BENCH TOP	24	M	M	
12.	B021 WEST LAB FLOOR	27	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	25	M	M	
15.	B021 COMPUTERS	28	M	M	
16.	B021 DSC/TGA	32	M	M	
17.	B021 SOUTH BENCH TOP	27	M	M	
18.	121 DOORWAY	29	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	26	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	27	M	M	
23.	122 EAST BENCH TOP	25	M	M	
^{36}Cl SOURCE 09/14/1971		50192	**********	**********	
		101.20%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 11/21/19	SIGN/DATE: 11/22/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191120_1410
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191120_1410\20191120_1410.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	11/20/2019	2:11:22 PM	1	5.00	28	9	37	291.42	
1	11/20/2019	2:17:31 PM	2	5.00	26	5	31	270.87	
1	11/20/2019	2:23:50 PM	3	5.00	25	3	28	192.75	
1	11/20/2019	2:30:02 PM	4	5.00	23	7	30	328.27	
1	11/20/2019	2:36:18 PM	5	5.00	24	6	30	260.04	
1	11/20/2019	2:42:36 PM	6	5.00	24	4	28	222.77	
1	11/20/2019	2:48:57 PM	7	5.00	24	8	33	346.91	
1	11/20/2019	2:55:12 PM	8	5.00	27	4	31	142.26	
1	11/20/2019	3:01:32 PM	9	5.00	19	5	23	288.31	
1	11/20/2019	3:07:49 PM	10	5.00	20	5	25	307.99	
1	11/20/2019	3:14:04 PM	11	5.00	19	5	24	262.30	
1	11/20/2019	3:20:19 PM	12	5.00	22	5	27	265.37	

1	11/20/2019	3:26:38 PM	13	5.00	23	4	27	270.82
1	11/20/2019	3:32:56 PM	14	5.00	21	4	25	230.03
1	11/20/2019	3:39:16 PM	15	5.00	22	6	28	290.31
1	11/20/2019	3:45:33 PM	16	5.00	27	5	32	215.33
1	11/20/2019	3:51:52 PM	17	5.00	22	5	27	311.18
1	11/20/2019	3:58:13 PM	18	5.00	24	6	29	347.73
1	11/20/2019	4:04:31 PM	19	5.00	24	4	28	184.66
1	11/20/2019	4:10:47 PM	20	5.00	21	6	26	300.58
1	11/20/2019	4:17:05 PM	21	5.00	22	5	27	261.32
1	11/20/2019	4:23:21 PM	22	5.00	21	6	27	322.35
1	11/20/2019	4:29:32 PM	23	5.00	20	5	25	278.95
1	11/20/2019	4:35:12 PM	24	5.00	14358	35834	50192	1021.34

LABORATORY SURVEY

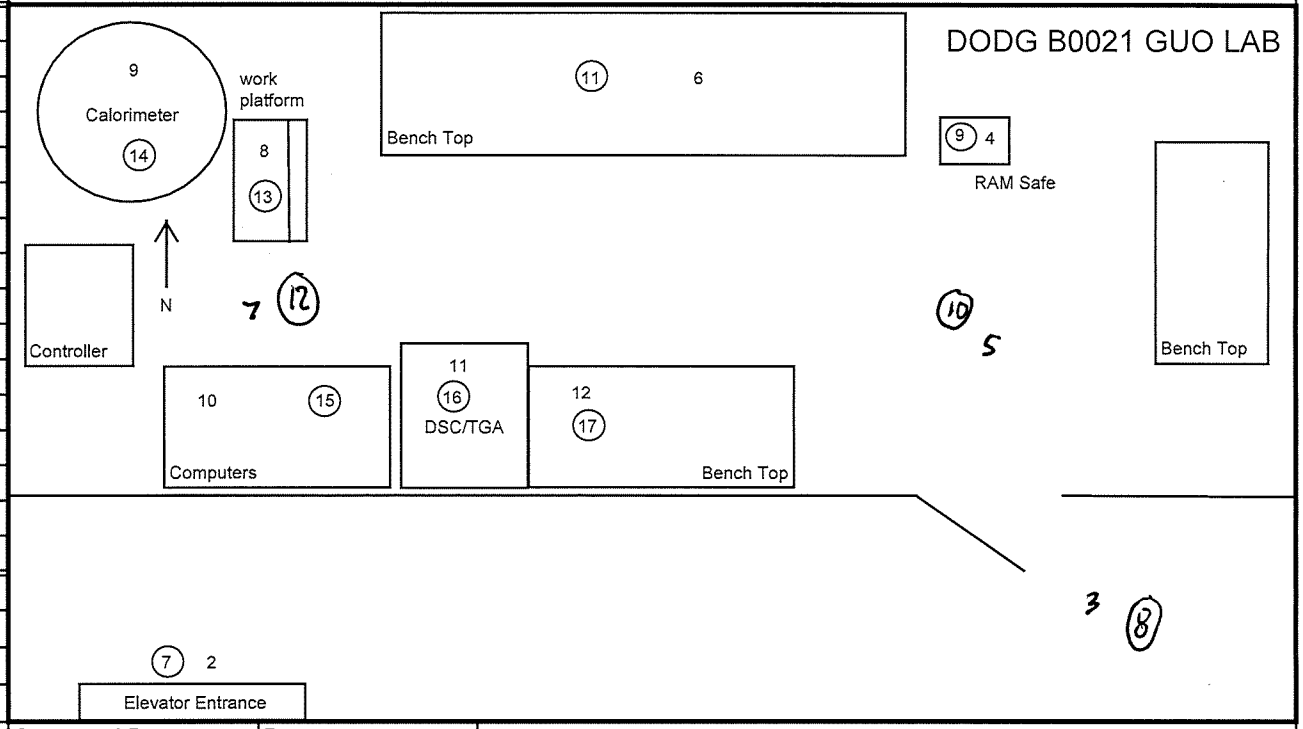
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	11/20/19	1340	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/20/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	100
3	South Floor	80
4	RAM Safe	1200
5	East Lab Floor	80
6	North Bench Top	80
7	West Floor	100
8	Work Platform	60
9	Calorimeter	80
10	Computers	100
11	DSC/TGA	80
12	South Bench Top	100

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 11/20/19	Notes
Swiped By: BT	Date: 11/20/19	
Reviewed By: Madeleine Heine	Date: 11/22/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

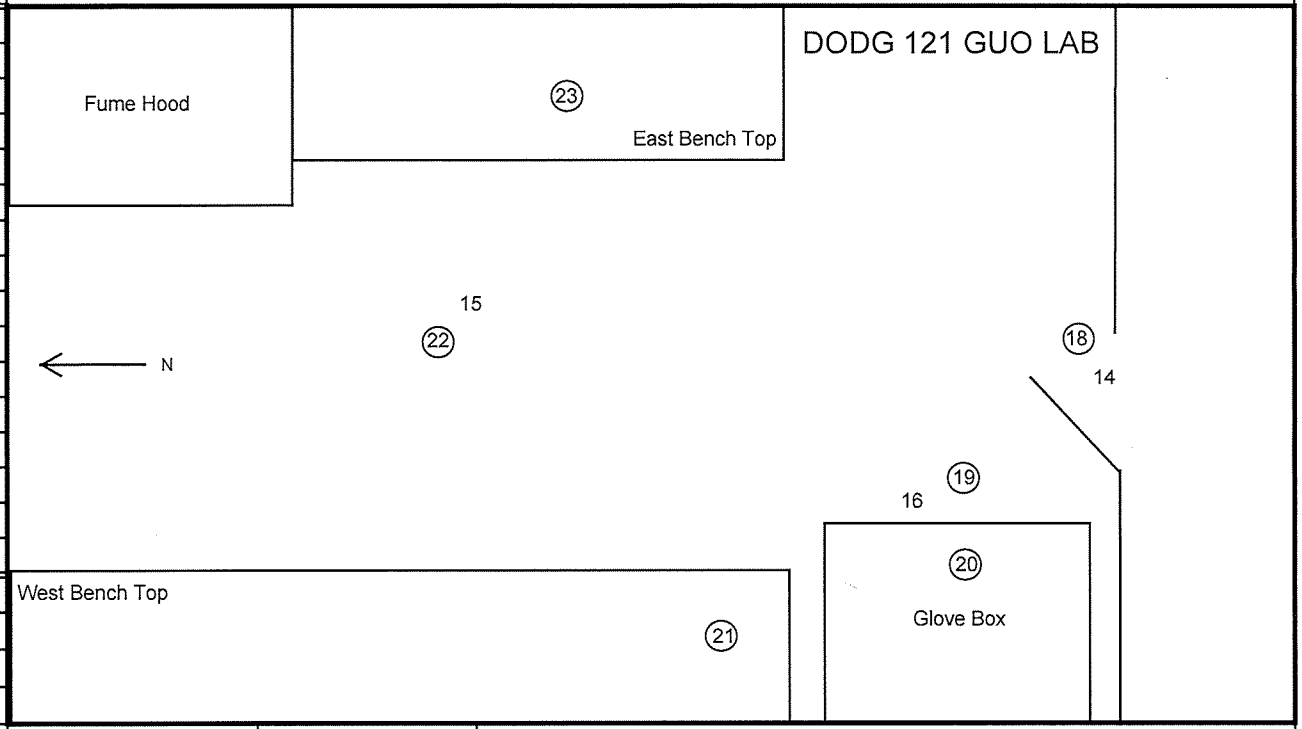
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	11/20/19	1401	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/22/2019

Survey #	Location	CPM
13	Background	100
14	121 Doorway	100
15	121 Center of lab	120
16	121 Glove Box	120

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	11/20/19	
Swiped By: BT	Date: 11/20/19	
Reviewed By: Maddison Heine M. Heine	Date: 11/22/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	48	Dates:	11/24/2019-11/30/2019	Counted On	11/25/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor		uCi/cm2 = CPM:C * Control Factor / 100		
Limit of quantification (LOQ)=	8.87E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	29	**********	*********	
7.	B021 ELEVATOR ENTRANCE	35	M	M	
8.	B021 FENCED GATE	46	2.38E-05	2.38E-07	
9.	B021 RAM SAFE	29	M	M	
10.	B021 EAST FLOOR	34	M	M	
11.	B021 NORTH BENCH TOP	23	M	M	
12.	B021 WEST LAB FLOOR	26	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	28	M	M	
15.	B021 COMPUTERS	34	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	24	M	M	
18.	121 DOORWAY	33	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	23	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	29	M	M	
23.	122 EAST BENCH TOP	31	M	M	

^{36}Cl SOURCE 09/14/1971	50094	**********	**********	
	101.00%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: [signature] / 11/25/19	SIGN/DATE: [signature] 11/26/19

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 48	Dates: 11/24/2019-11/30/2019	Counted On 11/25/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR: 1.40E-06	
CHANNEL ENERGY RANGE (keV)	CH A: 4-200 CH B: 200-2000 CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)= 8.87E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK	

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	31	**********	*********	
2.	BACKGROUND 2	31	**********	*********	
3.	BACKGROUND 3	27	**********	*********	
4.	BACKGROUND 4	26	**********	*********	
5.	BACKGROUND 5	30	**********	*********	
6.	BACKGROUND 6	29	**********	*********	
7.	B021 ELEVATOR ENTRANCE	35	M	M	
8.	B021 FENCED GATE	46	2.38E-05	2.38E-07	
9.	B021 RAM SAFE	29	M	M	
10.	B021 EAST FLOOR	34	M	M	
11.	B021 NORTH BENCH TOP	23	M	M	
12.	B021 WEST LAB FLOOR	26	M	M	
13.	B021 WORK PLATFORM	27	M	M	
14.	B021 CALORIMETER	28	M	M	
15.	B021 COMPUTERS	34	M	M	
16.	B021 DSC/TGA	29	M	M	
17.	B021 SOUTH BENCH TOP	24	M	M	
18.	121 DOORWAY	33	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	23	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	29	M	M	
23.	122 EAST BENCH TOP	31	M	M	
	^{36}Cl SOURCE 09/14/1971	50094	**********	**********	
		101.00%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: [signature] / 11/25/19	SIGN/DATE: [signature] 11/26/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191125_1011
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191125_1011\20191125_1011.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	11/25/2019	10:12:41 AM	1	5.00	28	3	31	154.01	
1	11/25/2019	10:18:52 AM	2	5.00	27	4	31	200.03	
1	11/25/2019	10:25:11 AM	3	5.00	23	4	27	208.71	
1	11/25/2019	10:31:22 AM	4	5.00	21	5	26	259.44	
1	11/25/2019	10:37:41 AM	5	5.00	25	5	30	263.52	
1	11/25/2019	10:43:59 AM	6	5.00	22	6	29	304.21	
1	11/25/2019	10:50:19 AM	7	5.00	30	5	35	170.70	
1	11/25/2019	10:56:33 AM	8	5.00	40	6	46	173.37	
1	11/25/2019	11:02:52 AM	9	5.00	25	4	29	77.99	
1	11/25/2019	11:09:14 AM	10	5.00	28	7	34	231.44	
1	11/25/2019	11:15:30 AM	11	5.00	18	5	23	183.21	
1	11/25/2019	11:21:45 AM	12	5.00	21	6	26	309.97	

1	11/25/2019	11:28:07 AM	13	5.00	22	5	27	205.99
1	11/25/2019	11:34:22 AM	14	5.00	23	5	28	250.96
1	11/25/2019	11:40:34 AM	15	5.00	27	7	34	194.15
1	11/25/2019	11:46:46 AM	16	5.00	21	8	29	351.57
1	11/25/2019	11:53:01 AM	17	5.00	20	4	24	243.68
1	11/25/2019	11:59:13 AM	18	5.00	26	7	33	245.36
1	11/25/2019	12:05:37 PM	19	5.00	23	5	28	141.98
1	11/25/2019	12:11:54 PM	20	5.00	19	4	23	300.09
1	11/25/2019	12:18:13 PM	21	5.00	22	4	27	247.06
1	11/25/2019	12:24:33 PM	22	5.00	22	7	29	299.15
1	11/25/2019	12:30:44 PM	23	5.00	26	5	31	193.37
1	11/25/2019	12:36:25 PM	24	5.00	14445	35649	50094	1017.29

LABORATORY SURVEY

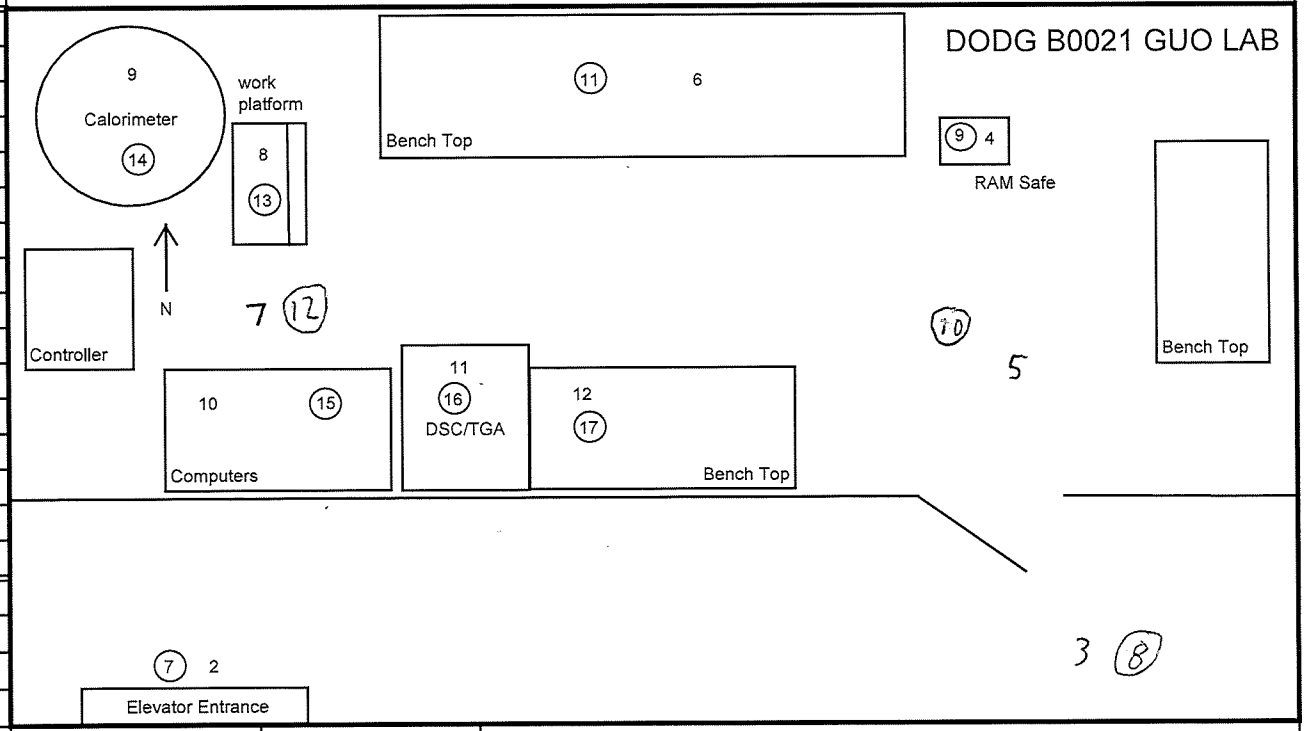
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	11/25/19	0948	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/25/19

Survey #	Location	CPM
1	Background	90
2	Elevator Entrance	90
3	South Floor	100
4	RAM Safe	1000
5	East Lab Floor	80
6	North Bench Top	80
7	West Floor	120
8	Work Platform	80
9	Calorimeter	90
10	Computers	80
11	DSC/TGA	80
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 11/25/19	Notes
Swiped By: BT	Date: 11/25/19	
Reviewed By: Madison Kerr M. Heine	Date: 11/26/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

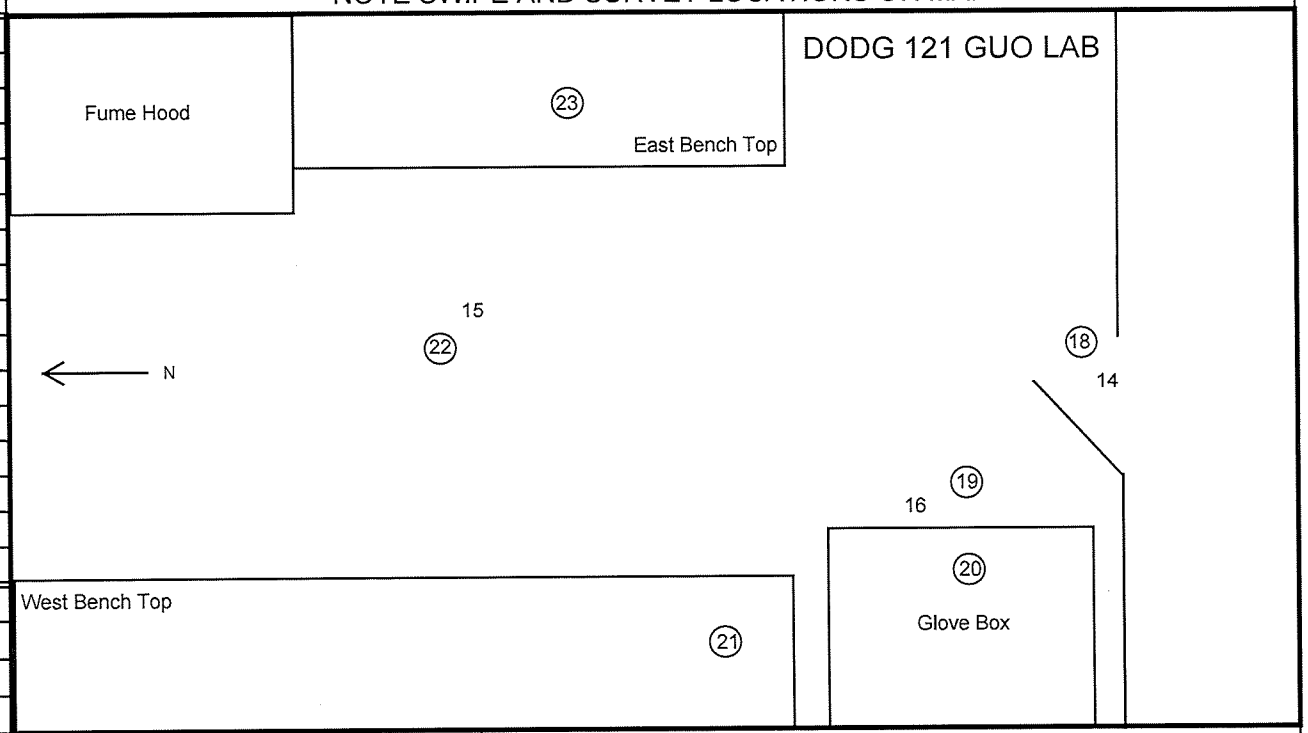
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User: Xiaofeng Guo	Date: 11/25/19	Time: ~~0944~~ 1002	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON ☐ OFF ☒					

LSC Printout Date: 11/25/19

Survey #	Location	CPM
13	Background	80
14	121 Doorway	90
15	121 Center of lab	86
16	121 Glove Box	120

Swipe #	Swipe # and Locations		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	11/25/19	
Swiped By: BT	Date: 11/25/19	
Reviewed By: Madison Ebin m. Heine	Date: 11/26/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 49	Dates: 12/01/2019-12/07/2019	Counted On 12/4/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200 CH B: 200-2000	CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.59E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	46	**********	*********	
2.	BACKGROUND 2	40	**********	*********	
3.	BACKGROUND 3	38	**********	*********	
4.	BACKGROUND 4	39	**********	*********	
5.	BACKGROUND 5	38	**********	*********	
6.	BACKGROUND 6	37	**********	*********	
7.	B021 ELEVATOR ENTRANCE	37	M	M	
8.	B021 FENCED GATE	32	M	M	
9.	B021 RAM SAFE	33	M	M	
10.	B021 EAST FLOOR	28	M	M	
11.	B021 NORTH BENCH TOP	27	M	M	
12.	B021 WEST LAB FLOOR	31	M	M	
13.	B021 WORK PLATFORM	30	M	M	
14.	B021 CALORIMETER	27	M	M	
15.	B021 COMPUTERS	29	M	M	
16.	B021 DSC/TGA	30	M	M	
17.	B021 SOUTH BENCH TOP	28	M	M	
18.	121 DOORWAY	30	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	24	M	M	
21.	121 WEST BENCH TOP	27	M	M	
22.	121 CENTER OF LAB	31	M	M	
23.	122 EAST BENCH TOP	31	M	M	
	^{36}Cl SOURCE 09/14/1971	50157	**********	**********	
		101.13%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 12/5/2019	SIGN/DATE: 12/5/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191204_1605
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191204_1605\20191204_1605.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	12/4/2019	4:06:31 PM	1	5.00	34	13	46	327.46	
1	12/4/2019	4:12:39 PM	2	5.00	32	8	40	249.33	
1	12/4/2019	4:18:57 PM	3	5.00	27	11	38	343.37	
1	12/4/2019	4:25:07 PM	4	5.00	29	10	39	287.01	
1	12/4/2019	4:31:22 PM	5	5.00	30	8	38	267.91	
1	12/4/2019	4:37:39 PM	6	5.00	28	9	37	296.94	
1	12/4/2019	4:43:58 PM	7	5.00	27	10	37	276.83	
1	12/4/2019	4:50:13 PM	8	5.00	25	7	32	292.78	
1	12/4/2019	4:56:29 PM	9	5.00	26	7	33	263.79	
1	12/4/2019	5:02:44 PM	10	5.00	23	5	28	178.04	
1	12/4/2019	5:08:58 PM	11	5.00	21	6	27	216.55	
1	12/4/2019	5:15:15 PM	12	5.00	26	6	31	184.85	

1	12/4/2019	5:21:34 PM	13	5.00	23	7	30	316.12
1	12/4/2019	5:27:51 PM	14	5.00	22	6	27	255.42
1	12/4/2019	5:34:09 PM	15	5.00	24	4	29	171.30
1	12/4/2019	5:40:19 PM	16	5.00	23	7	30	317.91
1	12/4/2019	5:46:38 PM	17	5.00	23	4	28	166.47
1	12/4/2019	5:52:58 PM	18	5.00	24	6	30	213.48
1	12/4/2019	5:59:13 PM	19	5.00	23	5	28	164.13
1	12/4/2019	6:05:25 PM	20	5.00	21	4	24	156.70
1	12/4/2019	6:11:40 PM	21	5.00	22	5	27	192.22
1	12/4/2019	6:17:55 PM	22	5.00	23	7	31	233.08
1	12/4/2019	6:24:05 PM	23	5.00	25	6	31	234.82
1	12/4/2019	6:29:45 PM	24	5.00	14539	35617	50157	1014.42

LABORATORY SURVEY

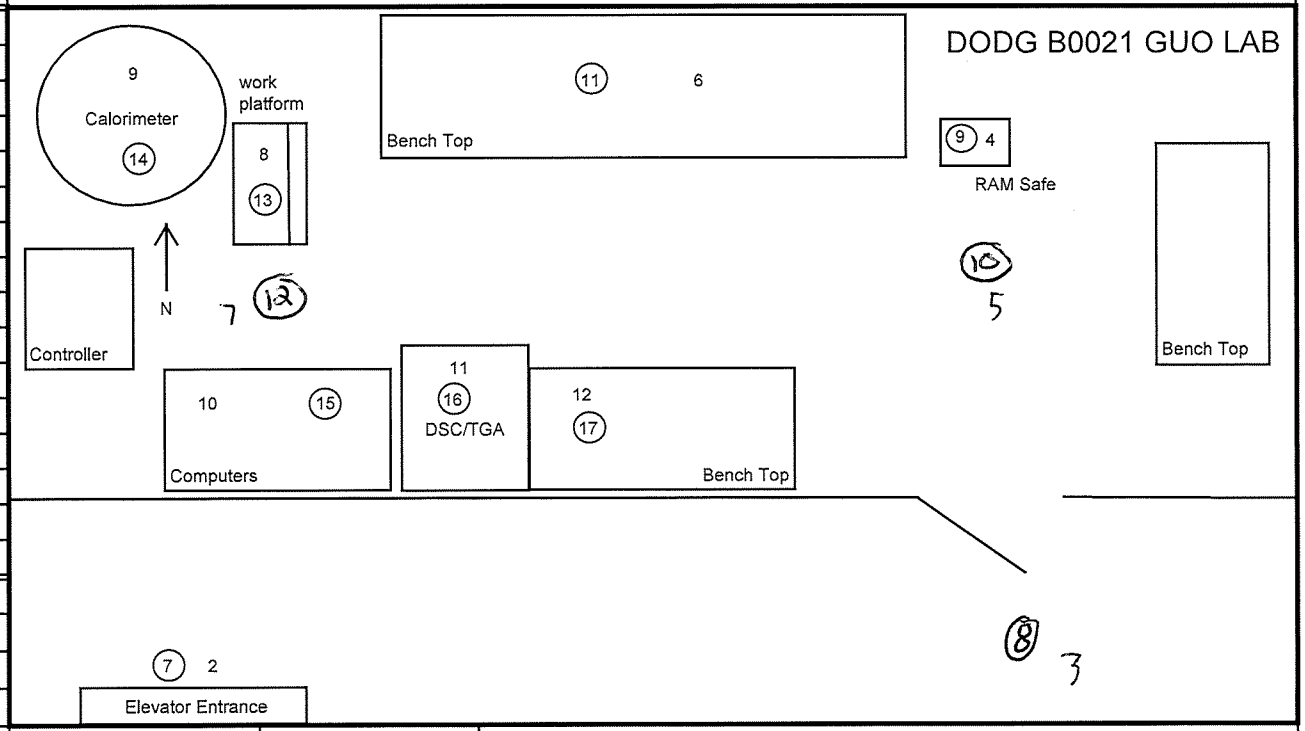
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User: Xiaofeng Guo	Date: 12/4/19	Time: 1537	Swipe Instrument: Quantasmart	Serial No. 073396	Radiation Detected: Beta/Gamma
Reactor Status (Check One) ON [X] OFF [ ]					

LSC Printout Date: 12/4/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	100
3	South Floor	100
4	RAM Safe	1100
5	East Lab Floor	80
6	North Bench Top	100
7	West Floor	80
8	Work Platform	80
9	Calorimeter	80
10	Computers	60
11	DSC/TGA	120
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 12/4/19	Notes
Swiped By: FM	Date: 12/4/19	
Reviewed By: Mooldsen Heine m. Heine	Date: 12/5/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

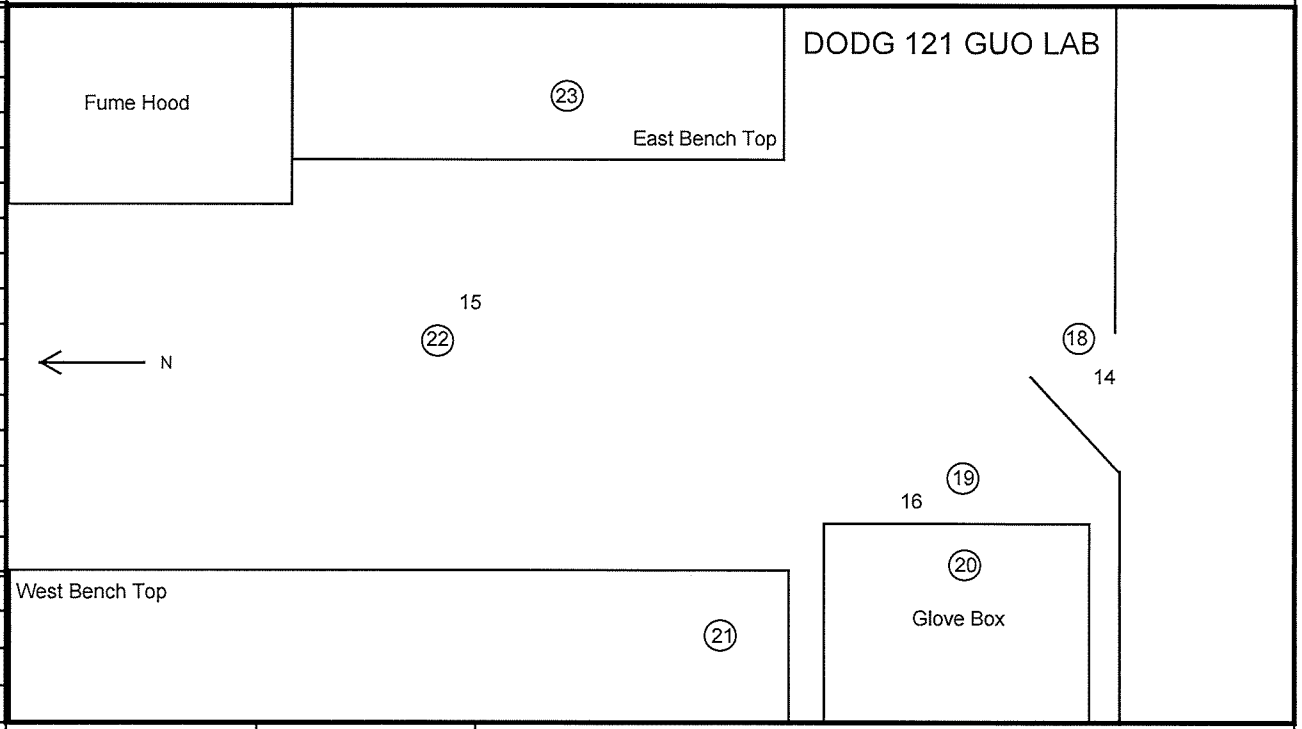
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	Date	Time	Swipe Instrument	Serial No.	Radiation Detected
Xiaofeng Guo	12/4/19	1555	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 12/4/2019

Survey #	Location	CPM
13	Background	100
14	121 Doorway	80
15	121 Center of lab	160
16	121 Glove Box	160

Swipe #	Location		
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	12/4/19	
Swiped By: FM	Date: 12/4/19	
Reviewed By: Madison Klein M. Heine	Date: 12/5/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week #	50	Dates:	12/08/2019-12/14/2019	Counted On	12/10/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)		CONTROL FACTOR:		1.40E-06	
CHANNEL ENERGY RANGE (keV)		CH A: 4-200	CH B: 200-2000	CH C: 4-2000	
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor			uCi/cm2 = CPM:C * Control Factor / 100	
Limit of quantification (LOQ)=	8.80E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK			

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	30	**********	*********	
2.	BACKGROUND 2	29	**********	*********	
3.	BACKGROUND 3	29	**********	*********	
4.	BACKGROUND 4	27	**********	*********	
5.	BACKGROUND 5	26	**********	*********	
6.	BACKGROUND 6	28	**********	*********	
7.	B021 ELEVATOR ENTRANCE	28	M	M	
8.	B021 FENCED GATE	30	M	M	
9.	B021 RAM SAFE	29	M	M	
10.	B021 EAST FLOOR	23	M	M	
11.	B021 NORTH BENCH TOP	21	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	26	M	M	
14.	B021 CALORIMETER	26	M	M	
15.	B021 COMPUTERS	30	M	M	
16.	B021 DSC/TGA	27	M	M	
17.	B021 SOUTH BENCH TOP	25	M	M	
18.	121 DOORWAY	32	M	M	
19.	121 GLOVE BOX- FLOOR	28	M	M	
20.	121 GLOVE BOX	28	M	M	
21.	121 WEST BENCH TOP	26	M	M	
22.	121 CENTER OF LAB	25	M	M	
23.	122 EAST BENCH TOP	27	M	M	

^{36}Cl SOURCE 09/14/1971	50188	**********	**********	
	101.19%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable containimation limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 12/10/2019	SIGN/DATE: 12/11/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191210_1406
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191210_1406\20191210_1406.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s%
Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	12/10/2019	2:07:53 PM	1	5.00	26	5	30	229.88	
1	12/10/2019	2:14:02 PM	2	5.00	23	6	29	251.07	
1	12/10/2019	2:20:19 PM	3	5.00	24	6	29	279.85	
1	12/10/2019	2:26:29 PM	4	5.00	21	5	27	281.65	
1	12/10/2019	2:32:47 PM	5	5.00	21	5	26	231.14	
1	12/10/2019	2:39:03 PM	6	5.00	24	4	28	240.21	
1	12/10/2019	2:45:21 PM	7	5.00	23	6	28	216.42	
1	12/10/2019	2:51:35 PM	8	5.00	24	6	30	233.53	
1	12/10/2019	2:57:52 PM	9	5.00	22	7	29	206.59	
1	12/10/2019	3:04:06 PM	10	5.00	19	4	23	185.23	
1	12/10/2019	3:10:21 PM	11	5.00	17	4	21	164.50	
1	12/10/2019	3:16:38 PM	12	5.00	20	9	29	364.16	

1	12/10/2019	3:22:58 PM	13	5.00	20	5	26	221.17
1	12/10/2019	3:29:14 PM	14	5.00	22	4	26	172.07
1	12/10/2019	3:35:31 PM	15	5.00	26	4	30	187.75
1	12/10/2019	3:41:42 PM	16	5.00	22	5	27	250.86
1	12/10/2019	3:48:01 PM	17	5.00	21	4	25	131.70
1	12/10/2019	3:54:19 PM	18	5.00	27	5	32	154.25
1	12/10/2019	4:00:35 PM	19	5.00	22	6	28	196.17
1	12/10/2019	4:06:48 PM	20	5.00	21	7	28	221.46
1	12/10/2019	4:13:02 PM	21	5.00	21	5	26	166.28
1	12/10/2019	4:19:16 PM	22	5.00	19	6	25	291.71
1	12/10/2019	4:25:25 PM	23	5.00	21	5	27	262.56
1	12/10/2019	4:31:05 PM	24	5.00	14433	35756	50188	1014.26

LABORATORY SURVEY

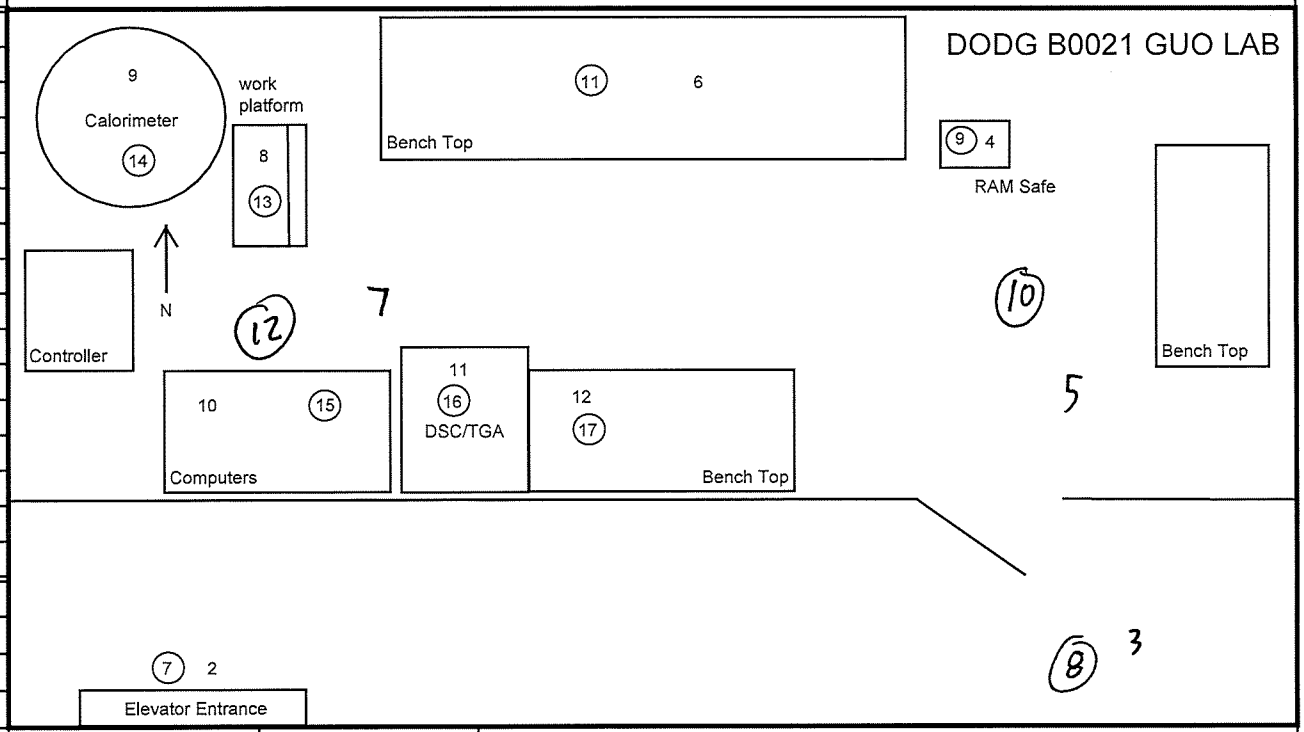
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 12	172178	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	12/10/2019	1047	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 12/10/2019

Survey #	Location	CPM
1	Background	60
2	Elevator Entrance	100
3	South Floor	80
4	RAM Safe	1260
5	East Lab Floor	60
6	North Bench Top	100
7	West Floor	120
8	Work Platform	60
9	Calorimeter	80
10	Computers	80
11	DSC/TGA	80
12	South Bench Top	80

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations

1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 12/10/19	Notes
Swiped By: BT	Date: 12/10/19	
Reviewed By: Madison Heine M. Heine	Date: 12/11/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 12	172178	Gamma
Authorized User Xiaofeng Guo	Date 12/10/2019	Time 1137	Swipe Instrument Quantasmart	Serial No. 073396	Radiation Detected Beta/Gamma

Reactor Status (Check One)
ON ☒ OFF ☐

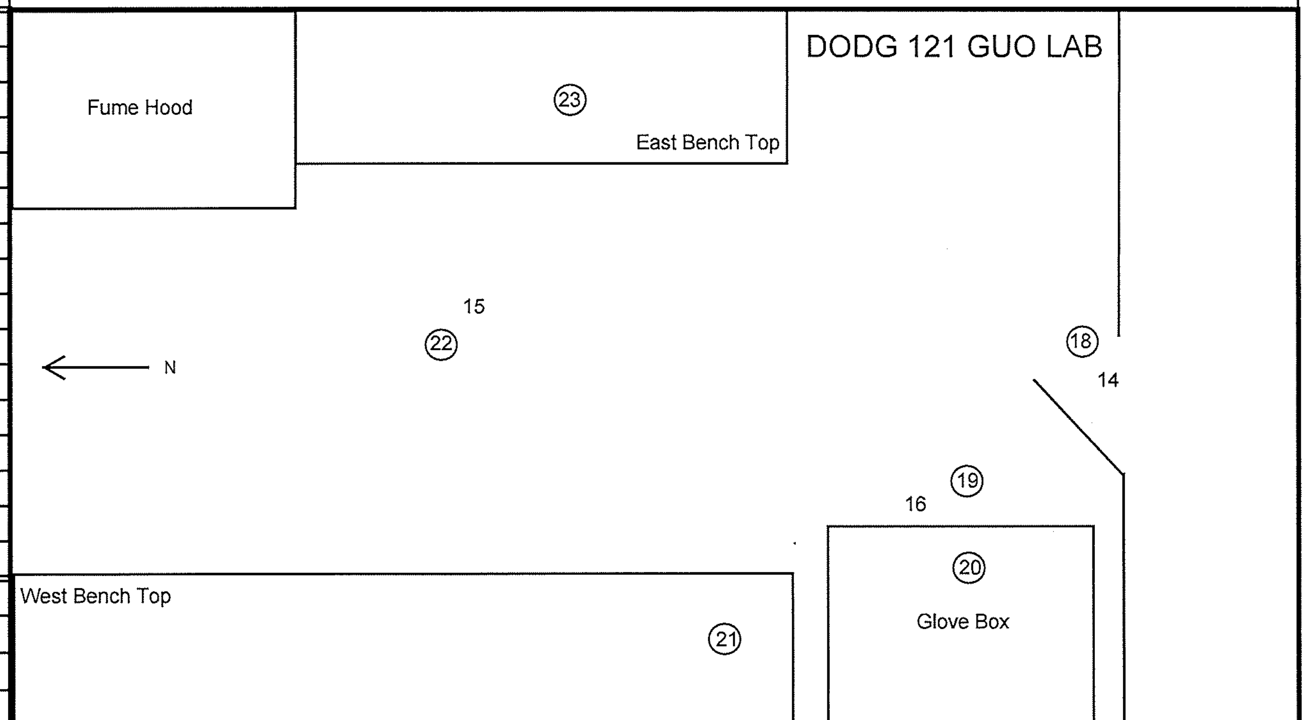
LSC Printout Date: 12/10/19

Survey #	Location	CPM
13	Background	80
14	121 Doorway	100
15	121 Center of lab	80
16	121 Glove Box	100

Swipe # and Locations

18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
DT	12/10/19	
Swiped By: DT	Date: 12/10/19	
Reviewed By: M. Heine	Date: 12/11/19	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

GUO LAB DODGEN B021/121 WEEKLY SWIPES & SURVEYS

Revised 7/9/2019

Week # 51	Dates: 12/15/2019-12/21/2019	Counted On 12/17/2019
INSTRUMENT USED: Quantasmart (Serial# 073396)	CONTROL FACTOR:	1.40E-06
CHANNEL ENERGY RANGE (keV)	CH A: 4-200	CH B: 200-2000 CH C: 4-2000
COUNTING TIME: 5 Min.	uCi/swipe = CPM:C * Control Factor	uCi/cm2 = CPM:C * Control Factor / 100
Limit of quantification (LOQ)=	9.24E-08 uCi/cm^2	QUANTIFICATION BELOW REG GUIDE 8.23 LIMITS OK

Swipe #	LOCATION: ROOM # & AREA/OBJECT	GROSS CPM CHANNEL C	uCi/swipe	uCi/cm^2	NOTE:
1.	BACKGROUND 1	39	**********	*********	
2.	BACKGROUND 2	32	**********	*********	
3.	BACKGROUND 3	37	**********	*********	
4.	BACKGROUND 4	33	**********	*********	
5.	BACKGROUND 5	31	**********	*********	
6.	BACKGROUND 6	33	**********	*********	
7.	B021 ELEVATOR ENTRANCE	29	M	M	
8.	B021 FENCED GATE	32	M	M	
9.	B021 RAM SAFE	32	M	M	
10.	B021 EAST FLOOR	25	M	M	
11.	B021 NORTH BENCH TOP	30	M	M	
12.	B021 WEST LAB FLOOR	29	M	M	
13.	B021 WORK PLATFORM	33	M	M	
14.	B021 CALORIMETER	29	M	M	
15.	B021 COMPUTERS	30	M	M	
16.	B021 DSC/TGA	28	M	M	
17.	B021 SOUTH BENCH TOP	29	M	M	
18.	121 DOORWAY	26	M	M	
19.	121 GLOVE BOX- FLOOR	27	M	M	
20.	121 GLOVE BOX	25	M	M	
21.	121 WEST BENCH TOP	30	M	M	
22.	121 CENTER OF LAB	26	M	M	
23.	122 EAST BENCH TOP	30	M	M	

^{36}Cl SOURCE 09/14/1971	50133	**********	**********	
	101.08%	CALIBRATION CHECK OK?	YES	

Notes(s): M = below limit of quantification on the LSC. The limit of quantification is checked against lowest allowable contaimination limit of 1 x 10^{-6} uCi/cm^2.

SURVEY PREPARED BY: B. Tanner	REVIEWED BY: M. Heine
SIGN/DATE: 12/18/2019	SIGN/DATE: 12/20/19

Assay Definition-

Assay Description:

Assay Type: CPM
Report Name: Report1
Output Data Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191217_1526
Raw Results Path: C:\Packard\Tricarb\Results\CSE\Reactor Weekly\20191217_1526\20191217_1526.results
Assay File Name: C:\Packard\TriCarb\Assays\Reactor Weekly.lsa

Count Conditions-

Nuclide: Reactor
  Quench Indicator: tSIE/AEC
  External Std Terminator (sec): 0.5 2s%
  Pre-Count Delay (min): 0.00
Quench Set: n/a
Count Time (min): 5.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate % Reference: Off

Background Subtract: Off
Low CPM Threshold: Off
2 Sigma % Terminator: Off

Regions	LL	UL
A	4.0	200.0
B	200.0	2000.0
C	4.0	2000.0

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: n/a Heterogeneity Monitor: n/a
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

P#	DATE	TIME	S#	Count Time	CPMA	CPMB	CPMC	SIS	MESSAGES
1	12/17/2019	3:28:05 PM	1	5.00	30	9	39	255.97	
1	12/17/2019	3:34:14 PM	2	5.00	25	7	32	231.38	
1	12/17/2019	3:40:30 PM	3	5.00	30	7	37	334.24	
1	12/17/2019	3:46:40 PM	4	5.00	26	7	33	242.16	
1	12/17/2019	3:52:56 PM	5	5.00	26	5	31	228.16	
1	12/17/2019	3:59:12 PM	6	5.00	25	7	33	295.85	
1	12/17/2019	4:05:29 PM	7	5.00	22	7	29	272.77	
1	12/17/2019	4:11:44 PM	8	5.00	25	7	32	251.45	
1	12/17/2019	4:17:59 PM	9	5.00	26	7	32	212.35	
1	12/17/2019	4:24:13 PM	10	5.00	20	5	25	196.64	
1	12/17/2019	4:30:28 PM	11	5.00	23	7	30	277.89	
1	12/17/2019	4:36:43 PM	12	5.00	24	5	29	230.04	

1	12/17/2019	4:43:03 PM	13	5.00	26	7	33	285.72
1	12/17/2019	4:49:19 PM	14	5.00	23	6	29	264.08
1	12/17/2019	4:55:34 PM	15	5.00	23	7	30	278.94
1	12/17/2019	5:01:47 PM	16	5.00	21	7	28	377.91
1	12/17/2019	5:08:05 PM	17	5.00	23	6	29	226.23
1	12/17/2019	5:14:23 PM	18	5.00	22	5	26	166.29
1	12/17/2019	5:20:39 PM	19	5.00	23	4	27	238.92
1	12/17/2019	5:26:52 PM	20	5.00	20	5	25	196.05
1	12/17/2019	5:33:08 PM	21	5.00	24	6	30	164.79
1	12/17/2019	5:39:22 PM	22	5.00	20	6	26	225.94
1	12/17/2019	5:45:31 PM	23	5.00	25	5	30	156.63
1	12/17/2019	5:51:10 PM	24	5.00	14411	35721	50133	1013.09

LABORATORY SURVEY

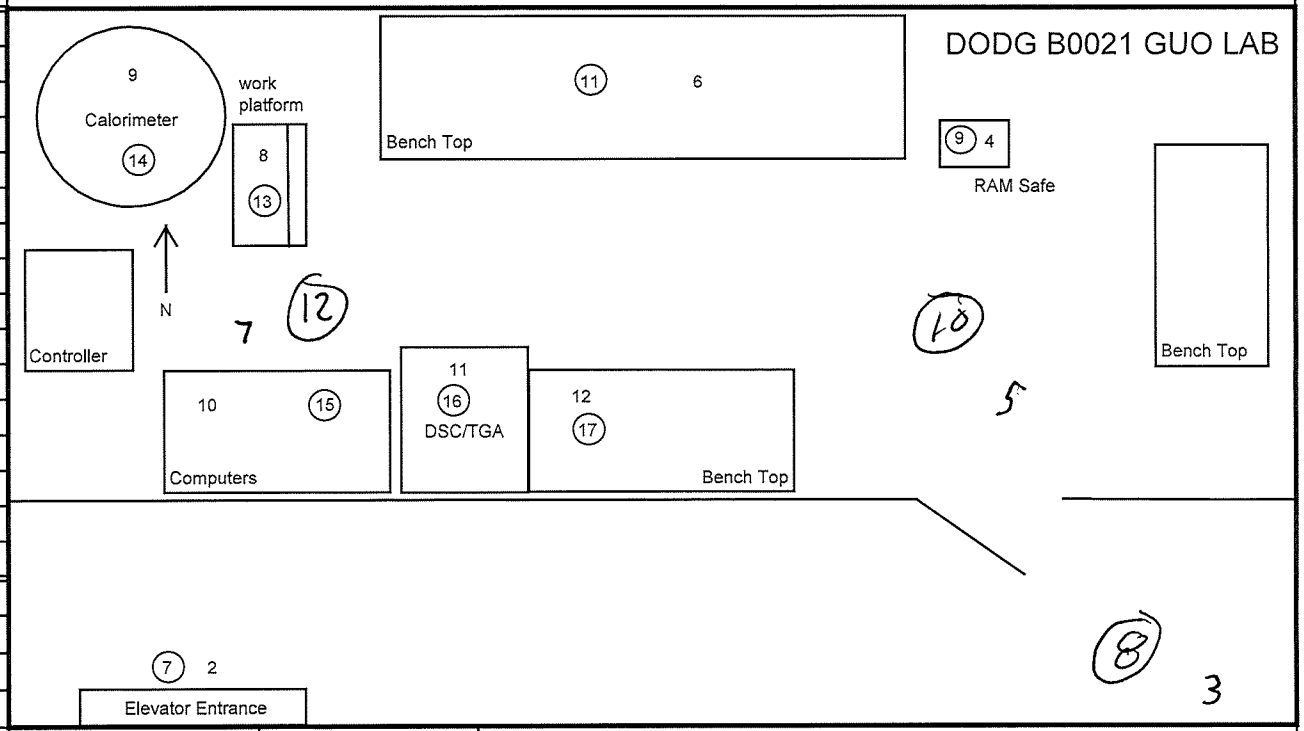
Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	B0021 - GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	12/17/2019	1500	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON ☒ OFF ☐					

LSC Printout Date: 12/17/2019

Survey #	Location	CPM
1	Background	80
2	Elevator Entrance	80
3	South Floor	100
4	RAM Safe	900
5	East Lab Floor	80
6	North Bench Top	100
7	West Floor	80
8	Work Platform	80
9	Calorimeter	80
10	Computers	66
11	DSC/TGA	80
12	South Bench Top	60

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Swipe # and Locations			
1-6	Background	16	DSC/TGA
7	Elevator Entrance	17	South Bench Top
8	South Floor		
9	RAM Safe		
10	East Lab Floor		
11	North Bench Top		
12	West Lab Floor		
13	Work Platform		
14	Calorimeter		
15	Computers		

Surveyed By: BT	Date: 12/17/2019	Notes
Swiped By: BT	Date: 12/17/2019	
Reviewed By: Maddison Qbi m.Heine	Date: 12/20/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.

LABORATORY SURVEY

Radiation Safety Office
Washington State University
Pullman, WA 99164-1302
(509) 335 8916

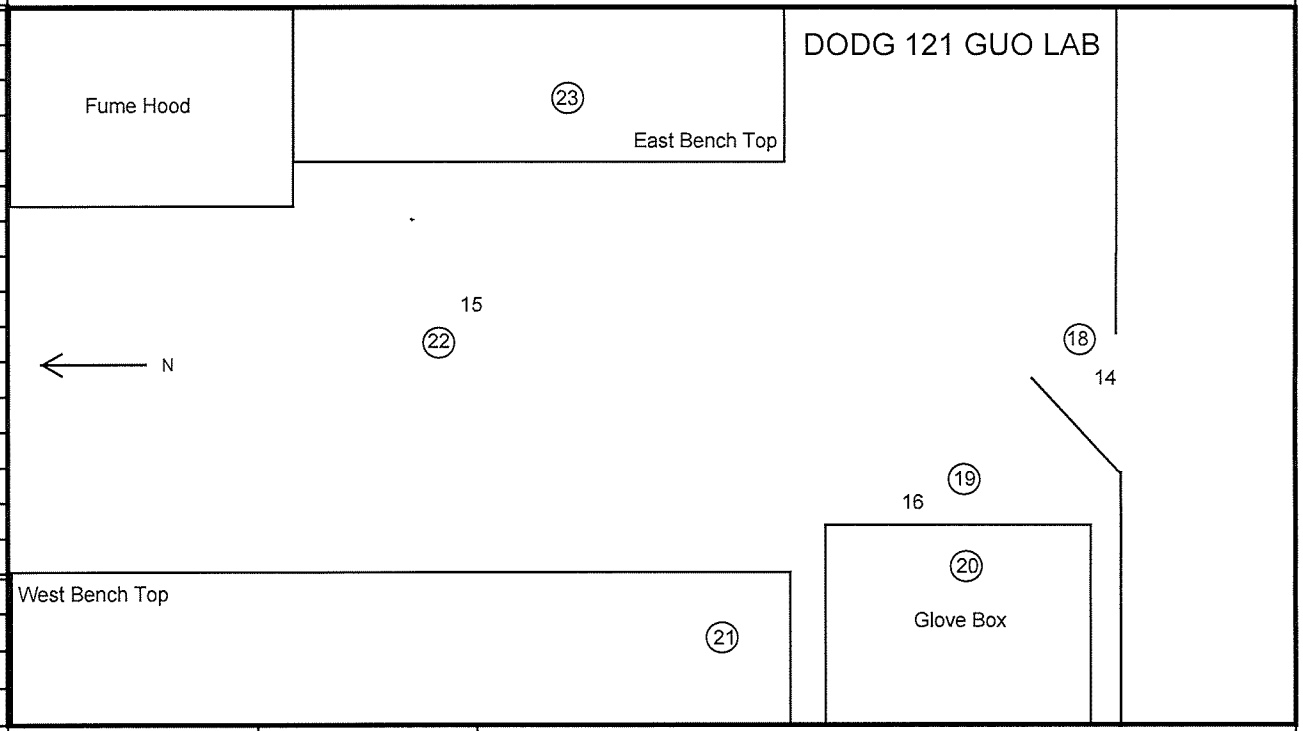
Building	Room	Lab Class	Survey Instrument	Serial No.	Radiation Detected
Dodgen Research Facility	121- GUO	D	GM Detector Model 3	58680	Gamma
Authorized User	**Date**	**Time**	**Swipe Instrument**	**Serial No.**	**Radiation Detected**
Xiaofeng Guo	12/17/2019	1520	Quantasmart	073396	Beta/Gamma
Reactor Status (Check One) ON [X] OFF [ ]					

LSC Printout Date: 12/17/2019

Survey #	Location	CPM
13	Background	60
14	121 Doorway	80
15	121 Center of lab	100
16	121 Glove Box	105

Swipe # and Locations			
18	121 Doorway		
19	121 Glove Box-floor		
20	121 Glove Box		
21	West Bench Top		
22	121 Center of lab		
23	East Bench Top		

NOTE SWIPE AND SURVEY LOCATIONS ON MAP



Surveyed By:	Date:	Notes
BT	12/17/2019	
Swiped By: BT	Date: 12/17/2019	
Reviewed By: Woodward Li m.Heine	Date: 12/20/2019	

Circled numbers on map indicate a swipe area of 100 square cm. Numbers not circled indicate a survey location.