ATTACHMENT 3
Pre-Dive Checklist
Page 1 of 1

(USED FOR SUBSEQUENT DIVES AFTER CREW'S INITIAL BRIEF. MAY BE PERFORMED IN ANY ORDER)

PRE-DIVE CHECKLIST (complete before each dive)	Initial - N/A
1. Complete a pre-job briefing (discussion to include dive area boundaries, dose rate information and task(s)).	
2. Verify two underwater survey instruments are in calibration and source checked and are available.	
3. Verify water clarity and underwater lighting adequate.	
4. Verify dive site survey is performed (historical survey available for initial dive) and methodology by RP Supervision approved.	
5. Verify dive suit is wet prior to diving.	
6. Verify diver's suit(s) is surveyed and meets the requirements of step 4.3.5 1ST Dive Now	N/A
7. Verify helmet dosimetry attached with wire/plastic ties, when applicable. Do not use material, such as plastic bags or tape, which could block diver's exhalation valve.	N/A
8. Verify diver dosimetry in proper location (e.g., EDs, TLDs, Extremity, etc.).	
9. Verify remote dosimetry equipment is operational. No Remote Dosimetry	N/A
10. Verify two-way voice communications are available and operational.	
11. Verify approved method of visual contact is available.	
12. Verify survey instrumentation used by diver is operable.	
13. Verify in-leakage test of diver suit has been performed.	
14. Verify that breathing air is monitored.	
15. Evaluate the need for vacuuming and shielding.	
16. Ensure all prerequisites of RP-AA-461 are met prior to dive operations.	
17. Discuss immediate actions for each the following: CO alarm, High Rad alarm, CAM alarm, diver disorientation, diver signaled to leave, failure of underwater survey instrumentation, diver reaches pre-established dose limits, radiological aspects of dive can NOT be maintained or are suspect	
18. Discuss when the dive operations shall be suspended as per step 4.4.7.	
19. Verify with Diver Supervisor that Ops Shift Supervision has been notified prior to start of dive evolutions.	
20. Ensure appropriate controls are in place for dive evolutions in a high dose rate gradient area.	
21. Ensure water are within limits. (<95° F unless approved by Dive Supervisor and prior to notification to RP/Safety)	
22. Discuss approved dose levels with divers.	
23. When meeting the requirements of step 3.3.11, ensure a documented plan exists with the appropriate approvals when evaluating diver safety.	

Tim Fisher Divers Name (Print)	5/8/09 Date
RP Technician (signed)	5/8/09 Date
RP Supervision Review (signed)	05/08/09 Date

GROSS BETA/GAMMA/ALPHA
Full Database Record Report

Samp # 48909 collect By MEH ETN CA RWP 000054
Other; Cond. Storage Tank CST INSIDE TENT.DURING DIVIN
Date/Time Start 05/08/09 9:40 Stop 05/08/09 16:35 Net Time 6.92hrs
Flow Rate 22 Sampler SN 0001 Cal Due 07/29/09 Volume 9.13E+06
General Area Sample
Beta Results
Beta Conc. 9.61E-12 Counts 49 Bkg 22.50
Count Duration 1 Count Time 1723 Count Date 05/08/09 Eff 0.136
Beta DACs 0.00 Counter SN 700488 Counted By Fiona M Roberts

Alpha Results
Alpha Conc. 0.00E+00 Counts 0 Bkg 0.00
Count Duration 0 Count Time Count Date / / Eff 0.000
Alpha DACs 0.00 Counter SN Counted By

Gamma Results
Gamma Part DACs 0.00 Detector 0 Gamma Char DACs 0.00 Detector 0

Total DACs 0.00 Respirator PF 1 Total DAC-HRs 0.00
mrem CEDE 0.0

ATTACHMENT 4
Dive Checklist
Page 1 of 1

(Used for subsequent dives after crew's initial brief. May be performed in any order)

PRE-DIVE CHECKLIST (COMPLETE BEFORE EACH DIVE)

Date: 7/8/09 Diver's Name: Tim Fisher RWP # 54
*Standby Gordon Smith

Approved Dose Level: 2000 mrem Current Exposure: 266 mrem
* 2000 * 700

Maximum Stay Time: 3hrs 20min N/A 7-8-09 Minutes

POST-DIVE CHECKLIST (complete after each dive)	Initial - N/A
Dive Suit Survey Complete (including discrete radioactive particles)	MEH
Hose Off Diver	MEH
Decon Diver's Suit / Post Decon Survey documented	MEH
Electronic Dosimeter readings recorded	MEH
Multiple Dosimetry TLDs stored	N/A
Primary TLD returned to diver Only Primary TLD Being used	N/A
Exposure investigation required?	☐Yes ☒No

			Electronic Dosimeter Exposure							
Time In	Time Out	Stay Time	Head	Left Arm	Left Leg	Chest	Back	Right Arm	Right leg	Other
In 14:45	Out 15 15	30	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A

Mark Hartman [signature] 5/8/09
RP Technician (signed) **Date**

[signature] 5/8/09
RP Supervision Review (signed) **Date**

ATTACHMENT 5
Diver Surveys In and Out of Water
Page 1 of 1

Diver's Name: Tim Fisher Dive Location: CST Date of Dive: 5/8/09

In Water – Survey On Diver

	Time	RPT Init	Instr. Type	Serial Number	Cal Due Date	Location on Diver	Max Reading	
1st Survey								mrem/hr
2nd Survey								mrem/hr
3rd Survey								mrem/hr
4th Survey				N/A				mrem/hr
5th Survey								mrem/hr
6th Survey								mrem/hr
7th Survey								mrem/hr
8th Survey								mrem/hr

Out of Water – Survey On Diver

	Time	RPT Init	Instr. Type	Serial Number	Cal Due Date	Location on Diver	Max Reading W/O (Uncorrected)	Reading W/C
1st Survey	15:50	[illegible]	R02	073357	8/11/09	All	<0.5 mrad/hr	<0.5 mrem/hr
2nd Survey							mrad/hr	mrem/hr
3rd Survey							mrad/hr	mrem/hr
4th Survey							mrad/hr	mrem/hr
5th Survey				N/A			mrad/hr	mrem/hr
6th Survey							mrad/hr	mrem/hr
7th Survey							mrad/hr	mrem/hr
8th Survey							mrad/hr	mrem/hr

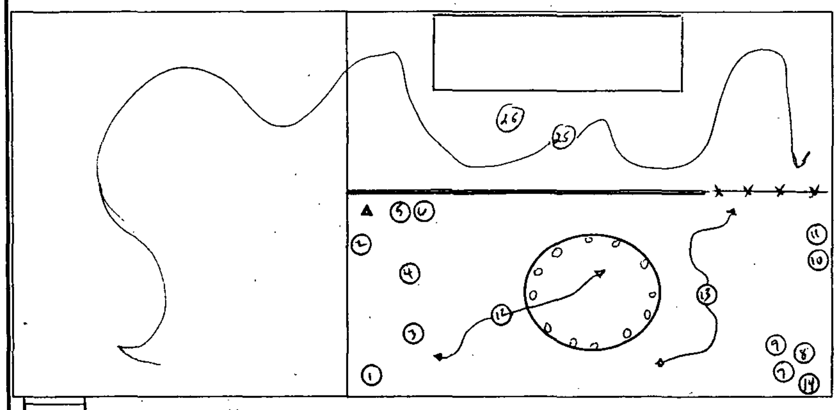
- If Discrete Radioactive Particle(s) <10 mrad/hr, then RPT to survey diver suit approximately every 1 - 2 hr *(based on evolutions and work environment)*, perform detailed w/o & w/c survey, attempt to decon and allow diver to return to water.
- If Discrete Radioactive Particle >10 mrad/hr and <500 mrad/hr, then RPT to survey diver suit approximately every 1/2 hr, perform detailed survey, collect particles and allow diver to return to water.
- If Discrete Radioactive Particle >500 mrad/hr, then immediately remove diver from suit, perform detailed survey of suit, characterize particles and initiate dose assessment.

[signature] 5/8/09
RP Technician (signed) Date

[signature] 5/8/09
RP Supervision Review (signed) Date

OCGS Radiological Survey

OCGS Radiological Survey	No. CAA-09-03116	Date 5-8-09	Time 1830	Location CST Tank Top Enclosure
		RWP OC-01-09-00054		Reason Support Tank Inspection
		Rx. Power - 100 %		



Note - Extra smears taken on Gloves + Boots / clean area

Smears — DPM

21 - Left Boot - <1k βγ <20 α
22 - Right Boot - <1k βγ <20 α
23 - Left Glove - <1k βγ <20 α
24 - Right Glove - <1k βγ <20 α
(100cm²)

25 - clean Area LAS <1K DPM

26 - clean Area 100cm² <1k / <20 DPM

SMEARABLE CONTAMINATION

#	LOCATION	β γ ☒ DPM ☐ MRAD/HR	α DPM	AREA
1	Rope *	4K	NT	L
2	Grates *	4K	↑	↑
3	Diver Umbilicals	2K		
4	Diver Umbilicals	4K		
5	Outside Diver Helmet	<1K		
6	Inside Diver Helmet	<1K		
7	Outside Diver Suit	4K		
8	Outside Diver Suit	<1K		
9	Inside Diver Suit	<1K		
10	Cage	<1K		
11	5-8-09 Cage Bottom	1K		
12	Floor and Hatch	<1K	↓	↓
13	Floor	<1K	NT	L
14	Weigh Belt	<1K	NT	L
15	I/S Suite	<1k	<20	100cm²
16	I/S Suite	↓	↓	↓
17	O/S Suite			
18	O/S Suite			
19	I/S Helmet	↓	↓	↓
20	O/S Helmet	<1k	<20	100cm²

INSTRUMENTATION DATA

RADIATION SURVEY

INST	R02
S/N	073357 BCF 4
CDD	8-11-09
INST	NA
S/N	BCF
CDD	

CONTAMINATION SURVEY

INST	RM14
S/N	077461
CDD	5-22-09
EFF 10%	BKG 100 CPM
INST	SAC4
S/N	78465
CDD	11/17/09
CF 3.15	BKG .16 CPM

AIR SAMPLE DATA

FC SEE REMARKS uC

L = Large Area Smear
NC = Not Counted
NA = Not Applicable
NT = Not Taken

Surveyor:(Print Name) J BUCHTA / A. MARSHALL 5-8-09	# = Gamma G.A.	⊛ = Smear
Signature [signature] Date	# B = Beta	DF - Direct Frisk
Reviewer:(Print Name) Mark Hartmann	# N = Neutron	X-X or - - = Rad Boundary
Signature [signature] Date 5-8-09	# / # = Contact / 30 cm	#/# = Beta / γ Contact
Hd = Head, Ch = Chest, Kn = Knee, W = Waist	# B / # = β / γ	#/# Beta / γ 30cm
All dose rates in mrem/hr unless otherwise noted		

☒ No Beta Detected Unless Otherwise Noted ☐ No Beta Readings Taken

Remarks: ▲ - Air Sample Location - A/S # 489-09 Conc 9.61E-12 βγ

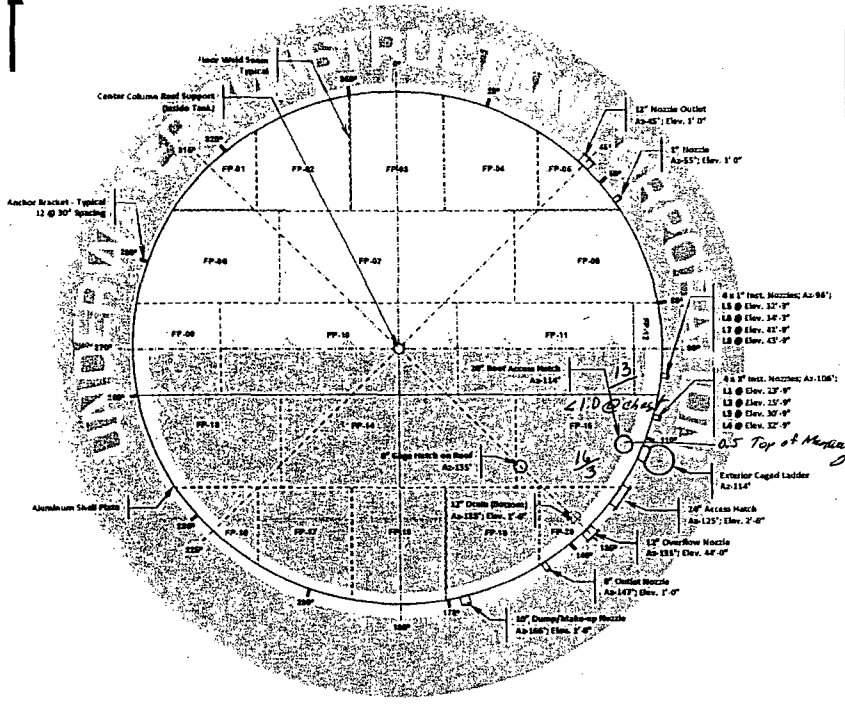
Items Check and No Hot Particles Found

* Items Bagged and Tagged

)CGS Radiological Survey | No. **CAA-** 09-3115 | Date 5-8-09 | Time 15:15 | Location I/S CST

RWP 0C-1-09-0054 | Reason Bottom of Tank During initial Dive.

Rx. Power - 100 %



SMEARABLE CONTAMINATION

	LOCATION	β γ ☐ DPM ☐ MRAD/HR	α DPM	AREA
1				
2				
3				
4				
5				
6				
7				
8				
9		N/T		
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

INSTRUMENTATION DATA

RADIATION SURVEY
INST AMP-100
S/N 76499 BCF N/A
CDD 10/3/09
INST RO2
S/N 073357 BCF 4.03
CDD 8/11/09

CONTAMINATION SURVEY
INST
S/N
CDD
EFF 10% BKG N/T CPM
INST
S/N
CDD
EFF BKG CPM

AIR SAMPLE DATA
FC NT * See Remarks uCi

L = Large Area Smear
NC = Not Counted
NA = Not Applicable
NT = Not Taken

Surveyor: (Print Name) Mark Hartsman
Signature Mark Hartsman Date 5-8-09
Reviewer: (Print Name)
Signature Date 5/9/09

Hd = Head, Ch = Chest, Kn = Knee, W = Waist

= Gamma G.A. | # B = Beta | # N = Neutron | # / # = Contact / 30 cm | # B / # = β / γ

(#) = Smear | DF - Direct Frisk | X-X or - - = Rad Boundar | #/# = Beta / γ Contact | #/# Beta / γ 30cm

All dose rates in mrem/hr unless otherwise noted

☐ No Beta Detected Unless Otherwise Noted ☒ No Beta Readings Taken

Remarks: * A/S Taken O/S Manway in Tent #489-09 · 9.61E-12 uCi/cc
Tritium Sample taken but not yet counted.