

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)).	<i>MCA</i>
2. Verify two underwater survey instruments are in calibration and source checked and are available.	<i>MCA</i>
3. Verify water clarity and underwater lighting adequate.	<i>MCA</i>
4. Verify dive site survey is performed (historical survey available for initial dive) and methodology by RP Supervision approved.	<i>MCA</i>
5. Verify dive suit is wet prior to diving.	<i>MCA</i>
6. Verify diver's suit(s) is surveyed and meets the requirements of step 4.3.5	<i>MCA</i>
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.).	<i>MCA</i>
9. Verify remote dosimetry equipment is operational.	N/A
10. Verify two-way voice communications are available and operational.	<i>MCA</i>
11. Verify approved method of visual contact is available.	<i>MCA</i>
12. Verify survey instrumentation used by diver is operable.	<i>MCA</i>
13. Verify in-leakage test of diver suit has been performed.	<i>MCA</i>
14. Verify that breathing air is monitored.	<i>MCA</i>
15. Evaluate the need for vacuuming and shielding.	<i>MCA</i>
16. Ensure all prerequisites of RP-AA-461 are met prior to dive operations.	<i>MCA</i>
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	<i>MCA</i>
18. Discuss when the dive operations shall be suspended as per step 4.4.7.	<i>MCA</i>
19. Verify with Diver Supervisor that Ops Shift Supervision has been notified prior to start of dive evolutions.	<i>MCA</i>
20. Ensure appropriate controls are in place for dive evolutions in a high dose rate gradient area.	N/A
21. Ensure water are within limits. (<95° F unless approved by Dive Supervisor and prior to notification to RP/Safety)	<i>MCA</i>
22. Discuss approved dose levels with divers.	<i>MCA</i>
23. When meeting the requirements of step 3.3.11, ensure a documented plan exists with the appropriate approvals when evaluating diver safety.	<i>MCA</i>

GORDON SWINTH
Divers Name (Print)
[Signature]
RP Technician (signed)
[Signature]
RP Supervision Review (signed)

5/18/09
Date
5/18/09
Date
5/18/09
Date

F-15

RD2A 330289
Aurora-100 76499
Telephone 75614

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: <u>5/18/09</u>	Diver's Name: <u>Gregory Smith</u> RWP # <u>06-109-54</u>
Approved Dose Level: <u>2000</u> mrem	Current Exposure: <u>696</u> mrem
Maximum Stay Time: <u>N/A</u> Minutes	

POST-DIVE CHECKLIST (complete after each dive)	Initial: N/A
Dive Suit Survey Complete (including discrete radioactive particles)	<u>MCH</u>
Hose Off Diver	<u>MCH</u>
Decon Diver's Suit / Post Decon Survey documented	<u>MCH</u>
Electronic Dosimeter readings recorded	<u>MCH</u>
Multiple Dosimetry TLDs stored	<u>N/A</u>
Primary TLD returned to diver - <u>PRIMARY TLD BEING USED</u>	<u>N/A</u>
Exposure investigation required?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Electronic Dosimeter Exposure										
Time In	Time Out	Stay Time	Head	Left Arm	Left Leg	Chest	Back	Right Arm	Right Leg	Other
In 1425	Out 1505	40m	N/A	N/A	N/A	0.2	N/A	N/A	N/A	N/A

MCH
RP Technician (signed)

[Signature]
RP Supervision Review (signed)

5/19/09
Date

5/19/09
Date

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

Diver's Name: Gordon Smith Dive Location: CST Date of Dive: 5/18/09

In Water - Survey On Diver							
	Time	RPT Init	Instr Type	Serial Number	Cal Due Date	Location on Diver	Max Reading
1 st Survey							_____ mrem/hr
2 nd Survey							_____ mrem/hr
3 rd Survey							_____ mrem/hr
4 th Survey							_____ mrem/hr
5 th Survey							_____ mrem/hr
6 th Survey							_____ mrem/hr
7 th Survey							_____ mrem/hr
8 th 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/Cs	
1 st Survey	15:00	MEH	R2A	330289	5/19/09	All	<2 mrad/hr	<2 mrem/hr	
2 nd Survey							_____ mrad/hr	_____ mrem/hr	
3 rd Survey							_____ mrad/hr	_____ mrem/hr	
4 th Survey							_____ mrad/hr	_____ mrem/hr	
5 th Survey							_____ mrad/hr	_____ mrem/hr	
6 th Survey							_____ mrad/hr	_____ mrem/hr	
7 th Survey							_____ mrad/hr	_____ mrem/hr	
8 th 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.

Gordon Smith
RP Technician (signed)

5/18/09
Date

[Signature]
RP Supervision Review (signed)

5/19/09
Date

ATTACHMENT 6
Diver-Performed Survey Verifications
Page 1 of 1

DIVER'S NAME: Gordon Swinick DATE OF DIVE: 5/18/09
GENERAL DIVE LOCATION: CST

Survey of Dive Area							
	Time	RPT Init	Instr. Type	Serial Number	Cal. Due Date	Location of Survey	Maximum Reading
1 st Survey	14:45	MLA	AMP 100	76499	10/8/09	Filter	180 mrem/hr
2 nd Survey	14:45	MLA	AMP 100	76499	10/3/09	Diver G/A	2 mrem/hr
3 rd Survey							mrem/hr
4 th Survey							mrem/hr
5 th Survey							mrem/hr
6 th Survey							mrem/hr
7 th Survey							mrem/hr
8 th Survey							mrem/hr
9 th Survey							mrem/hr
10 th Survey							mrem/hr
11 th Survey							mrem/hr
12 th Survey							mrem/hr
13 th Survey							mrem/hr

Mark Whitman
RP Technician (signed)

5/18/09
Date

John Miller
RP Supervision (signed)

5/19/09
Date

ATTACHMENT 5
High Radiation Area (HRA) and Locked High Radiation Area (LHRA) Briefing Form (CM3)
Page 1 of 1

HRA/LHRA to be entered: CST/TBOF
RWP #: OC-1-09-00054-01
General description of tasks to be performed: Remove Filters from CST & Transfer to drums on TBOF

Briefing Content: (check/initial completed steps)

- ☒ Introduce brief with statement identifying brief's purpose. (Example: "This is a High Radiation Area or Locked High Radiation Area Brief.")
- ☒ Inform worker they are responsible for ensuring correct RWP is being used.
- ☒ Use survey or location maps as appropriate to accurately identify location of work activities / entries.
- ☒ Identify dose rate in work area.
- ☒ Identify low dose area information.
- ☒ Identify required dosimetry.
- ☒ Identify alarm set points. 80/800
- ☒ Identify maximum stay-times.
- ☒ Inform worker to conduct self-check of ED alarm set points against set points noted on Radiation Worker Pocket RWP Data Sheet prior to HRA/LHRA entry.
- ☒ Inform worker that a verification of ED alarms set points should be conducted if entering HRA/LHRA with another individual.
- ☒ Inform worker to verify ED has a display prior to HRA /LHRA entry (Reinforce need to check dose frequently while in HRA/LHRA).
- ☒ Inform worker to NOT move material within area that will increase boundary dose rates without RPT in attendance.
- ☒ Discuss proper control of barricades and postings upon entering / exiting area
- ☒ Inform workers that if they identify an uncontrolled unlocked access point that they must control the area and contact RP.
- ☒ Discuss expected Access and Egress points with the worker.
- ☒ Complete brief with statement concluding the briefing. (Example: "This concludes the High Radiation Area/Locked High Radiation Area Brief.")

Briefing and Acknowledgment:

HRA / LHRA Brief provided by: (print/sign) Mark Hertmann Date/Time 5/15/09

Briefing received by (print/sign) Mark Hertmann

Ex Doyle
Jim Fiumara
Heidy Benton
Golden Smith
David Abrams
ROBERT HOFFMAN

OCGS Radiological Survey		No. CAA-09-03395	Date 5/18/09	Time 15:35	Location CST Tank Top Enclosure		
		RWP OC-01-09-00054		Reason Tank Inspection Support Ariers			
		Rx. Power - 100 %					
		SMEARABLE CONTAMINATION				INSTRUMENTATION DATA	
		LOCATION	β γ $\frac{1}{2}$ DPM □ MRAD/HR	α DPM	AREA	RADIATION SURVEY	
1 1/2 Suit	21000	<20	100CM	INST R02A			
2 1/2 Suit				S/N 330289 BCF 4.31			
3 1/2 Suit				CDD 5/19/09			
4 1/2 Helmet				INST Amp 100			
5 1/2 Helmet				S/N 76499 BCE N/A			
6 1/2 Suit				CDD 10/3/09			
7 1/2 Suit				CONTAMINATION SURVEY			
8 1/2 Suit		<20		INST RM14			
9 Deck		N/A		S/N C010215			
10 Deck				CDD 10/10/09			
11 Deck				EFF 10% BKG 80 CPM			
12 Deck	21000		100CM	INST SAC4			
13 Deck	21000		L	S/N 78465			
14 Floor	2K			CDD 11/7/09			
15 Cage	1K			CF 3.15 BKG 0.16 CPM			
16 Umbilical	1K			AIR SAMPLE DATA			
17 1/2 Helmet	21000			FC <100 uC			
18 1/2 Suit	2K	N/C	L	L = Large Area Smear			
19				NC = Not Counted			
20				NA = Not Applicable			
A				NT = Not Taken			
Surveyor: (Print Name) M. Naughton				# = Gamma G.A.			
Signature [Signature] Date 5/18/09				# B = Beta			
Reviewer: (Print Name) ROBERT HEFFNER				# N = Neutron			
Signature [Signature] Date 5/18/09				# I # = Contact / 30 cm			
Hd = Head, Ch = Chest, Kn = Knee, W = Waist				# B / # = β / γ			
All dose rates in mrem/hr unless otherwise noted				# / # = Beta / γ 30cm			
<input type="checkbox"/> No Beta Detected Unless Otherwise Noted				<input type="checkbox"/> No Beta Readings Taken			
Remarks: Smears and LAS counted by M. Naughton							
- Dose Rate on Contact to Filters Ranged from 500-700 mR/hr on contact and 35-110 mR/hr @ 30cm							