. «			ar Powe	r Busines	ss Unit PERMIT			
Revision: 0		CO	3			RWP Number:	04-14	1
Controlling Work Document: <u>Va</u>	rious		RG 1.1	6 Class: _	2	Estimated Dose:	4.320	_ Rem
Job Title: Nozzle Da	m Install/Remove							
Job Location: U1 Co	ontainment							
Job Description:	move/ Install Nozz	le Dams in Ste	am Gener	rators		····		
		Padiolog		accmant	of Work		<u></u>	
Significant incre	ase in radiation lev	vels is likely?	⊠Yes		Reason:	Removal of Shieldin ALARA doors.)	g (ie, Manways	,
Significant increase in	n contamination lev	els is likely?	⊠Yes	□No	Reason:	Removing nozzle da	ms after use.	
	Potential for in	nternal dose?	⊠Yes	□ N₀	Reason:	Removing nozzle da	ms after use.	
		<u></u>	<u> </u>	<u></u>				
Tech 1. Domou	and Install No	aralo Domo	RWP	Tasks				
Task 1: Remove	e and Instan No	SZLIE Dams						<u></u>
Task 3:								
Task 4:								<u> </u>
Task 5:				.			<u> </u>	
Task 6:		•						
Task 7:		*						
Task 8:								
Task 9:								
Task J.		·······						
Task 11.		<u> </u>		·····		·····		
Task 12:						·····		
			Review	and An	nrovel		<u> </u>	
		17111		and Ap	provar			
Prepared By:	<u>CD</u> Initials	2/2	24/04					
			Date					
ALARA Review By:			24-04 Date	ALAR	A Review I	No.: 🗌 N/A 🛛	2004-00	17
Approved By:	<u>_</u>	\langle	2]-2	8-04	
		RP	Supervisor				Date	
Terminated By:	<u> </u>	RP	Supervisor				Date	
PBF-4031 Revision 12 12/10/03 HP 1.10/P6.8		<u> </u>	Infor in ac Act, Poly Page	mation in cordance exemption PA - : 1 of 4	this record with the Fr ns 4,5 2004-	was deleted bedom of Information	·L-4	

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Nuclear Power Business Unit RADIATION WORK PERMIT					
Revision: 0 COD RWP Number: 04-141					
TASK 1: Remove and Install Nozzle Dams					
Radiation Protection personnel are authorized to suspend work activities in the event of a change in job scope, changes in radiological conditions, or a failure of personnel working under the RWP to abide by the RWP conditions.					
Stop Work Dose Rate: 30,000 mr/hr ED Dose Rate Alarm: 25,000 mr/hr ED Dose Alarm:904mrem					
Radiation Protection Hold Points: N/A No entries into the S/G Channelhead without RP approval. Contact RP before entering any HRA's					
Authorized Radiological Work Areas: Any RWP permits entry into RCA(s), RMA, and RA.					
⊠ HRA ⊠ LHRA □ VHRA □ Ctmt, Reactor Critical ⊠ CA ⊠ HCA ⊠ HPCA ⊠ Airborne Radioactivity Area					
Expected Radiological Conditions: Data From: 🗌 Current Survey 🛛 Historical Data 🖾 Estimated					
Radiation: GA 500 to 10,000 mrem/hr Contact: 10,000 to 20,000 mrem/hr					
Contamination: 10,000 to > 1E6 dpm/100 cm ² Internal Contamination: 10,000 to > 1E6 dpm/100 cm ² (\boxtimes estimated)					
Airborne Radioactivity: $\leq .25$ DAC \boxtimes P \boxtimes I ₂ \boxtimes NG \square ³ H (\boxtimes Estimated / \square Actual DAC)					
RP Job Coverage: Routine Direct Start of Job System Breach Pre-Job Briefing Required					
Special Instructions: Direct RP Coverage required for all entries into the S/G Channelhead. See Job files 132, 133.					
Radiological Survey Requirements: A. Radiation: Prior to/Start of Work System Breach Other					
Special Instructions: Verification Platform/Channel Head surveys required. Hot particle surveys required for all worker's every 2 hours and immediately after exit from the S/G Channelhead.					
B. Contamination: Prior to/Start of Work System Breach Other					
Special Instructions: Verify conditions prior to entry.					
C. Airborne: 🗌 Prior to/Start of Work 🗋 System Breach 🖾 Other					
Special Instructions: Shiftly Platform Air Samples required during S/G work. Grab samples required based on job evolution and radiological conditions.					

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Revisi	on:	0				RWP Number:	04-141
III.	Dose .	Assessment: 7	LD and EPD require	:d.	•		
	Speci	ial Instructions:	Special multiple dosim HPIP 1.66. RP to relo Extremity Dosimetry r Perform time keeping of Rescue team does not r	netry packs required wB Dosim equired as per H on personnel ma require multiple	aired for full body netry to area expe HPIP 1.66. aking whole body e dosimetry and sh	/half body entries into cted to receive the high entries into the channe bould wear dosimetry c	channelhead IAW nest exposure. elhead. on the chest.
IV.	Prote	ctive Clothing	······				
	\boxtimes	Coveralls, Boo	oties, and Rubber Gloves	(Minimum requ	lirements for ente	ring a contaminated ar	ea)
		Labcoat, Boot	ies, and Rubber Gloves m	nay be used only	y with RP permiss	sion.	~
	\boxtimes	Coveralls, Do	ible Booties or Booties a	nd Rubber Tote	s/Boots, and Dou	ble Rubber Gloves to e	enter HCA.
		Double covera	lls, Double Rubber glove	s, Double Boot	ies, Rubber Totes	/Boots. ⁽¹⁾	
	\boxtimes	Plastic suit, D	ouble Rubber Gloves, Do	uble Booties, R	ubber Totes/Boot	s. ⁽¹⁾	
		Surgeon's Glo	ves may be substituted for	r Rubber Glove	s with RP permis	sion.	
	Hood and Face Shield required as per RP.						
	\boxtimes	Other: See Sp	ecial Instructions	⁽¹⁾ Safety r	review may be rec	uired for additional co	veralls or plastics.
	Speci	ial Instructions:	Additional Dress requi	irements as per l	RP. Plastic suit fo	or all entries into the S/	G Channelhead.
v	Respi	ratory Protect	ion.			Deview	
••	Cont						
	Speci	ial instructions: E	Subble Hoods to be used t	for whole body	entries. Reach-in	s require a face shield.	
VI.	Engin	ieering Contro	ls:				Ĺ
	Speci	ial Instructions:	HEPA ventilation requ	aired on opposit	te leg for reach-in	s and full jumps as mu	ch as practicable.
<u> </u>						Ex 5	inter
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Nuclear Power Business Unit RADIATION WORK PERMIT

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Revision: 0		RWP Number:	04-141
VII. ALARA Requireme LDWA: <u>To be ide</u>	ents: COL	🛛 See ALARA Revie	w
Special Instructions:	 Prejob briefing to cover all items in the A ALARA Doors to be shut when not activ RP to monitor for Hot Particles at a mini RP TO SURVEY ALL ITEMS EXITI Ensure ventilation is running on 1 channer RP to be present when opening bags or e DO NOT HANDLE ITEMS FROM C Foreign debris found within the S/G char handled without RP permission. When working in these areas or tools) workers shall monitor at 1 Contact RP immediately if, duri >10,000 cpm above bkg using a beta instrument. Contact RP immediately if, duri garments any contamination above 	ALARA Review. yely working in S/G Channelhead imum of once every two hours and imu ING THE STEAM GENERATOR. welhead at all times. equipment boxes on the 8'. CHANNELHEAD WITHOUT RP All nnel head may be highly radioactive and r handling equipment from these areas least every two hours. ing monitoring of protective clothing, a frisker or >5 mRem/hr above bkg usi ing monitoring of skin, personal clothing ove bkg is discovered.	PPROVAL!!! nd shall not be (such as refueling the worker discovers ing an open window ing, or modesty

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Point Beach Nuclear Plant Level 3 Pre-Job ALARA Review

ALARA Review Number: 2004-0017 U1R28

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Estimated dose:

4.320 Rem

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		Part 1: Job Description
A.	Job Description (Attach work list if appropriate)	Install and Remove S/G Primary Nozzle Dams
В.	Controlling job procedures.	Scientech Document No. 83A7564 and the job specific RWP
C.	Job History/O.E./Lessons Learned	See the attached INPO Just-in Time Operating Experience report. Lessons learned during U2R26 concerning the stainless steel brush use are to be implemented (the drills that will be used for the hole cleaning evolutions will be taped so they can only be operated in the correct direction).
D.	Dose history.	Nozzle Dams were installed during U2R26 using 2.038 rem. Dose estimate calculations are on page 3.
		Part 2: ALARA Checklist
NO	TE: The following exposure redu	ction measures should be considered during job planning.
Sec	tion 1: Pre-Job Planning/	
E.	Designated low dose waiting/staging areas.	Low dose areas on the platforms will be out of the shine from the manways, near the top of the platform access ladder and also on the 8' el. of containment. See the attached survey maps of the S/G platforms, the 10' platforms and the 8' G.A.'s.
F.	Remote job coverage equipment.	Audio and video equipment will be used. Teledosimetry use is also recommended.
G.	Communication devices used.	Westinghouse comm. gear will be used.
H.	Services required. (lighting, air, electrical)	Grade D breathing air will be required =
1.	Designated work area access/exit points.	Access to the generators will be at the entrance to the 10' platforms, then to the manway platform ladders.
J.	Coordination with other groups.	Coordination between Scientech, RP and Operations will be required.
K.	Work performed outside of radiation areas: Prefabrication Disassembly Assembly	Set-up and assemble as much of the nozzle dam equipment as possible outside of the loop areas.
L.	Post-job cleanup requirements.	An inspection of the S/G bowls after installation of the dams will be required. Also the S/G manway platform will need to be deconned prior to the eddy current equipment setup.

Point Beach Nuclear Plant Level 3 Pre-Job ALARA Review



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AI	ARA Review Number: 2004-0	017 U1R28	Estimated dose:	4.320	Rem
M.	Special tools/equipment used to minimize time and exposure. (Use contaminated tools when practicable)	None			
N.	Radwaste minimization.	Survey and decon all tools and equipme	ent as required.		
0.	Work activities/equipment status that could result in significant interruption of job or changes in radiological conditions.	Loss of S/G channel head ventilation wi	ill interrupt the job. terupting the stop War	K Con	d Ann

Sec	tion 2: Radiological Controls	
Ρ.	Describe temporary shielding to be used.	Shielding package #'s 94 and 95 are to be installed on the "A" S/G manway platform. Shielding package #'s 15, 63 and 64 are to be installed on the "B" S/G manway platform.
Q.	What systems/components will be filled with water or flushed to reduce job area dose rates?	N/A
R.	Engineering controls to control airborne activity. (HEPA filters, glove bags, etc.)	Use of the channel head HEPA/ventilation system.
S.	Attach applicable survey data.	All current survey data will be attached and discussed during the pre-job briefings.
Sec	tion 3: Worker Preparation and	Training
T.	 Consider the following: Experienced workers selected. Special training, photos, drawings, video tapes available Rchearsal Mock-up training Use of fewer workers evaluated Method of shift turnovers 	Experienced workers will be utilized. Mock-up training will be performed with all necessary personnel involved.

ALARA-As Low As Reasonably Achievable RWP-Radiation Work Permit HEPA-High Efficiency Particulate Air

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Point Beach Nuclear Plant Level 3 Prc-Job ALARA Review



These dose rates being used are from historical data, current survey data will be used to update this estimate if necessary.



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Point Beach Nuclear Plant In-Progress ALARA Review/Assessment

ALARA Review Number:	2004-0017	Date:	4-11-04

Review Purpose:

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In-Progress ALARA Review (No pre-job ALARA Review Performed)
 In-Progress ALARA Assessment (Dose Adjustment)
 In-Progress ALARA Assessment (Job at 50% of Original Dose Estimate)

	Part 1: Job Description				
A.	Job Description (Attach work list if appropriate)	Install and Remove S/G Primary Nozzle Dams			
B.	Controlling job procedures.	Scientech Document No. 83A7564 and the job specific RWP			
C.	Job History/O.E./Lessons Learned	See the attached INPO Just-in Time Operating Experience report. Lessons learned during U2R26 concerning the stainless steel brush use are to be implemented (the drills that will be used for the hole cleaning evolutions will be taped so they can only be operated in the correct direction).			
D.	Dose history.	Nozzle Dams were installed during U2R26 using 2.038 rem.			

Part 2: Person-Rem Radiation Dose Evaluation					
Date	Current Dose Estimate (Rem)	Dose Expended to Date (Rem)	% of Current Estimate	% of Job Completed	Revised Dose Estimate (Rem)
4-11-04	4.32 rem	4.442 rem	1.03 %	66 %	6.002 rem

Part 3:	Part 3: Dose Effectiveness Evaluation					
1. Check one or more of the items listed below which accumulation. Provide an explanation for all items	 Check one or more of the items listed below which may have contributed to higher than expected RWP Person-Rem accumulation. Provide an explanation for all items checked. 					
a. Job scope changed/expanded.						
b. Job site radiation levels different/changed.						
c. Encountered scheduling/coordination difficulties.						
d. Work extended due to tool/equipment failure.						
e. Work extended due to wrong or unavailable parts/tools/material.						
f. Work extended due to unplanned job site preparation requirements.						

Point Beach Nuclear Plant
n-Progress ALARA Review/Assessment



In-Progres	s ALARA Review/Assessment
g. Work extended due to interruptions/interferences caused by other work activities.	
h. Inadequate compliance with radiological controls/requirements.	
i. Inadequate consideration of Pre-Job ALARA Worksheet items.	
j. Inadequate shielding.	
k. Other. Desse Cosst In CAP = 900 Miem	Currently all four dams are installed, total dose expended to accomplish this was 4.442 rem, 67mRem of that total was for equipment set-up. There were numerous difficulties during the installation process. These included service air supply for the bubble hoods, which increased time on the platforms. A bolt could not be installed on the "A" hot leg (was eventually resolved by chasing the threads). But the biggest impact was having to remove the "A" hot leg dam and then installing it again once a vent path for the RCS was established. Additionally a proper jump platform was not available on the "A" S/G platform. See the attached AR. Also when making the original dose estimate, nothing was allotted for the camera installation and nozzle dam verification, which was at least 140 mRem plus the RP support dose. The new estimate is for one minute in each bowl for dam removal. Which is 1.32 rem, plus 0.120 rem for S/G platform support and .120 rem for removing cameras and S/G close-out inspections added to the current total of 4.442 for a total of 6.002 rem.
2. Exposure Reduction Action to Be Implemented (If Applicable).	Install a proper jump platform on the "A" S/G manway platform prior to nozzle dam removal.
 AR Generated: □ No ⊠ Yes AR Number: 	CAP055587

Completed By:	W. W. Lemerond	Date: 4-11-04
Approved By:		Date:

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Point Beach Nuclear Plant

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TEDE ALARA EVALUATION	RWP 04-141									
DESCRIBE THE WORK TO BE PERFORMED (DOSE RATES, EST. AVERAGE AIR CONCENTRATIONS, CONTAMINATION LEVELS):										
Steam generator nozzle dam installation/removal – The work involves installation and removal of the steam generator nozzle dams. The work area is a confined area and entry/exit through the manway will abrasively scrub exposed surfaces. Dose rates in the work area is 20 R/hr based on historical data. Expected contamination levels are 200 mrad/hr beta/gamma. From historical data, highest measured alpha contamination was 600-dpm/100 cm ² . Long-lived alpha contamination levels are unknown. Estimated work duration is 3 minutes per worker. The estimated beta/gamma DAC fraction from HPIP 4.40 for work in a confined area is 450 DAC beta/gamma and 10 DAC for alpha.										
DESCRIBE THE ENVIRONMENTAL CONDITIONS AND EFFECTS ON PERSONNEL SAFETY: The environmental conditions in the work area are typical refueling temperature and humidity conditions (i.e, approximately 80 °F and 50 % humidity).										
DESCRIBE PROCESS AND ENGINEERING CONTROLS TO BE USED: Steam generator channelhead ventilation will be operating during the entry.										
DESCRIBE THE PROTECTIVE EQUIPMENT AND CLOTHING, INCLUDING THE RESPIRATOR, TO BE USED AND THEIR EFFECTS ON WORKER EFFICIENCY: The protective clothing that will be worn is the standard protective clothing requirement for work in a contaminated area (coveralls, booties, cotton liners, rubber gloves). Additionally, the standard protective clothing will be augmented with plastic coveralls and additional sets of booties and rubber gloves. An airline/hood is planned for respiratory protection.										
DESCRIBE POTENTIAL POST-ACTIVITY NEGATIVE IMPACTS (E.G., PERSONNEL DECONTAMINATION AND SKIN DOSE ASSESSMENTS, PORTAL MONITOR ALARMS): Potential post-activity negative impacts include facial contamination and uptakes without the use of respiratory protective equipment. Additional time and energy will be spent responding to portal monitor alarms, documenting the contamination and uptake, and assessing the dose impacts.										
DOSE WITHOUT RESPIRATORY PROTECTION:	1									
[Time (hrs) x Dose rate (mR/h)] 0.05 x 20000	= 1000 mrem, external dose									
[Time (hrs) x DAC fraction (x 2.5 mR/DAC-h)] 0.05 x 460 x 2.	5 = 60 mrem, internal dose									
Est. dose for implementating engineering or process controls	= <u>0</u> mrem									
Total	= <u>1060</u> mrem									
	· 45									
DOSE WITH RESPIRATORY PROTECTION:										
[Time (hrs) x Dose rate (mR/h)] 0.05 x 1.15 x 20	0000 = 1150 mrem, external dose									
[Time (hrs) x DAC fraction x 2.5 mR/DAC-h / Respirator PF] 0.058 x 460 x 2	$.5/50^{\times} = 1$ mrem, internal dose									
Est. dose for implementating engineering or process controls	$\int = 0$ mrem 5									
Total (J = 115P mrem									
Note: Time value should reflect worker efficiency impact due to respirator use.	Work time increased by 15 percent per HPIP 440.									
ALARA RECOMMENDATIONS:	X									
Without respirator										
X With respirator Type: Negative Pressure/PA	PR X Airline/Hood I SCBA									
As indicated below										
Justification/Comments: This evaluation determines that the use of an airline/hood for to the use of the airline/hood does not negate its use when accounting for the additional internal contamination that will result when the airline/hood is not used.	this work is not ALARA. However, the increase in dose due time and energy needed to address the effects of external and									
Preparer (Name/Date): Carl Onesti V	.04									
Approver (Name/Date):	4-3-04									
/										

PBF-4230a Revision 1 02/06/02 HP 15.12

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Point Beach Nuclear Plant

IODINE ACTIVITY CONCENTRATIONS

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I				A DATA AND AND AND AND AND AND AND AND AND AN							
LOCATION	:	<u>11 </u>	A \$/1-	Herceg	}—		<u>.</u>	_ RWP	No. <u>64-</u>	<u>104</u>	
Remot	e conta	inmer	nt sampling	system used?		Yes	□ No [PNA	C(
SAMPLING	DATA	:									
SAMPL	.E		SAMPLE	START		SAMP	LE STOP	S	AMPLE	SAMPLER	
NUMBE	ER		DATE	TIME		DATE	TIME		.UME, (cc)	NUMBER	INITIALS
30-1	09	4.	12-8	1830	4	-8-04	1845	1.6	5 56	HUS-22	m
Sample start flow //O Lpm Total sample time (min) //Sm Sample stop flow Image: Sample flow Image: Sample flow Image: Sample flow Average sample flow Image: Sample flow Image: Sample flow Image: Sample flow ANALYSIS DATA: [X] Isotopic Analysis [I] MECDOS (for DAC data) S.I. #											
} Date	Tir	ne	Isotope	*Concentration (µCi/cc)		By Initials	Date	Time	Isotope	Concentration (µCi/cc)	n By Initials
4/8/01	102	2	I-131	2.66E-1	-10 Gr		4/8/84	2022	Cl-38	ZMOA.	au
			I-132	6.09E-	9				Br-82	1	<u> </u>
			I-133								
			I-134								
			I-135								
Ŷ	1 C		Total Iodine	6.36E-9	}		Y	Ŷ	Total Additional		V
Total Iodine	Concen	tratio	n + Total A	Additional Conc	entri	ation =	6.36E	-9 _{μC}	i/cc By (Ini	tials)	
[] Unit 1		[] U	nit 2	RE-211:			μCi	RE-21	2:	μCi/cc	
This form sho *RELEASE - If th Save	ould be ACCOL e conce e the chi	used : JNTA ntrati- arcoal	for all radio BILITY - on of total I filter until	biodine analysis (for release pat for radioiodine the investigation	s res hs or s exc on is	ults. nly) ceeds 2.28 complete	E-09 μCi/cc, f d.	ollow steps	s outlined in R	AM 5.2.	L.
: Aj	pproved	l by:		$\int z$	\in	2		E	Date: 4/4	1/04	
PBF-4002 Revision 6 11/1 HP 1.1 - J.7 or C	3/03 23.2/PG.3			-/					Referen	ces: HPIPs 3.52, 3.5	2.2. 3.53. 5 1

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RADIOLOGIC & SURVEYS

LOCATION: "A" Loop - . w "A" Steam Generator



PBF-4021 Revision 0 01/01/93 HP 1.9 Notes: 1) All readings in mrem/hr

2) *Designates hot spots

3) ODesignates routinely updated posting

4) "Potential Hazards" identified are indicated on map

				<u>RA</u> LOCATION:	AT Loop - Lociow "A" Steam Generator
DATE TIME MONI	TOR	4 - 8-04 1530 2411 01104	<u> </u>	INSTRUMENT TYPE SERIAL NO. COUNTED BY <i>Losse</i>	ABOSTO A Protects/RM14PURPOSE: Daily Survey Pre-RWP 7626 9684 7698 NRWP # <u>C4-140</u> Other <u>rist Caphian Asuarial</u> Marcharyk 120 REVIEWED BY: <u>Reviewed By:</u>
NO.	MREM/ HR	$\beta_{\gamma} DPM/ 100 CM2 \mu C/\zeta 50/\zeta 35/\zeta 35/\zeta 35/\zeta 250/\zeta 700/\zeta 500/\zeta 500/\zeta 150 mR.d 150 mR.d $	$\begin{array}{c} \alpha DPM/\\ 100 \ CM^2\\ \hline \\ \hline$	REMARKS Fleest Strongenek Fleet Fleet Fleet Manuay C/L Manuay C/L Manuay	Area Poste d': 4KA, HCA, clarles & Ctherwise Noted NRMTE 200 200 200 200 200 200 200 20
					Area 1C-9

PBF-4021 Revision 0 01/01/93 HP 1.9

Notes: 1) All readings in mrem/hr
2) *Designates hot spots
3) ØDesignates routinely updated posting
4) "Potential Hazards" identified are indicated on map

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IME IONI	<u>4</u>	- 4-04 1530 18(Ert -	SHE Nim	INSTRUMENT TYP SERIAL NO COUNTED BY	$\frac{RSC5}{16ACU3}/\frac{R}{17698} = Duily Survey = Pre-RWP$ $\frac{7337}{1684} = \frac{7698}{17698} = \frac{C4-141}{100} = Other$ $\frac{PC1CR}{16R} = \frac{N}{1811} = REVIEWED BY:$
10.	MREM/ HR	βγ DPM/ 100 CM ²	αDPM/ 100 CM ²	REMARKS	I HRA WI TIASAING IZED INATS
$\frac{7}{1}$		714	~mpA	FLeck	
<u></u>		<u></u>	SMRH	·	
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<u></u>		<u> </u>	<u> <u> </u></u>		-1 $\sum_{i=1}^{n} a_i = a_i = \frac{a_i}{35} + \frac{a_i}{4} = \sum_{i=1}^{n} a_i = \frac{a_i}{35} + \frac{a_i}{35} + \frac{a_i}{35} + \frac{a_i}{35} = \frac{a_i}{35} + \frac{a_i}{35} + \frac{a_i}{35} = \frac{a_i}{35} + \frac{a_i}{35}$
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· · · ·		XCC/C			MANWAY -> 3000
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					Taking stricture TO.
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					Area 1C-9

4) "Potential Hazards" identified are indicated on map

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AREA C-1

PBF-4021 Revision 1 08/29/95 HP 1.9

- Notes: 1) All readings in mrem/hr
 - 2) *Designates hot spots

2) ØDesignates not special
 3) ØDesignates routinely updated posting
 4) "Potential Hazards" identified are indicated on map

DATE TIME MONI	ز د TORز د	10 04 100 278K 50	:E.N.:11	INSTRUMENT TYPE SERIAL NO COUNTED BY	$H: \varepsilon \le ABA \varepsilon US RD1/42$ PURPOSE: Daily Survey Pre-RWP $2 \le 5 \le ABS4 76\% 8$ $\square RWP # 64 - 143$ $\square Other$ $Pictor REVIEWED BY: \square All $
NO.	MREM/ HR	βγ DPM/ 100 CM ²	αDPM/ 100 CM ²	REMARKS	
				<u>F (cc)?</u>	AV.78% EFF 10 35 35 MDA AMAX 14 14 14 14 14 14 14 14 14 14 14 14 14
PBF-40 Revision HP 1.9	1 21 n 0 01/01/93	<u> </u>		I Notes: 1) All reading 2) *Designate 3) ⊗Designate 4) *Potential 1	Area 1C-9 s in mrem/hr s hot spots is routinely updated posting Hazards" identified are indicated on map

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SAMPLE TY AP 🕅 G	₽ E: gš ☐ Other	AII	Poin RBORNE R	t Beach Nucle: RADIOACT	r Plant IVITY SU	RWP No			
Sample Locati	un: <u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u>	I CTMT	(crissia	esta tend	<u>/ </u>	<u>.</u>	~ 	-	
Remote	containment san	npling system	used? 🔲 Y	ies 🗌 No	N. N.				
SAMPLING D	ATA:						Г Ц Г — — — — — — — — — — — — — — — — — — —		
SAMPLE NUMBER	SAM DATE	IPLE START	E D.	SAMPLE STO	DP	VOLUME (cc)	SAMPLER NUMBER	BY INITIALS	
30-104	- NF	A N	+ 423		830"	10175	- NA	RUK	
Sample Start FlowI ATotal Sample Time (min)I ASample Stop FlowIFlow CorrectionIIAverage Sample FlowIRemarksII									
GROSS BETA	-GAMMA COL	INTING DAT	<u>A</u> :	·····	·····	•••	CALOUR		
DATE	TIME	Counter Number	GROSS .cpm	BKGD cpm	NET cpm βγ	MULT. FACTOR	ACTIVITY (µCi/cc) ^{(1,2}	BY	
					[
Chemistry f ¹²¹ If sample tal activity is gr <u>GROSS ALPH</u> .	or isotopic analysis cen from an area v cater than IE-10 A COUNTING	is. with known alpl μCi/cc. perform DATA:	a contaminatio gross alpha co	n (c.g., refueling unting and take c	cavity, spent ir send sample	fuel pool transfe e to Chemistry fo	r canal. reactor her r isotopic analysis	ad) and sample	
DATE	TIME	Counter Number	GRO cpr	SS BI	GD pm	NET cpm α	cpm βγ/ NET cpm α ⁽³⁾	BY INITIALS	
L	<u> </u>	<u> </u>		<u> </u>			·		
If sample act Isotopic An: Date $4/6/0$	ivity ratio of net of allysis IN <u>4</u> Time	cpm beta-gamm NOBLGS [1859	a to net cpm alp DACDOS Spectrum In	ndex No. <u> 0</u>]	50. notify RP Retur <u>ممبر [</u>	n to RP by	hr. for LL	A counting.	
ISOTOF	PE ((µCi/cc)	BY INITIAL	.s 1sot	OPE	ΑCΠ/Π (μCi/cc)		TALS	
Xe 13 :	3 3.34	16-7	- TW				<u> </u>		
	· · · · · · · · · · · · · · · · · · ·								
Record RE-211	and RE-212 rea Unit 2	dings for all at	-power contai RE-211: SAE air camal	nment air sam	oles: μCi	RE-212:		_ μCi/cc	
	Unit 2		RE-215:		μCi/cc	SAE Flow:	<u></u>	scfm	

ł.

 $\frac{R}{6} = \frac{8}{200} \frac{R}{1000} + (For release paths only)$ If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6 = $\frac{100}{1000} \frac{\mu Ci/cc}{\mu Ci}$ or the total for noble gases exceeds 6.86E-06 $\mu Ci/cc$, notify the Chemistry lab supervisor and/or the Radiation Protection supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{11} screening.

1

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Sample Volume (cc): _____ (from Page 1)

⁴⁴Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD ^{.4)}	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C ₁												
C2												
C3	,											
C.												
CLL									·			
Reviewed By: ZZZ Date: Date:												

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C2	At T ₆	Start second count at least 2 hours after C1.	•
C3	At T _a	Start time dependent upon results of C_2 .	
C₄	At T ₂₈	Start count 24 hours after C1.	
CLL	At T>75	Start count at least 75 hours after T_0 .	

$$C_{11} = C_2 \cdot (C_1 e^{-\lambda \Delta t})$$

1 - e^{-\lambda \Delta t}

VALUES OF (C2.3.4, ETC.)/C1 FOR C11 EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔΤ	1	ΔΤ		ΔT	T
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9,5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	• 0.5027	16	0.3506
3.25	0.8083	. 7	0.6322	10.75	0.4945	18	0.3076
3.5 .	0.7951	7.25	0.6220	11	0.4865	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338	<u></u>	

NOTES:

1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu \text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C1	C:	ì.	اد	Сц	RP Supervision Notified (initials)
				0.0655			

3. If the C_4/C_1 ratio is greater than that in Table 1, refer to HPIP 3.53. Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Point Beach Nuclear Plant *** NOBLE GAS SKIN EXPOSURE ***

SAMPLE DATE: 04/08/04 18:30 SAMPLE LOCATION: U1 CTMT CHANNEL REMARKS:

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1

SAMPLE ID: 30-104

TAKEN BY: RLK ANALYSIS BY: EK

ISOTOPIC ANALYSIS RESULTS

	ISOTOPE	NOBLE GAS CONC. (uCi/cc)	FRACTION	GAMMA WHOLE BODY (mR/hr)	BETA SKIN DOSE (mR/hr)	GAMMA SKIN DOSE (mR/br)	TOTAL SKIN DOSE (mR/hr)
_	XE-133	3.390E-07	1.0000	0.01	0.01	0.02	0.03
	TOTALS	3.390E-07	1.0000	0.01	0.01	0.02	0.03

Date: 4/5/34 Reviewed by:

MECDose/Noble Gas Program (SWR-2001-103)

04/08/04 7:18:03 PM

Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS ***

SAMPLE DATE: 4/8/2004 18:30 SAMPLE LOCATION: U1 CTMT CHANNEL REMARKS:

1

)

SAMPLE ID: 30-104

TAKEN BY: RLK ANALYSIS BY: EK

ISOTOPIC ANALYSIS RESULTS

	RESTRICTED DAC	CONC	FRAC. OF	% OF
ISOTOPE	(uCi/cc)	(uCi/cc)	CONC.	DAC
XE-133	1.00E-04	3.39E-07	1.00	0.339
	TOTALS	3.39E-07	1.00	0.339

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 1.2E+04 hours.

_____ Date: _____ 20 Reviewed by: _

SAMPLE TYI AP DG	PE: as 🔲 Other	AI	Poir RBORNE I	nt Beach Nuc RADIOÁC	lear Plant TIVITY (SURVEY	RWP	No. <u>D</u>	<u>1-140</u>		
Sample Location	on: <u>じ-</u>	1 CTINT	<u>5/c.pl.</u>	atterm	(1157)	https://www.	metal	2"			
Remote	containment s	ampling system	used?	ies 🔲	No P	NATS F	5				
SAMPLING D	ATA:			<u> </u>			L				
SAMPLE NUMBER	SA DATI	MPLE START E TIN	1E D	SAMPLES	TOP TIME.	VOLUME	SAMI NUM	PLER IBER	BY INITIALS		
30-105	4-8-	04 144	10 4-1	8-04 4	513	2:7E6	-215	3	RLK		
Sample Start Fl Sample Stop Fl Average Sampl	mple Start Flow 35 / p:s1 Total Sample Time (min) 93 mple Stop Flow Flow Correction 0.83 erage Sample Flow Remarks 0.83										
GROSS BETA	-GAMMA CO	DUNTING DAT	<u>[A:</u>	· · · · · · · · · · · · · · · · · · ·	<u> </u>	·····					
DATE	TIME	Counter Number	GROSS .cpm	BKGD cpm	NET cpm f	MULT By FACTO	· ACT R (μCi	MPLE IVITY i/cc) ^(1,2)	BY INITIALS		
4-8-04	1638	Pri-Z	121.C	0.6	121	7.2	8.4	19 6-511	Sen		
 If sample act Chemistry fc If sample tak activity is greater GROSS ALPH 4 	tivity is greater or isotopic analy cen from an area cater than 1E-1 A COUNTING	than or equal to ; ysis. a with known alp 0 μCi/cc. perform <u>3 DATA</u> :	5E-10 μCi/cc. r ha contamination n gross alpha co	notify RP super n (e.g., refueli unting and tak	rvision, perfo ng cavity, spe e or send san	rm gross alpha co ent fuel pool trans ple to Chemistry	unting and t: fer canal, rea for isotopic :	ike or send ictor head) analysis.	and sample to		
DATE	TIME	Counte Numbe	r GRC r cpi	DSS I	BKGD cpm	NET cpm α	NET cpm βy NET cpm α	(3)	BY INITIALS		
(3) Il sample acti	ivity ratio of pa	L com hais unmo			180 patién I	D Autominion an	d narform lo				
Isotopic Ana	lysis	NOBLGS	DACDOS	ma 15 1655 111an	Ret	urn to RP by	hr.	for LLA (counting.		
Date			Spectrum J	ndex No							
ISOTOP	E	ACHVITY (μCi/cc)	BY INITIAL	.s 150	TOPE	ACTIVI (µCi/ci	TY :)	BY INITIA	LS		
·								•			
L					1]		
Record RE-211 :	und RE-212 re Unit 2	eadings for all a	1-power contai RE-211:	inment air su	nples. µCi	RE-212:	<u> </u>		µCi/cc		
Unit 1	reading and S.] Unit 2	AE How for all	SAE air sampl RE-215:	les.	_ µCi/cc	SAE Flow	<u></u>		scfm		

NOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

<u>Release Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6.7 \times -0.9 μ Cr/cc, or the total for noble gases exceeds 6.86E-06 μ Cr/cc, notify the Chemistry lab supervisor and/or the Radiation Protection visor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an autoorne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

Sample Volume (cc): ______ (from Page 1)

"Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD' ⁴¹	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C ₁		[<u> </u>										
C2												
C3	•											
C,												
Cu									•			
Reviewed E	Reviewed By: Date: Date: Date:											

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C,	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C ₂	At T ₆	Start second count at least 2 hours after C ₁ .
C ₃	At T _a	Start time dependent upon results of C2:
C₄	At T ₂₈	Start count 24 hours after C ₁ .
CLL	At T>75	Start count at least 75 hours after T ₀ .

$$C_{1L} = \frac{C_2 - (C_1 e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TAI	BLE 1			
ΔT		ΔΤ	1	·ΔT		ΔT	
•	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 •	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5\text{E}-13 \ \mu\text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C,	C2	· 7.	۱۷	Сц	RP Supervision Notified (initials)
				0.0655			

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

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Point Beach Nuclear Plant

TODINE[®]ACTIVITY CONCENTRATIONS

LOCATION: UI CTINT JE FLATFORN - DIARhrow RWP NO. CY-140

🗹 NA No

SAMPLING DATA:

SAMPLE	SAMPLE START		SAMP	LE STOP	SAMPLE	SAMPLER		
NUMBER	DATE	TIME	DATE	TIME	VOLUME, (cc)	NUMBER	INITIALS	
30-106	4-8-64	1440	4-8-04	1613	2.7.66	6-602	RLK	

Sample start flow	35 LPM	Total sample time (min)	<u> </u>	
Sample stop flow)	Flow correction factor	<u> </u>	
Average sample flow	¥	Remarks		

ANALYSIS DATA:

[X] Isotopic Analysis

[] MECDOS (for DAC data)

S.I. #

) Date	Time	Isotope	*Concentration (µCi/cc)	By Initials	Date	Time	Isotope	Concentration (µCi/cc)	By Initials
4/8/04	1756	I-131	< MOA	4r	418/04	1756	CI-38	ZMDA	qL.
	1	I-132					Br-82		
		I-133							
		I-134							
		I-135		i.					
d	V	Total Iodine	Ŷ	Ý		3)	Total Additional	A	Ψ.
Total Iodine C	oncentratio	n + Total A	dditional Concentr	ation =	ZMOY	ϟ μCi	/cc By (Initi	als) W	

[] Unit I

[] Unit 2

RE-211: μCi RE-212: μCi/cc

This form should be used for all radioiodine analysis results.

*RELEASE ACCOUNTABILITY - (for release paths only)

If the concentration of total for radioiodines exceeds 2.28E-09 μ Ci/cc, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed.

Approved by:

Date: 4/9/04

PBF-4002 Revision 6 11/13/03 HP 1.1 - 1.7 or C3.2/PG.3

Peferences: HPIPs 3.52, 3.52, 2, 3.53, 5.1

SAMPLE TYPI	SAMPLE TYPE: Point Beach Nuclear Plant CAP Gas Other AIRBORNE RADIOACTIVITY SURVEY RWP No. <u>EY-171</u>												
Sample Locatio	n:/	· I A	5 <u>76</u> _j	vistic.	<u>.</u>					-	<u>.</u> Ð	<u>.</u>	
Remote c	ontainment s:	impling syst	em used	? 🗌 Ye	\$	🗌 No		NA		, U			
SAMPLING D.	<u>\TA</u> :												
SAMPLE NUMBER	DATE	MPLE STAP	RT IME	DA	SAMF TE	PLE STO	OP TIME		OLUME (cc)	SAM NUN	IPLER 1BER	B INITI	Y ALS
30-123	4-8.	24 19	e C	4-9	. 24	1	310	3.	UZET	LVS	.30	RL	K_
Sample Start Flo Sample Stop Flo Average Sample	w Flow	$\frac{40}{4}$	277 	-			Total Flow Rema	Samp Corre rks	le Time (n ction	in) 		91 . 43	
DATE	TIME	Counter Number	G	ROSS	BK ci	GD pm	NET cpm (- 3γ	MULT. FACTO	AC R (μC	MPLE TIVITY 'i/cc) ⁽¹²⁾		Y IALS
17-9-04	030	CAN S	11	117	31	,ス	14085	.9	9.4	1.9	y E.Y	RL	ĸ
 If sample activity for ⁽²⁾ If sample take activity is greated activity is greated activity. 	vity 15 greater i isotopic analy n from an area ater than TE-10 <u>COUNTINC</u>	than or equal sis. h with known 0 μCi/ce, perf 6 DATA:	to 5E-10 alpha con orm gross	µCi/ee, no: namination salpha cour	ity RP (e.g., 1 iting at	P supervi refueling nd take o	sion, perfo eavity, spe r send san	rin gro ent fue iple to	ss alpha cou l pool transf Chemistry f	er canal, re or isotopic	actor hea actor hea analysis.	nd sample d) and sar	: 10 11plc
DATE	TIME	Cour Num	nter iber	GROS cpm	S	Bh	GD	: c	NET pmα	cpm β NET 	γ/ ₁ 31	BY INITIA	LS
. 9-04	1040	72.7	え	··· 4	8 0.1 44.7				315.	<u>i </u>	RUN	<u> </u>	
13' If sample activ Disotopic Analy Date $ 9 - 6^{-6}$	ity ratio of ner vsis <u> -(</u> Time	NOBLGS	mma to n [2].D. Sp 1	et cpm alph ACDOS ectrum Ind	a is les lex No	6	SO, notify I Ret	RP sup .urn to	RP by <u>74</u>	perform <u> </u> hr. Y	ong-lived . for LL?	alpha cou A countir	inting. 1 g.
ISOTOPE		(μCi/cc)		INITIALS		ISOT	OPE		(µCi/cc)	INIT	IALS	
24-51	3.6	58-10	v	121.3	12	2.2-9	5.	1.	028-	10 -	Fie	2	
MN-54	5.7	1-38-11		وز ما		54-1	13	6.	$(7 \xi -$	12 -		··· · · · · · · · · · · · · · · · · ·	
(0-57		$\frac{3}{3} - 11$	<u> </u>	1-1-3		<u>-</u>	im	- 4	<u>-748-</u>		10	13	
$\left(\frac{0-58}{5}\right)$	<u> </u>	78-7				56-1	<u> </u>		. (42-				
12-54		$\frac{1}{17}$		10.0								{	
Ach - 90		125-10		1/13						<u> </u>	<u> </u>		<i>,</i> .
Record RE-211 ar	nd RE-212 re Unit 2 ading and S Unit 2	adings for al	II at-pow RE-2 III SAE : RE-2	er contain: 11: air sample: 15:		air samp	ıles. μCi μCi/cc		RE-212: SAE Flow	 :		µCi/cc scfm	
OTE: All releas	e path air sai	mples must h		d for long	-lived	alpha. I	See back :	side of	f form.				
elease Accountabil SST 09 µCt/cc, or r, sor, Save the rb, the release.	http:For relea the total for n e air particulat	ase paths only oble gases ex- e filter until th) If the t reads 6.8 the invest:	otal concent 6E-06 µCF6 gation is co	ration rel noti mplete	for parts ny the C ed. The s	culates (ex hemistry li ample sho	cludin sh supe uld he	g naturally o ervisor and/o investigated	becurring is or the Rudia to determine	sotopes) a mon Prot ine its sig	exceeds ection nificance	95 2R

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4F-4022 Season 16/11/13/03

LONG LI Sample V	IVED ALP	H <u>A COU:</u> :C	NTING D	<u>ATA</u> : (from	Page 1)		If the and if	ratio of (C ₂ /C C ₂ is greater	C ₁) is greater 1 than 7.5E-13	han the v . perform	alue given i C ₁₁ screen	in Table 1. ing.	
r					•		•	"Record LLI	D for the cou	nter beir	ng used at e	each count	•
COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Muli. Factor	Activity (µCi/cc)	LLD -	Hours From C ₁	Activity Ratio/C ₁	BY INIT.	
Ci	+-4-54	1+10	7270	17.8	0.5	17.3	4.25	j. c y E .12	7.46 8-14		•	RLK	
C2	4-9-01	:610	7270	14.8	0.5	14.3	4.25	9.16 5-13	7.46 514	2	0.832	Rui	
С;	•										<u></u>		
۲.													

Reviewed By:

CLL

Kı **RP** Supervision

4-11-24 Date:

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COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C,	At T4	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C2	At T ₆	Start second count at least 2 hours after C1.
C3	At T _x	Start time dependent upon results of C_2 .
C1	At T ₂₁	Start count 24 hours after C ₁ .
CLL	At T>75	Start count at least 75 hours after To.

$$C_{1,L} = \frac{C_2 - (C_1 e^{-\lambda_2 t})}{1 - e^{-\lambda_2 t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔT	1	ΔΤ		ΔT	1
<u> </u>	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.\$630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110]4	0.3997
3	0 8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0 7951	7.25	0.6220	11	0.4865 ·	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0 6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4463	28	0160
5	0.7207	8.75	0.5638	12.5	04410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338	 	

NOTES:

1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be \leq 7.5E-13 µCi/cc).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C,	С <u>:</u>	<i>.</i>	اد	Сц	RP Supervision Notified (initials)
				0.0655			

3. If the C4/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

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SAMPLE TYT	AMPLE TYPE: Point Beach Nuclear Plant AP Gas Other AIRBORNE RADIOACTIVITY SURVEY									VEY	RV	VP No. <u>-</u>	4-8-041 34-1017) 34-140
Sample Location	on:	11 .A	- 5/6	PLA	TFOR	m							-
Remote	containment	sampling	system	used?	י 🗆	cs	🗌 No	U	ŃA		G		
SAMPLING D	<u>ATA</u> :										()	<u> </u>	
SAMPLE NUMBER	S	AMPLE	START TIM	E	D.4	SAMP ATE	I.E STC	P IME	S V	AMPLE OLUME (cc)	SA NL	L MPLER JMBER	BY INITIALS
30-110	4-8	-04	151	Ч	4-4	5-64	119	00	С.	56 ë 6		3-3	Rn
Sample Start Fl Sample Stop Fl Average Sampl	nple Start Flow Total Sample Time (min) nple Stop Flow Flow Correction rage Sample Flow Remarks									in)	226 6.83		
GROSS BETA	-GAMMA	COUNTI!	NG DAT	<u>A</u> :							<u> </u>	CAMPLE	
DATE	TIME 2002	Con Nut	unter mber	GR .cj	OSS om	BK cp	GD om	NET cpm β	γ	MULT. FACTOR	A ()	CTIVITY (Ci/cc) ^(1,2)	BY
4-8-04	1902	P?cu	-2	70).2	D.	Ŀ	69.6		4.2	2	.01 0-11	Rh
Chemistry fo ⁽²⁾ If sample tal activity is gr <u>GROSS ALPH</u>	or isotopic ar sen from an a cater than IE A COUNTI	alysis. irea with ki I-10 μCi/co <u>NG DAT:</u>	nown alpl :. perform <u>A</u> :	ha conta a gross :	imination Ilpha cou	i (e.g., fi inting ar	efucting ad take o	cavity, sper r send samp	nt fue ple to	l poul transfe Chemistry fo	r canal. or isotop	reactor head ic analysis. ET	1) and sample
DATE	TIMI	=	Counter Number	r 	GRO cpn	SS n	BK	GD om	c	NET pm α	срп NI срп	α ΕΤ α α ⁽³⁾	BY INITIALS
(3) If sample act	ivity ratio of	net com b	ະເລ-ຍລາາກ		com aln	ha is les	s than 18		P sup	ervision and	perform	long-lived	alpha counting.
Isotopic Ana	ulvsis		.GS [CDOS			Ret	urn to	RP by	· 1	- hr. for LLA	counting.
Date	Ti	me		Spe	ctrum Ji	ndex No)						
ISOTOF	PE	ACTIV (µCi/c	ITY :c)		BY NITIAL	s	ISOT	OPE		ACTIVIT (µCi/ee)	Υ)	BINIT	Y IALS
			<u> </u>									•	
							, <u> </u>						{
								}					
				+									
Record RE-211	and RE-212	readings	for all a	t-powe RE-21	r contai	nment :	air samp	les. μCi		RE-212:			μCi/cc
Record RE-215	reading and Unit 2	SAE flow	w for all	SAE ai RE-21:	ir sampl 5:	es.		μCi/cc		SAE Flow:	: 		scím

1

NOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

 $\frac{P}{c} = \frac{\sqrt{2}}{2} \frac{Accountability}{2} + (For release paths only)$ If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6. ---09 μ Cr/cc, or the total for noble gases exceeds 6.86E-06 μ Cr/cc, notify the Chemistry lab supervisor and/or the Radiation Protection supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

Sample Volume (cc): ______ (from Page 1)

⁽⁴⁾Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD ^{.41}	Hours From C ₁	Activity Ratio/C,	BY INIT.
C1												
C2						·						
C;												
C1												
Сц				,					•			
Reviewed B	у:		RP	Supervis	ion				Date	: 4/	9/08	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T _a	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C2	At T ₆	Start second count at least 2 hours after C ₁ .
C3	At T _a	Start time dependent upon results of C_2 .
C1	At T ₂₈	Start count 24 hours after C ₁ .
Сц	At T>75	Start count at least 75 hours after To.

$$C_{11.} = \frac{C_{2} - (C_{1} e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔΤ		ΔΤ]]	ΔΤ	T
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 • •	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	12	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338	<u></u>	

NOTES:

1. If the ratio of activity $(C_{2,3}, \text{ctc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \,\mu\text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C,	C:	2.	اد	Сц	RP Supervision Notified (initials)
				0.0655			

3. If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

SAMPLE TYPH	E: s 🔲 Other	AII	RBOF	Point RNE R	Beach : ADIO	Suclear ACTI	r Plant NITY S	SU'R'	VEY	RW	P No. <u> </u>	27-10	<u> </u>
Sample Location	n: <u>[/</u>	11. A 5/6	[7	Lor Le	<u>g</u>						•	-	
Remote co	ontainment s	ampling system	used?	י 🗆	cs [] No		ŇA	$\approx c$		<u></u>		
SAMPLING D.	<u>\TA</u> :						·		$\underline{\boldsymbol{\boldsymbol{\mathcal{L}}}}$				
SAMPLE NUMBER	SA DATI	MPLE START	1E	D.ª	SAMPI. ATE	E STO)P IME	v v	AMPLE OLUME (cc)	SAN NUI	1PLER MBER	BY INITIA	LS
30-108	4-8-0	4 183	0	4.1	5.01	i	145	1.	6266	-HUS	- 22	Sen.	-00
Sample Start Flo Sample Stop Flo Average Sample	w W Flow		·				Total ! Flow (Remar	Samp Correc 'ks	le Time (mi ction	n)	(5	
GROSS BETA-0	<u>GAMMA CO</u>	DUNTING DAT	<u>A:</u>										·
DATE	TIME	Counter Number	GR .cp	OSS om	BKC cpr	GD n	NET cpm β	γ	MULT. FACTOR	S. AC (پر)	AMPLE TIVITY Ci/cc)	BY INITL	, ALS
4-3-61	:153	P20-2	27	.6	<u>છ</u> .(ن	27.0	$\frac{1}{2}$	4.2	3.1	0 8.11] An	
activity is gre GROSS ALPHA DATE	aler than 1E-1 <u>COUNTIN(</u> TIME	0 μCi/cc. perform <u>G DATA</u> : Counte Numbe	r r	GRO GRO	SS	BK BK	GD om		Ċhemistry fo NET pm α	r isotopic NE cpm NE cpm	$\frac{T}{\beta \gamma \prime}$	BY INITIAL	S
(3) If sample activ	vity ratio of p	t com beta-enun		com alo	ha is less	than D	0 notify R	Psun	ervision and		I long-lived	alpha cour	nting.
					10 13 1033		Dett		DP by	,	for II A		
Date	Tim	e e		ctrum Ir	ndex No.				ICI 09		. 10. 22.		F -
ISOTOPE	3	ACTIVITY (µCi/cc)]!	BY NITIAL	s	ISOT	OPE		ACTIVIT (µCi/ce)	Y	B	Y IALS	
·											•		
				<u> </u>									
Record RE-211 a	nd RE-212 r) Unit 2	eadings for all a	II-powe RE-21	r contai I :	nment ai	ir samf	les. μCi		RE-212:			µCi/ce	
Record RE-215 re	eading and S] Unit 2	AE flow for all	SAE ai RE-21:	ir sampl 5: 	es.		µCi/cc		SAE Flow:			scfm	

. . .

NOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

 $F = \frac{3e}{2}$ Accountability - (For release paths only) If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6 = .-09 µCi/cc, or the total for noble gases exceeds 6.86E-06 µCi/cc, notify the Chemistry lab supervisor and/or the Radiation Protection supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{11} screening.

Sample Volume (cc): ______ (from Page 1)

"Record	LLD	for	the	counter	be	ing	used	at	eacl	h cou	nt.

:

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD ⁴¹	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C,		[1 1									
C2												
С,	•	1										
C1												
Cu						·						
Reviewed By: Date: Date: Date:												

. . .

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T4	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C ₂	At T ₆	Start second count at least 2 hours after C1.	•
C3	At T _a	Start time dependent upon results of C_2 .	
C₄	At T ₂₈	Start count 24 hours after C ₁ .	
CLL	At T>75	Start count at least 75 hours after T_0 .	

$$C_{1L} = \frac{C_2 \cdot (C_1 e^{-\lambda \Delta t})}{1 \cdot e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔΤ	1	ΔΤ		ΔΤ	
	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110]4	0.3997
3	0.8216	6.75	0.6427	10.5	• 0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 •	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0 6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0 4 4 6 3	28	0.160
5	0.7207	8.75	0.5638	12.5	0 4 4 1 0	30	0.140
5.25	0.7090	9	0.5546	12.75	0 4 3 3 8		

NOTES:

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1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).

2. If Cill is greater than 7.5E-13 µCi/cc, notify RP supervision for review.

Date	Time	C ₁	C:	<i>i</i> .	اک	С _ц	RP Supervision Notified (initials)
				0.0655			

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

SAMPLE TY AP	PE: Gas 🔲	Other	AI	RBOI	Poin RNE R	t Beach : ADIO	Nucle: ACT	ir Plant INITY	SU'R	NEY .	R	RWP No. 04-135		
Sample Locat	ion:	чі	A - 5/0	. PLA	FFOR	<u>n</u>						-	-	
Remote	contain	ment samj	pling system	used?	ז 🗌	es	א 🗆	, d	NA F	> (i)	J.			
SAMPLING I	DATA:								6	\mathbb{Y}	L			
SAMPLE NUMBER		SAMP DATE	LE START	1E	D.	SAMPI ATE	E STO	OP FIME		SAMPLE 'OLUME (cc)	SA NI	MPLER UMBER	BY INITIALS	
30-107	<u> </u>	-1-6-04	1 1100		५२१	3-04	110	140	9	,0167	- 66	-3-3	Rn	
Sample Start Flow35 c f mTotal Sample Time (min)3100Sample Stop Flow1Flow Correction0.83Average Sample Flow1Remarks											3/0C			
GROSS BETA	GROSS BETA-GAMMA COUNTING DATA:													
DATE TIME Counter GROSS BKGD NET MULT. SAMPLE Number cpm cpm cpm $\beta \gamma$ FACTOR $(\mu Ci/cc)^{(1.2)}$ INITIALS														
4-8-04 1750 PRO-1 275.2 0.5 274.7 4.1 5.63 5-12											Rn			
⁽²⁾ If sample ta activity is gr <u>GROSS ALPH</u>	 ⁽²⁾ If sample taken from an area with known alpha contamination (e.g., refueling cavity, spent fuel pool transfer canal, reactor head) and sample activity is greater than 1E-10 μCi/ce, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. <u>GROSS ALPHA COUNTING DATA:</u> 													
DATE			Numbe	r	cpm	1	ני	om	c	pmα	срп 	ET $\alpha^{(3)}$	INITIALS	
L	<u> </u>		l											
(3) If sample act	tivity rati	o of net cp	m beta-gamm	a to net	epm alpl	ha is less	than 18	80, notify F	RP sup	ervision and	perform	long-lived:	ilpha counting.	
🔲 Isotopic An:	alysis		DBLGS	DAC	DOS			Ret	urn to	RP by	1	hr. for LLA	counting.	
Date		Time		Spec	trum In	dex No.		<u> </u>						
ISOTOF	PE	ACT (µ	FIVITY Ci/cc)	IN	BY SITIALS	s	ISOT	OPE		ACTIVIT (µCi/cc)	Y	BY INITI	ALS	
								`						
					<u> </u>									
											<u> </u>			
		····	····											
		· · · · ·		-		-1	·							
Record RE-211	ecord RE-211 and RE-212 readings for all at-power containment air samples. Unit 1 Unit 2 RE-211: μCi RE-212: μCi/cc													
Unit I	Unit :	and SAE	now for all [SAE air RE-215	: sample	:s. 		µCi/cc		SAE Flow:	<u> </u>		scfm	

NOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

 $\frac{P}{C} = \frac{se Accountability}{2} + (For release paths only)$ If the total concentration for particulates (excluding naturally occurring isotopes) exceeds $\frac{C}{C} = -09 \ \mu Cr/cc, or the total for noble gases exceeds 6.86E-06 \ \mu Cr/cc, notify the Chemistry lab supervisor and/or the Radiation Protection$ supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as anairborne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

Sample Volume (cc): ______ (from Page 1)

¹⁴Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD'41	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C ₁		[•						····]		
C:												
C;	•											
C.										-		
Сц									•			
Reviewed B	sy::	Z	RP	Supervis	sion			-	Date	: 4/9	1/24	

COUNTING INFORMATION FOR LONG LIVED ALPHA

<u>Count</u> <u>Time</u>

C,	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C2	A1 T6	Start second count at least 2 hours after C ₁ .
С3	At T _x	Start time dependent upon results of C_2 .
C.,	At T ₂₈	Start count 24 hours after C ₁ .
Сц	At T>75	Start count at least 75 hours after T_0 .

$$C_{1L} = \frac{C_2 - (C_1 e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔΤ	1	ΔΤ	<u></u>	ΔΤ	
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	• 0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 -	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	\$.75	0.5638	12.5	0 4 4 1 0	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

- 1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).
- 2. If CLL is greater than 7.5E-13 µCi/cc, notify RP supervision for review.

Date	Time	C,	C:	ì.	اک	Сц	RP Supervision Notified (initials)
				0.0655			

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS ***

SAMPLE DATE: 4/9/2004 10:10 SAMPLE LOCATION: U1 A S/G platform REMARKS:

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:

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SAMPLE ID: 30-123

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TAKEN BY: RK ANALYSIS BY: KCB

COD

ISOTOPIC ANALYSIS RESULTS

	RESTRICTED		FRAC.	%
	DAC	CONC	OF	OF
ISOTOPE	(uCi/cc)	(uCi/cc)	CONC.	DAC
CO-57	3.00E-07	1.13E-11	0.00	0.004
CO-58	3.00E-07	2.67E-09	0.62	0.890
CO-60	1.00E-08	8.93E-10	0.21	8.930
CR-51	8.00E-06	3.65E-10	0.08	0.005
FE-59	1.00E-07	2.62E-11	0.01	0.026
MN-54	3.00E-07	5.23E-11	0.01	0.017
NB-95	5.00E-07	1.60E-10	0.04	0.032
SN-113	5.00E-07	6.17E-12	0.00	0.001
SB-117M	5.00E-07	4.24E-12	0.00	0.001
SB-125	2.00E-07	1.16E-11	0.00	0.006
ZR-95	5.00E-08	1.02E-10	0.02	0.204
	TOTALS	4.30E-09	1.00	10.116

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 395.4 hours.

Reviewed by: from Date: and it is a second s

04/09/04 12:34:36

SAMPLE TYPE: X AP Gus	🗌 Other	All	RBORN	Point Beach	Nucle ACT	ar Plant HVHTY 9	SI'RV	EY	RW	P No		
Sample Location:	- نرز	1-A"S	16 PI	<u>'T</u>								
. Remote con	tainment sam	pling system	used? [] Yes		。凶	NA	P	\bigcirc	\mathbb{D}_{L}		
SAMPLING DAT	<u>A:</u>									Li		
SAMPLE NUMBER	SAMI DATE	PLE START	E	SAMPI DATE	E ST	OP TIME	S.A VC	MPLE DLUME (cc)	SAN NU	1PLER MBER	BY INITIALS	
30-129	4.9.04	101	0 -	t-16 64	C	940	3	5 F7	<u></u>	364	RLK	
Sample Start Flow Sample Stop Flow Average Sample Fl	ow	30 1p.	<u>м</u>			Total ! Flow (Remar	Sample Correct iks	Time (mining) ion	n)	14	10	
GROSS BETA-GAMMA COUNTING DATA:												
DATE TIME Counter Number GROSS cpm BKGD cpm NET cpm βγ MULT. FAGTOR SAMPLE ACTIVITY (µCi/cc) ^{11,3} INITIALS												
4.1:-3.1	· 7 (C. p. b . 13 . 25	.724	-5.5	5	445.5		9.4	· 7.	11:		
Chemistry for isc ⁽²⁾ If sample taken fr activity is greater <u>GROSS ALPHA CC</u>	 If sample activity is greater than or equal to 5E-10 μCi/cc, notify RP supervision, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. If sample taken from an area with known alpha contamination (e.g., refueling cavity, spent fuel pool transfer canal, reactor head) and sample activity is greater than 1E-10 μCi/cc, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. GROSS ALPHA COUNTING DATA: 											
DATE	TIME	Counter Number	G	ROSS cpm	BK	GD	NI cpn		NET cpm β NET <u>cpm a</u>	y/ 131 .	BY	
⁴³ If sample activity								<u>-</u>				
				n alpha is less i	nan 18	O, notify Ri	P superv	rision and p	erform le	ing-lived al	pha counting.	
Date	Time			JS m Index No.		Retu	rn 10 K	P by	hr.	for LLA C	ດບການກ່ຽ.	
ISOTOPE	ACT بلا	CIVITY Ci/cc)	B INITI	Y IALS	SOTO	OPE	<u>ب</u>	ACTIVITY (µCi/cc)		BY INITIA	LS	
		<u></u>				·		·······		•	{	
		······										
			}					<u> </u>				
	ļ											
L	<u> </u>		<u> </u>									
Record RE-211 and R	E-212 readir it 2	ngs for all at- Ri	power cor E-211:	ntuinment ais	sampl	es. µCi	RI	5-212:		ł	iCi/ce	
Cecord RE-215 readin	ng and SAE f it 2	low for all S. RI	AE air san E-215:	nples.		uCi/cc	S.ª	E Flow:		S	cím	

SOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

•

<u>telease Accountability</u> - For release paths only). If the total concentration for particulates texcleding naturally occurring isotopes) exceeds (5°F-09 µCr/cc, or the total for noble gases exceeds 6.80E-06 µCr/cc, notify the Chemistry lab supervisor and/or the Radiation Protection (isor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an or orne release.

LONG LIVED ALPHA COUNTING DATA:

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

.

Sample Volume (cc): ______ (from Page 1)

"Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Blgd (cpni)	Net (cpm)	Muh. Factor	Activity	LLD ⁴	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C,						[[····	••••	
C2												
С,	•											
С.												
CLL									•	11	••••	
Reviewed B	y: K		RP	Supervis	ion			•	Date	4.10	- 04	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C,	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C ₂	At T ₆	Start second count at least 2 hours after C1.
C3	At T _a	Start time dependent upon results of C_2 .
C4	At T ₂₈	Start count 24 hours after C ₁ .
Сц	At T>75	Start count at least 75 hours after To.

$$C_{1L} = \underbrace{C_{2} \cdot (C_{1} e^{-i \Delta 1})}_{1 - e^{-i \Delta 1}}$$

VALUES OF (C23.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

TABLE 1									
ΔΤ	1	ΔΤ	1	ΔΤ		T۵]		
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268		
2	0.8772	5.75	0 6862	9.5	0.5367	13.25	0.4198		
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	04130		
2.5	0.\$490	6.25	0.6641	10	0.5194	13.75	0.4063		
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997		
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506		
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076		
3.5	0.7951	7.25	0.6220	11	0.4865 •	. 20	0.2698		
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236		
4	0.7695	7.75	0 6019	11.5	0.4708	23	0.222		
4.25	0.7570	8	0.5921	11.75	0.4632	• 24	0.208		
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182		
4.75	0.7326	8.5	0.5731	12.25	0.4463	28	0160		
5	0.7207	8.75	0.5638	12.5	0 4 4 1 0	30	0.140		
5.25	0 7090	9	0.5546	12.75	0.4338				

NOTES:

- 1. If the ratio of activity $(C_{2,2}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).
- 2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C,	C:	2	اک	Сц	RP Supervision Notified (initials)
		i		0.0655		[

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Patticulate Contamination.

					•				
e.t ≽ *				Point Beach	Nuclear Plant				
			IODINE	ACTIVITY	CONCENTI	RATION	ŇS		
1		¢							
LOCATION:	<u> </u>	1 A"	S/E Plu	1		RWP No)		
							_	-	
Remote	containm	ent sampling	g system used?	🗋 Yes	🗆 No 🛛 🕅	NA	$\mathcal{C}($	JD,	
SAMPLING I	DATA:								
SAMPLE	:	SAMPLE	ESTART	SAMP	LE STOP	SAN	IPLE	SAMPLER	
NUMBER	<u>`</u>	DATE	TIME	DATE	TIME	VOLU	ME, (cc)	NUMBER	INITIALS
30-13	0 4	-9.04	1010	4-10.0p	0940	3.5	E7	ムピジ・J	RLIT
Sam	nle start f	low	31 12m		Total same	le time (m	un)	1410	
Sam	ple stop f	low	1	<u> </u>	Flow corre	ction facto	or	9.83	
Ave	rage samp	le flow	¥		Remarks				
ANALYSIS D	ATA:								
[X] Is	sotopic Ar	alysis		[] MECDO	S (for DAC data))	S.I. #		
<u></u>	- 								
Date	Time	Isotope	*Concentrati (µCi/cc)	on By Initials	Date	Time	Isotope	Concentratio (µCi/cc)	n By Initials
4-10-04	157:9	I-131	4-885-	12 KB			CI-38		
		1-132					Br-82		
		I-133							
		I-134							
•		I-135							
		Total Iodine	4.882-12	- Kib		Ī	Total Additional	Linat	- FiB
C						<u></u>		<u></u>	
Total Iodine C	oncentrati	on + Total 🤅	Additional Conc	entration =	4.895-1	μCi/c	e By (Init	tials) <u>(CB</u>	
[] Unit I	[]]	Jnit 2	RE-211:		μCi	RE-212:	<u></u>	μCi/cc	:
This farm sha	1.		-1- 31 1 1	1					
*RELEASE A	CCOUNT	ABILITY -	(for release pat	hs only)					
If the Save 1	concentra	tion of total	for radioiodine	s exceeds 2.28	E-09 μCi/cc, follo	ow steps o	utlined in R	AM 5.2.	
24461	che endreu		a the macangath		- .				
			1A	\bigcirc				1. 1	
App	proved by:	·	40			Dat	e:Y	////ογ	

PBF-4002 Revision 6 11/13/03 HP 1.1 + 1.7 or C3.2/P6.3

References: HPIPs 3.52, 3.52,2, 3.53, 5.1

Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS ***

i SAMPLE DATE: 4/10/2004 09:40 SAMPLE LOCATION: U-1 A S/G PLAT REMARKS:

)

1

SAMPLE ID: 30-130

TAKEN BY: RLK ANALYSIS BY: KCB

ISOTOPIC ANALYSIS RESULTS

ISOTOPE	RESTRICTED DAC (uCi/cc)	CONC (uCi/cc)	FRAC. OF CONC.	% OF DAC
I-131	2.00E-08	4.88E-12	1.00	0.024
	TOTALS	4.88E-12	1.00	0.024

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 1.6E+05 hours.

Reviewed by: _____ Date: _____ Date: _____

04/10/04 4:02:57 PM
SAMPLE TY	'PE: Jas 🗍 Other		ear Plant TIVITY S	SURVEY	RW	VP No	142 4-145- 4-16-64 RM				
Sample Locat	ion: <u>L1</u>	A SE	PLATE	TORM							
Remote	containment s	ampling system	n used?	🗌 Ye	s 🗆 :	io 🗹	NA ((\mathbb{A})D)		
SAMPLING I	DATA:						Y N		クロ		
SAMPLE NUMBER	SA • DAT	MPLE START	ME	S DAT	AMPLE ST	TIME	SAMPLE VOLUME (cc)	SAN NU	MPLER MBER	BY INITIALS	
30-131 4-10 04 0938 4-10 c4 2250 1.47 67 LUS-3 Ph										- Jan	
Sample Start F Sample Stop F Average Samp	Sample Start Flow 3c L Pm Total Sample Time (min) 792 Sample Stop Flow										
<u>GROSS BETA</u>	-GAMMA CO	DUNTING DA	<u>ra:</u>				* <u>-</u>				
DATE	TIME	Counter Number	GR(cp	OSS m	BKGD cpm	NET cpm β	MUL Y FACTO	Γ. ΑC DR (μ(AMPLE CTIVITY Ci/ee) ^(1,2)	BY INITIALS	
4-10-04	: 256	Prov 1	43	.3	1.0	42.3	4.1	4.	61 E-12 F	Sen	
activity is gr GROSS ALPH. DATE	caler than 1E-1 A COUNTING TIME	0 μCi/cc. perform <u>3 DATA</u> : Counte Numbe	r r	GROSS cpm	B	KGD	NET cpm a	ier canar, ie før isotopic NET	r analysis.	BY	
	- 						- 	<u></u>	x ¹⁰¹		
(3) If sample acti	ivity ratio of net	cpm beta-gamm	a to net o	rpm alpha i	is less than 1	SO. notify RI	P supervision an	d perform h	ong-lived alg	oha counting.	
🗌 Isotopic Ana	lysis 🗌	NOBLGS	DAC	DOS		Retu	rn 10 RP by	hr	, for LLA c	ounting.	
Date	Time		Spec	trum Inde.	x No						
ISOTOP	E	(μCi/cc)	IN	BY	1507	OPE	ACTIVI (µCi/co	TY :)	BY INITIA	LS	
·				<u></u>							
			- 							{	
L			1								
Cord RE-211 a	nd RE-212 re:] Unit 2 adding und SA	adings for all at F	-power RE-211:	containme	ent air sam;	oles. μCi	RE-212:		μ	Ci/cc	
] Unit 2	E now for all S R	E-215:	samples.		μCi/cc	SAE Flow	:	Si	:fm	

.

(OTE: All release path air samples must be counted for long-lived alpha. See back side of form.

<u>electer Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds $S = 9 \mu Ci/cc$, or the total for noble gases exceeds 6.86E-06 $\mu Ci/cc$, notify the Chemistry lab supervisor and/or the Radiation Protection approximate. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an above release.

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

-					-		(-	'Record LL	D for the co	unter bein	ig used at a	each coui
COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD ^{.J}	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C,		1										
C:	•	1										
C3							· · ·			-		
C.											_	
CLL												
eviewed B	y:		RP	Supervis	;ion			- ,	Date	e: <u>4/</u>	11/04	

Sample Volume (cc): ______ (from Page 1)

Count Time

C	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C ₂	At T ₆	Start second count at least 2 hours after C1.
C ₃	At T,	Start time dependent upon results of C2.
C	At T ₂₈	Start count 24 hours after C1.
CLL	At T >75	Start count at least 75 hours after T_0 .

$$C_{1,1} = \frac{C_2 - (C_1 e^{-\lambda_2 t})}{1 - e^{-\lambda_2 t}}$$

VALUES OF (C23, 4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TAI	BLE 1			
ΔΤ		ΔΤ		ΔT		ΔΤ	
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	• 0.5110]4	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 ·	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0 4 4 1 0	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than 1. LLD, airborne alpha activity will be considered as not present (the LLD must be \leq 7.5E-13 µCi/cc).

2. If CLL is greater than 7.5E-13 µCt/cc, notify RP supervision for review.

Date	Time	C,	C:	7.	٥t	С _ц	RP Supervision Notified (initials)
				0.0655			

If the Ca/C1 ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived 3. Radioactive Alpha Particulate Contamination.

COUNTING INFORMATION FOR LONG LIVED ALPHA

IODINE ACTIVITY CONCENTRATIONS

LOCATION	<u> </u>	<u>A -5/0</u>	PLATE	<u>irm</u>		_ RWP	io. <u>Cy-1</u> 4	142 47: -10 of Ry		
Remote	e containme	nt sampling	system used?	🗌 Yes	□ No [7 na		$\mathbb{D}^{\mathbb{D}_{t}}$		
SAMPLING	DATA:									
SAMPL	E	SAMPLE	START	SAMP	LESTOP	S.	AMPLE	SAMPLER		
NUMBE	2.2	DATE	TIME	DATE	TIME		$c_{\text{ME}}(c_{2})$	NUMBER	INITIALS	
_ 30-13	52 4	-10.24	0715	4-10-04	2250			603-3		
Sample start flow 30 L P.M Total sample time (min) 792 Sample stop flow Image sample flow Flow correction factor 0.83 Average sample flow Image sample flow Remarks										
[X]	Isotopic An:	alysis		[] MECDC	S (for DAC d	ata)	S.I. #			
) Date	Time	Isotope	*Concentrati (µCi/cc)	on By Initials	Date	Time	Isotope	Concentratio (µCi/cc)	n By Initials	
4/11/04	01!3	1-131	<mda< td=""><td>ar</td><td>Y/ Br.M</td><td>0112</td><td>C1-38</td><td>< MAA</td><td>n</td></mda<>	ar	Y/ Br.M	0112	C1-38	< MAA	n	
		I-132					Br-S2			
		I-133								
		I-134								
		I-135					·			
Ψ.	\mathbb{V}	Total Iodine	\mathbb{V}	<u> </u>	Ý	N.	Total Additional		W	
Total Iodine (Concentratio	on + Total A	dditional Conc	entration =	240	βμCi	/ce By (Init	tials) 7/1		
[] Unit 1	[]U	Init 2	RE-211:		μCi	RE-212	2:	μCi/cc		
This form sho *RELEASE - If the Save	ould be used ACCOUNT concentration the charcos	for all radio ABILITY - ion of total I filter until	biodine analysis for release path for radioiodines the investigation	s results. hs only) s exceeds 2.28 on is complete	E-09 μCi/cc, f d.	ollow steps	outlined in R.	AM 5.2.		
; Ap	proved by:	2	Z	2		D	ate: 4/11	1/07		
PBF-4002		. /								

Revision 6 11/13/03 HP 1.1 - 1.7 or C3.2/PG.3

References: HPIPs 3.52, 3.52, 2.53, 5.1

SAMPLE TYP Ø_AP	E: 15 🗌 Other	AII	Poir RBORNE I	nt Beach I RADIO	Nuclea ACT	r Plant I <mark>VITY S</mark>	U.R	VEY	RW	'P No	04-1+2
Sample Locatio	on:	-1 A"	5/6 Fla	<i>t</i>						• 	_
Remote d	containment se	Impling system	used?	ies	🗌 No	× I	N.A	$\mathbb{C}($		\mathfrak{I}	
SAMPLING D	ATA:							CAMPLE		••••	
SAMPLE NUMBER	SAI DATE	MPLE START	IE D	SAMPI ATE	E STO)P IME	V	OLUME	SAN NU	MPLER MBER	BY INITIALS
30-137	4-10.	04 225	0 4-	11.04	05	845		73 = 7		2-3	RLK
Sample Start Flow35 /rmTotal Sample Time (min)595Sample Stop Flow/Flow Correctionc-83Average Sample Flow/Remarks-										· § 3	
GROSS BETA	GROSS BETA-GAMMA COUNTING DATA:										
DATE TIME Counter GROSS BKGD NET MULT. SAMPLE Number cpm cpm cpm βy FACTOR (µCi/cc) ^(1,2) INITIALS											
4-11-04	10:25	CAN'S	371;2	27.	8	343.	4	9.4	8.4	f: E-11	RLK
¹²¹ If sample tak activity is gro <u>GROSS ALPH/</u> DATE	21 If sample taken from an area with known alpha contamination (e.g., refueling cavity, spent fuel pool transfer canal, reactor head) and sample activity is greater than 1E-10 μCi/cc, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. GROSS ALPHA COUNTING DATA: NET DATE TIME Counter GROSS BKGD NET UP = BY INTIALS										
L									cpm	α ⁽³⁾	
(3) If sample acti	ivity ratio of pe				than 1	L	Psur	l	perform	[long-lived	alpha counting.
	turie 🗖	NOBI GS		1.100 10 10 20		Reti	1779 10	RP by	,h	r for LL	A counting.
Date	Time	:	Spectrum]	ndex No.							-
ISOTOP	E	ACTIVITY (µCi/cc)	BY INITIA	LS	ISOT	OPE		ACTIVII (µCi/cc	Υ)	BINIT	IALS
·										•	
			_								
		<u></u>								+	
Record RE-211 ;	and RE-212 re	adings for all a	t-power conta RE-211:	inment ai	ir samp	les. μCi		RE-212:			μCi/ce
Record RE-215 :	reading and S.] Unit 2	AE flow for all	SAE air samp RE-215:	oles.		μCi/cc		SAE Flow	: 		scfm

<u>Release Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds C Fe09 µCi/cc, or the total for noble gases exceeds 6.86E-06 µCi/cc, notify the Chemistry lab supervisor and/or the Radiation Protection ivisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an autoorne release.

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{11} screening.

Sample Volume (cc): ______ (from Page 1) .

"Record LLD	for the counter	r being used	at each count.

COUNT	DATE	TIME	Counter	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD ^{.11}	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C											••••	
C2												
C;	•								<u> </u>			
C.												
Cu				~					<u> </u>			
Reviewed B	y:	7£	RP	Supervis	ion		I		Date	- 4/11.	104	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C1 C2	At T₄ . At T ₆	Start first count 4 hours after sample stop time. (Essentially all radon decayed.) Start second count at least 2 hours after C_1 .	
C3	At T _x	Start time dependent upon results of C ₂ .	
C.	At T ₂₈	Start count 24 hours after C1.	
CLL	At T>75	Start count at least 75 hours after T ₀ .	

$$C_{1\perp} = \frac{C_2 - (C_1 e^{-\lambda \Delta_1})}{1 - e^{-\lambda \Delta_1}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR C1L EQUAL TO ZERO

			TA	BLE 1			<u>······························</u>
<u>ΔT</u>		ΔΤ		ΔΤ	·	ΔΤ	
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	. 10.75	0.4945	18 .	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 ·	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		<u> </u>

NOTES:

- 1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5\text{E}-13 \,\mu\text{Ci/cc}$).
- 2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C ₁	C:	2	۱ک	Сц	RP Supervision Notified (initials)
				0.0655			

3. If the Ca/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Ň		POIN R LOCATION: UNIT	NT BE/ UCLEAR PLANT ADIOL _ JAL SURVEYS STEAM GENERATOR CHANNEL HEAD
DATE <u>1-2</u> TIME MONITOR	-2310 -2310 Hand	INSTRUMENT TYPE 7 SERIAL NO7 COUNTED BY	T ABACUS PURPOSE: Routine Daily Survey Dif 35 ILSI XRWP#_:: 4140 Other_1):nfind a dot Assessed REVIEWED BY: MARSHOWLS
NO.	LOCATION	DOSE RATE (mrem/hr)	DIVIDER PLATE
	INLET CHANNEL (HOTLED	3)	.022 50221
1	Midpoint of tube sheet	HR.	
2	Channel head center	$7R_{}$	WHEAK FROM
3	Center divider head	ToR	DiAMARACIAL () -
4	Bottom of channel head	82	
5	Manway entrance	2,5K	25/ By
6	1' from manway	LG	29 ALP 112
7	3' from manway	250	
8	Center of diaphragm	38	$2 3, 11 10 / \dots $
	OUTLET CHANNEL (COLDL	EG)	
9	Midpoint of tube sheet	125	
10	Channel head center	81	
_11	Center divider plate	TSR	NAP: 12
_12	Bottom of channel head	102	in the contract of the contrac
13	Manway entrance	2.5%	6 14 · · · · · · · · · · · · · · · · · ·
14	1' from manway	IR	7 15 2 ,
15	3° from manway	3000	0° 0° 11
16	Center of diaphragm	2.8K	
ļ	HOT SPOTS (DESCRIBE LOCAT	rion)	$\frac{270^{\circ} - \frac{161}{1 - 1} - 90^{\circ}}{270^{\circ} - \frac{161}{1 - 1} - 90^{\circ}}$
17			
18			180° 180°
_19			
_20			8K° 14
			3/3 INLET DIAPHRAGM OUTLET DIAPHRAGM
	Ventilation Operational Check	<u>×</u>	20 ¹⁷
1	RAD DOORS INSTALLED	VENTILATION OPERABLE	
	(YES / NO)	(SAT / UNSAT / NA)	8B - 90° 16B - 90°
Hot Lee	1/2 5		8C - 180° 16C - 180°
Cold Leg	<u> </u>		8D - 270° 16D - 270°
			*TAKE DIAPHRAGM SURVEY BEFORE REMOVAL

AREA C-1

_ --

PBF-4021 Revision 1 08/29/95 HP 1.9

Notes: 1) All readings in mrem/hr 2) *Designates hot spots 3) &Designates routinely updated posting 4) "Potential Hazards" identified are indicated on map



DATE	.9.04 1500 PETER S	s stevinn (NSTRUMENT TYPI SERIAL NO COUNTED BY	RSCS /APAteus / RMILL PURPOSE: Daily Survey Pre-RV 7337/9684 / 7698 R RWP # 04-141 DOILD PETER SATENIN REVIEWED BY:
NO. MREM/ HR 7 3 4 5 7 7 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	$\beta \gamma DPM/ 100 CM2$ 7500^{3} 7500^{3} 7500^{3} 7500^{3} 7500^{3} 7500^{3} 7500^{3} 7000^{3}	$\begin{array}{c} \alpha DPM/\\ 100 CM^2\\ \hline \\ \hline$		SHIE(\mathcal{D}_{IN} (4') Hot 100 Leg LHRA W/ FIASHING RED LIGHTS RED Cold Leg RED LIGHTS RED RED RED RED RED RED RED RED

4) "Potential Hazards" identified are indicated on man

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Revision 0 01/01/93

HP 1.9

- 2) *Designates hot spots
- 3) Solution Solution
- 4) "Potential Hazards" identified are indicated on man

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PBF-4021 Revision 0 01/01/93 HP 1.9

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- Notes: 1) All readings in mrem/hr
 - 2) *Designates hot spots
 - 3) ODesignates routinely updated posting
 - 4) "Potential Hazards" identified are indicated on map

			POIN <u>RA</u> LOCATION: "B" L	H NUCLEAR PLANT: DIOLOGICAL SURVEYS DOP - BELOW "B" STEAM (GENERATOR	
DATE TIME MONITOR	[5] 64 2224 HINGUHS	 ئە"	INSTRUMENT TYPE_ SERIAL NO COUNTED BY	Aon Aon NLA	PURPOSE:	Daily Survey DPre-RWP Other Sice (rice) Stiller Y: Matters
NO. MREM/ HR	βγ DPM/ 100 CM ²	αDPM/ 100 CM ²	REMARKS		Hot	
					HANWAY "B" SG MANWAY	iles ifico Cold Leg

PBF-4021 Revision 0 01/01/93 HP 1.9

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- Notes: 1) All readings in mrem/hr

 - 2) *Designates hot spots
 3) ØDesignates routinely updated posting
 4) "Potential Hazards" identified are indicated on man



DATE TIME MONI	<u>4-5-</u> <u>1040</u> TOR <u>M A</u>	04 - TABEN	·	INSTRUMENT TYPE SERIAL NO COUNTED BY	RozA 7137	PURPOSE:	$\begin{array}{c} \square \text{ Daily Survey} \\ \hline H - 104 \\ \square \text{ BY:} \\ \hline H \hline \hline H \\ \hline H \hline \hline H \\ \hline H \\ \hline \hline H \hline \hline H \hline \hline H \\ \hline \hline H \hline \hline H \hline \hline \hline H \hline \hline H \hline \hline $	Pre-
NO.	MREM/ HR	βγ DPM/ 100 CM ²	αDPM/ 100 CM ²	REMARKS	· O O S	PRG -514161 00/350 · Le	DING SUNE	5/ (
						MANWAY "B" SG		
					60.	MANWA		Cold Leg
						50'	m	:

Revision 0 01/01/93 HP 1.9

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- Notes: 1) All readings in mrem/hr
 2) *Designates hot spots
 3) ØDesignates routinely updated posting
 4) "Potential Hazards" identified are indicated on map



Notes: 1) All readings in mrem/hr

Revision 0 01/01/93 HP 1.9

- 2) *Designates hot spots
- 3) ODesignates routinely updated posting

4) "Potential Hazards" identified are indicated on map

SAMPLE TY	PE: Jas 🗍 Other	AII	Poi RBORNE	int Beach	Nuclear ACTI	r Plant VITY S	URVE	Y	RWPI	No. <u>01</u>	1-140
Sample Locat	ion: <u>U</u>	1 <u>B 5/6</u>	PLATFO	m_				`	•		
Remote	containment s	ampling system	used?	Yes	🗌 No	0/i	NA 7	\sim	\mathbb{R}^{2}	-	
SAMPLING I	DATA:								L		<u> </u>
SAMPLE NUMBER	SA DATI	MPLE START E TIN	1E I	SAMPI DATE	LE STO	OP IME	VOLU (cc	JME	SAMP NUMI	LER BER	BY INITIALS
30-11	4-8-	04 134	2 4	-8-04	119	355_	8,83	26 -	<u>~ Lus·</u>	30	Ru
Sample Start Flow 30 cpm Total Sample Time (min) 3/3 Sample Stop Flow Flow Correction 0.99 Average Sample Flow Remarks 0.99											
GROSS BET	-GAMMA CO	DUNTING DAT	<u>[A:</u>						1	101 0	·····
DATE	TIME	Counter Number	GROSS , cpm	BK cp	GD m	NET cpm β	Y F	ACTOR	SAN ACT (μCi/	APLE [VITY [cc] ⁽¹²⁾	BY INITIALS
4-3-64	ZDIS	PRU-2	23.0	U.		22.4	1	-1.2	4.50	E-12	Rn.
GROSS ALPH	aken from an are treater than 1E-1	a with known alf 0 µCi/cc. perfor <u>G DATA</u> :	ha contaminat n gross alpha c	ion (e.g., re counting an	efueling id take o 	cavity, spe r send sam	nt fuel poo ple to Cher 	l transfer (mistry for	canal, read isotopic a NET cpm βγ	ctor head) nalysis.	and sample
		Numbe	r c	pm	C)	pm	cpm	α	NET cpm α ⁽¹	s, 	INITIALS
(3) If sample a		t com beta-gamr	I	alpha is les	s than 1	50, notify R	RP supervis	ion and p	erform lor	ng-lived a	Ipha counting.
	alvsis	NOBLGS		S		Rei	urn to RP	by	hr. :	for LLA	counting.
Date	Tim		 Spectrum	Index No)			-			
ISOTO	PE	ACTIVITY (µCi/cc)	BY INITI	ALS	ISOT	OPE	A	CTIVITY (µCi/cc)		BY INITL	ALS
·										•	
Record RE-21.	and RE-212 r	eadings for all	al-power con RE-211:	tainment :	tir samp	oles. μCi	RE	-212: _			μCi/ce
Record RE-21:	5 reading and S	SAE flow for all	SAE air san RE-215:	nples.		µCi/cc	S.A	E Flow:			scfm

F = se Accountability - (For release paths only) If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6 $2-09 \ \mu Ct/cc$, or the total for noble gases exceeds 6.86E-06 $\mu Ct/cc$, notify the Chemistry lab supervisor and/or the Radiation Protection supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

Sample Volume (cc): ______ (from Page 1)

"Record LLD	for the counter	being used	at each count.
-------------	-----------------	------------	----------------

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm) ·	Muli. Factor	Activity (µCi/cc)	LLD ⁻⁴¹	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C ₁												
C2			·			· .						
C;	•											
C.												
Cu									•			
Reviewed B	3y:	Zi	RP	Supervis	sion				Date	: <u> </u>	5/24	

COUNTING INFORMATION FOR LONG LIVED ALPHA

CountTimeC1At T4Start first count 4 hours after sample stop time. (Essentially all radon decayed.)C2At T6Start second count at least 2 hours after C1.C3At TaStart time dependent upon results of C2.C4At T28Start count 24 hours after C1.C11At T575Start count at least 75 hours after T6.

$$C_{1,L} = \frac{C_2 - (C_1 e^{-i\Delta t})}{1 - e^{-i\Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			<u></u>
ΔΤ		ΔΤ		ΔТ		ΔT	1
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5260	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 ·	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338	<u></u>	<u></u>

NOTES:

- 1. If the ratio of activity $(C_{2/3} \text{ etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5\text{E-13} \,\mu\text{Ci/cc}$).
- 2. If C11 is greater than 7.5E-13 µCi/ce, notify RP supervision for review.

Date	Time	C ₁	C:	<i>ì</i> .	۱ک	Сц	RP Supervision Notified (initials)
				0.0655			<u></u>

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

SAMPLE TYPE:	Pe AIRBORNE	oint Beach Nucl	ear Plant TIVITY !	SURVEY	RWP N	to. <u>01-140</u>
Sample Location: <u>U</u> B	5/6				-	
Remote containment sampling sys	tem used?	Yes 🔲 1	io D	NA SF	1. 7	
SAMPLING DATA:			-		リビ	
SAMPLE SAMPLE STA NUMBER DATE	RT TIME	SAMPLE S	TOP TIME	SAMPLE VOLUME (cc)	SAMPL NUMBI	ER BY ER INITIALS
30-112	·	1-8-04	2330	1075	F N/A	Rn
Sample Start Flow	!		Total Flow Rema	Sample Time (r Correction rks	nin)	
GROSS BETA-GAMMA COUNTING	DATA:					·····
DATE TIME Counte Numbe	GROSS cpm	BKGD cpm	NET cpm f	MULT FACTO	SAMI ACTIV R (μCi/co	PLE /ITY BY c) ^(1,2) INITIALS
¹²¹ If sample taken from an area with known activity is greater than 1E-10 μCi/cc, per <u>GROSS ALPHA COUNTING DATA</u> : DATE TIME Co	alpha contaminat form gross alpha (unter GF	tion (e.g., refuelin counting and take ROSS E	e cavity, spe or send sam	nt fuel pool trans ple to Chemistry NET	fer canal, reacto for isotopic ana NET cpm βγ/	br head) and sample alysis.
Nu	nber c	pm	cpm	срт α	$cpm \alpha^{(3)}$	INTIALS
(3) If sample activity ratio of net cpm heta-g Isotopic Analysis Ø NOBLGS	amma to net cpm :	alpha is less than S	180, notify F Ret	IP supervision and	d perform long.	lived alpha counting.
Date <u>118/04</u> Time <u>235</u>	<u>Z</u> Spectrum	Index No. <u>N</u>	iAm_			
-ISOTOPE ● ACTIVITY (μCi/cc)	BY INITI/	ALS · ISO	TOPE	ACTIVI (µCi/co	TY :)	BY INITIALS
2 MDA						
				· · · · · · · · · · · · · · · · · · ·		J
Record RE-211 and RE-212 readings for a	ill at-power cont RE-211:	ainment air san	ples. _ μCi	RE-212:		μCi/cc
Unit 1 Divit 2	all SAE air sam RE-215:	ples.	μCi/cc	SAE Flow	••	scfm

 $\int \frac{1}{2} \frac{$

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

Sample Volume (cc): ______ (from Page 1)

¹⁴Record LLD for the counter being used at each count.

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COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/cc)	LLD'"	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C,		1										
C2												
С;	•			·								
C1				·						-		
Сц												
Reviewed B	y:	- 3	A RP	Supervis	sion				Date	: <u>4</u> 4	104	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C _I	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C_2	At T ₆	Start second count at least 2 hours after C_1 .	•
C ₃	At T _a	Start time dependent upon results of C_2 .	
C.	At T ₂₈	Start count 24 hours after C ₁ .	
Cu	At T>75	Start count at least 75 hours after T ₀ .	

$$C_{1,L} = \underbrace{C_2 - (C_1 e^{-\sqrt{\Delta} t})}_{1 - e^{-\sqrt{\Delta} t}}$$

VALUES OF (C2.3.4. ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔΤ		ΔΤ		ΔT		ΔT	
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997 ·
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5 .	0.7951	7.25	0.6220	11	0.4865	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338	<u> </u>	

NOTES:

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1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5 \text{E} \text{-}13 \ \mu\text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

							RP Supervision
Date	Time	C ₁	C ₂	λ.	<u>اک ا</u>	CLL	Notified (initials)
				0.0655			

3. If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53. Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

				Point Beach	Nuclear Plan	τ					
,			IODINE	ACTIVITY	CONCEN	TRATIO	NS				
LOCATION:	<u> </u>	ι <u>β</u>	<u>D.</u> G	. Remoi	<u>4 L</u>	_ RWP N	io. <u>07</u>	140			
Remote	containme	ent sampling	system used?	🗋 Yes	🗌 No [.] NA					
SAMPLING I	DATA:	•	c								
SAMPLE		SAMPLE	START	SAMPI	LE STOP	e,S	MPLE	SAMPLER			
NUMBE	NUMBER DATE TIME			DATE_	TIME	VOL	UME, (cc)	NUMBER	INITLALS		
30-11	<u>ې د</u>	1-8-04	2320	4-8-04	2330	<u> </u>	3 = 6	HUS-17	Ban		
Sample start flow 113 c.c.m. Total sample time (min) 10 Sample stop flow Image: sample flow Flow correction factor Image: sample flow ANALYSIS DATA: [X] Isotopic Analysis MMECDOS (for DAC data) S.I. #											
[X] I	sotopic An	alysis		(XI/MECDOS	S (for DAC da	ata)	S.I. #	<u></u>			
Date	Time	Isotope	*Concentrati (µCi/cc)	on By Initials	Date	Time	Isotope	Concentratio (µCi/cc)	n By Initials		
4/9/04	0141	I-131	7.4561	11 Eu	4/9/11	0141	C1-38				
		I-132	7.12.E	10 h			Br-82				
		I-133	LMON	he							
		I-134		W	· \						
		I-135		W							
Ŷ		Total Iodine	7.870	-10 4	Ý	Ŷ	Total Additional				
Total Iodine C	Concentrati	on + Total A	Additional Conc	centration = _	7387E	<u>μ</u> Ci	/cc By(Ini	tials)			
[] Unit 1	[][Jnit 2	RE-211:		μCi	RE-212	2:	μCi/cc			
This form sho *RELEASE A If the Save	uld be used CCOUNT concentra the charco	l for all radi ABILITY - tion of total al filter unti	oiodine analysis (for release pat for radioiodine I the investigati	s results. hs only) s exceeds 2.28E on is completed	E-09 μCi/cc,:f I.	ollow steps	outlined in R	AM 5.2.			
•			715	\leq			41	9/			
Ap	proved by:	·	-9-			D	ate: //	1107			
PBF-4002 Revision 6 11/13 HP 1.1 - 1.7 or C	103 3.2PG.3		/				Referen	ces: HPIPs 3.52.3.5	2.2. 3.53. 5.1		

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Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS

SAMPLE DATE: 4/8/2004 23:30 SAMPLE LOCATION: U1 B S/G D.P REMARKS:

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SAMPLE ID: 30-115

TAKEN BY: RM ANALYSIS BY: EK

ISOTOPIC ANALYSIS RESULTS

ISOTOPE	RESTRICTED DAC (uCi/cc)	CONC (uCi/cc)	FRAC. OF CONC.	% OF DAC
I-131	2.00E-08	7.45E-11	0.09	0.373
I-132	3.00E-06	7.12E-10	0.91	0.024
	TOTALS	7.87E-10	1.00	0.396

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 1.0E+04 hours.

Date: 49/07 Reviewed by:

04/09/04 2:01:40 AM

MECDose/Noble Gas Program (SWR-2001-103)

SAMPLE TYP	E: as 🗌 Other	AI	Poin RBORNE I	nt Beach 2 RADIO	Nuclear ACTI	· Plant VITY S	URV	Ϋ́ΕΥ	RW	RWP No. 04-140		
Sample Locatic	on:	UL BS	12 Pia	TFOR	n				·		_	
Remote c	containment s	sampling system	used?	Yes	🗌 No		NA		Õ)	: برت		
SAMPLING D	ATA:		·····					ANDI E			,	
SAMPLE NUMBER	SAMPLE SAMPLE START SAMPLE STOP VOLUME NUMBER DATE TIME DATE TIME (cc)								SAI NU	MPLER MBER	BY INITIAI	S
30-116 4-8-04 1855 4-8-04 2340 8,04E6 -LUS-										5-30	Ben]
Sample Start Flow30 LPMTotal Sample Time (min)285Sample Stop FlowIFlow Correction0.99Average Sample FlowVRemarks0.99												
GROSS BETA	GAMMA C	OUNTING DA	<u>TA:</u>							(D) []		
DATE	TIME	Counter Number	GROSS . cpm	BKC	GD m	NET cpmβ	γ	MULT. FACTOR	Α (μ	AMPLE CTIVITY Ci/cc) ⁽¹²⁾	BY INITIA	LS
4-9-04	0022	PR0-2	59.2	0.0	•	53.0	•	<u>4.</u> Z	alis	38:5:11	Fin	
⁽²⁾ If sample tak activity is gri <u>GROSS ALPH</u> DATE	en from an ar eater than 1E- A <u>COUNTIN</u> TIME	ea with known alj 10 μCi/ce, perfor I <u>G DATA</u> : Count Numb	pha contaminati in gross alpha co er GR er CI	on (e.g., re ounting an OSS	fueling d take o BK	cavity, spe r send sam	nt fuel ple to (pool transfe Chemistry fo NET	r canal. 1 or 18010pi NE cpm NE	cactor head c analysis. βγ/	BY INITIALS	5
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									cpm	$pm \alpha^{(3)}$		
⁽³⁾ If sample act	ivity ratio of r	l	ma lo net cpm a	Inha is less	than 11	I	RP supe	1 crvision and	perform	long-lived	alpha count	
	ilvsis [TNOBLGS				Ret	urn to	RP by_	ł	or, for LLA	counting	
Date	Tir	ne	Spectrum	Index No	•							•
ISOTOP	Έ	ACTIVITY (µCi/cc)	BY INITIA	LS	ISOT	OPE	_	ACTIVII (µCi/cc	Υ)	B	Y	
·										·		
	·											
Record RE-211	and RE-212 Unit 2	readings for all	at-power cont RE-211:	ainment a	ir samp	ples. μCi		RE-212:	<u> </u>		μCi/ce	
Unit 1	Unit 2	SWE HOW IOL 31	RE-215:			µCi/cc		SAE Flow	:		scfm	

 $\frac{F}{2} = \frac{5}{2} \frac{1}{2} \frac{$

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If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{11} screening.

Sample Volume (cc): ______ (from Page 1)

¹⁴Record LLD for the counter being used at each count.

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity (µCi/ec)	LLD ⁻¹	Hours From C ₁	Activity Ratio/C	BY INIT,
C ₁												
C <u>2</u>												
C,	•									11		
C.												
Сц									- <u>-</u>			
leviewed B	y:	3	RP	Supervis	іол		· · ·	-	Date	: 4/9	104	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C2	At T ₆	Start second count at least 2 hours after C1.	•
С,	At T	Start time dependent upon results of C.	
C,	At T ₂₈	Start count 24 hours after C1.	
C	At T>75	Start count at least 75 hours after T_0 .	

$$C_{LL} = \frac{C_2 - (C_1 e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1		<u></u>	
ΔΤ		ΔΤ		ΔΤ		ΔT	
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
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2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	• 0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
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3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
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4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \,\mu\text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc. notify RP supervision for review.

Date	Time	C,	C:	λ	۱د	С _ц	RP Supervision Notified (initials)
				0.0655			

3. If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Point	Beach	Nuclea	r Plant
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IODINE ACTIVITY CONCENTRATIONS

UI B 5/6 PLATFORM LOCATION:

- NA Remote containment sampling system used? No No

RWP No. 04-140

SAMPLING DATA:

SAMPLE	SAMPLE	ESTART	SAMP	LE STOP	SAMPLE	SAMPLER	INITIALS	
NUMBER	DATE	TIME	DATE	TIME	VOLUME, (cc)	NUMBER		
30-117	4-8-0-1	1855	4-8-64	2340	8.04 EG	LUS-30	Rh	

Sample start flow RULPM Sample stop flow Average sample flow

Total sample time (min) Flow correction factor Remarks

S.I. # _____

ANALYSIS DATA:

[X]	Isotopic	Anal	lysis
-----	----------	------	-------

M'MECDOS (for DAC data) Concentration *Concentration By By Date Time Isotope $(\mu Ci/cc)$ Initials Date Time Isotope (µCi/cc) Initials Luch CIN 4/9/24 IM 6-12 nu CI-38 0104 I-131 9.V 8-1*50-1*1 Br-82 I-132 zmpa I-133 I-134 I-135 N Total Total CGE Additional Iodine $8.67E^{-1}$ µCi/cc By (Initials) Total Iodine Concentration + Total Additional Concentration =

RE-211: μCi [] Unit I [] Unit 2

This form should be used for all radioiodine analysis results.

*RELEASE ACCOUNTABILITY - (for release paths only)

If the concentration of total for radioiodines exceeds 2.28E-09 µCi/cc, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed.

Approved by:

_____ Date: 4/5/57

RE-212: μCi/cc

PBF-4002 Revision 6 11/13/03 HP 1.1 - 1.7 or C3.2/P6 3

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References: HPIPs 3.52, 3.52.2, 3.53, 5.1

Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS ***

SAMPLE DATE: 4/8/2004 23:40 SAMPLE LOCATION: U1 B S/G PLATFORM REMARKS: SAMPLE ID: 30-117

TAKEN BY: RM ANALYSIS BY: EK

ISOTOPIC ANALYSIS RESULTS

ISOTOPE	RESTRICTED DAC (uCi/cc)	CONC (uCi/cc)	FRAC. OF CONC.	% OF DAC
l-131	2.00E-08	5.43E-12	0.06	0.027
<u>l-132</u>	3.00E-06	8.15E-11	0.94	0.003
	TOTALS	8.69E-11	1.00	0.030

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 1.3E+05 hours.

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Reviewed by: 300 Date: 4/9.64

04/09/04 1:38:10 AM

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SAMPLE TYT	PE: as 🗌 Other	AII	Point RBORNE R	Beach Nucle ADIOAC	ear Plant FIVITY S	SURVEY	RW	P No		
Sample Locatio	on: <u>11-1</u>	1°8" 5/	e- Platte.	• 146			-			
Remote	containment sat	mpling system	used? 🔲 Y	es 🗌 🤉	io X			\mathcal{Y}_{μ}		
SAMPLING D	<u>ATA:</u>									
SAMPLE NUMBER	PLE SAMPLE START SAMPLE STOP VOLUME A BER DATE TIME DATE TIME (cc) (***								BY INITIALS	
30-125	11-3-01	1 234	10 4-9	-0+ 1	605	1 205-30	- 2.1	<u>حتى</u>	RLK	
Sample Start Flow 30.02 785 Sample Stop Flow Flow Correction 985 Average Sample Flow Remarks									785 5,54 	
GROSS BETA	GAMMA COL	UNTING DAT	[<u>A</u> :							
DATE	DATE TIME Counter GROSS Number cpm				NET cpm β	MULT FACTO	. ΑC R (μC	AMPLE TIVITY Silee) ^(1.2) ;	BY INITIALS	
4-9-04	1050	Pro 2	3355.6	0.1	3555.	5 4.2	2.2	285-9	Rn	
 ⁽¹⁾ If sample act Chemistry for ⁽²⁾ If sample tak activity is gree <u>GROSS ALPHA</u> 	 ⁽¹⁾ If sample activity is greater than or equal to 5E-10 μCi/cc, notify RP supervision, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. ⁽²⁾ If sample taken from an area with known alpha contamination (e.g., refueling cavity, spent fuel pool transfer canal, reactor head) and sample activity is greater than 1E-10 μCi/cc, perform gross alpha counting and take or send sample to Chemistry for isotopic analysis. GROSS ALPHA COUNTING DATA: 									
DATE	TIME	Counter • Number	r GRO r срп	SS B	KGD cpm	NET cpm α	NET cpm (NET .cpm č	r By/ r	BY INITIALS	
·-9-04	1650	P20-2	14.	4 0	0.0 1404 .		. 24/6	9	Pin	
13 Usampleacti A Isotopic Ana Date <u>4/9/10</u>	vity ratio of net of lysis I N	cpm heta-ganim NOBLGS	u to net cpm alpl DACDOS L Spectrum In	ha is less thân dex No. <u>N</u> I	180; motify R Az	P supervision and urn to RP by	perform 1	ong lived a	pha counting.	
ISOTOP	E A	CTIVITY (µCi/cc)	BY INITIAL	s 150'	TOPE	ACTIVI (µCi/cc	TY :)	BY INITIA	LS	
Cr 51	2.7	76-11	W	Rull	<u>3</u> .	7.576	.13	4		
Mn 54	2.8	06.12	61	<u>Sn 11</u>	3	<u>i.62.61</u>	2	a		
1057	5.3	<u>46-13</u>	4	Sn 11	TM	666				
1058	10	36-11			25	2.584		m		
Nh 95	$\frac{1}{15} - \frac{1}{3} - \frac{1}{3} - \frac{1}{2} - 1$									
Zr95	5.	696-11	al							
Record RE-211 a	ind RE-212 rea] Unit 2	dings for all a	t-power contain RE-211:	nment air san	ples. μCi	RE-212:			µCi/ce	
Record RE-215 r	eading and SA	E flow for all !	SAE air sample	: S.						
Record RE-215 r	cading and SA] Unit 2	E flow for all 1	SAE air sample RE-215:	es.	μCi/ce	SAE Flow	• • •		scím	

Release Accountability - (For release paths only). If the total concentration for particulates texcluding naturally occurring isotopes) exceeds $5.5^{4/2}$ -09 µCi/cc, or the total for noble gases exceeds 6.50^{2} -06 µCi/cc, notify the Chemistry lab supervisor and/or the Radiation Protection static isor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an anti-ine release.

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If the ratio of (C_2/C_1) is greater than the value given in Table 1. - and if C_2 is greater than 7.5E-13, perform C_{11} screening.

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Date:

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Sample Volume (cc): ______ (from Page 1)

					1.	"Record LL	D for the co	unter beir	ig used at c	each coun
IME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Muli. Factor	Activity (µCi/cc)	LLD ⁴	Hours From C,	Activity Ratio/C ₁	BY INIT.
]	•		
							1			
						the second design of the secon				

Reviewed By:

COUNT

C₁ C₂ C₃ C₄

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

DATE

C,	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C_2	At T ₆	Start second count at least 2 hours after C ₁ .
C3	At T _a	Start time dependent upon results of C2.
C1	At T ₂₈	Start count 24 hours after C ₁ .
CLL	At T>75	Start count at least 75 hours after To.

$$C_{1,L} = \frac{C_2 - (C_1 e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

P Supervision

VALUES OF (C2.3,4 ETC.)/C, FOR CLL EQUAL TO ZERO

	TABLE 1												
ΔΤ		ΔΤ	1	ΔΤ		ΔΤ	1						
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268						
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198						
2.25	0.8630	6	0.6750	9.75	0.5260	13.5	0.4130						
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063						
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997						
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506						
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076						
3.5	0.7951	7.25	0.6220	11	0.4865 •	20	0.2698						
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236						
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222						
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208						
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182						
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160						
5	0.7207	8.75	0.5638	12.5	0 4 4 1 0	30	0.140						
5.25	0.7090	9	0.5546	12.75	0.4338	<u></u>	* <u></u> *						

NOTES:

1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C ₁	C:		الا	Сц	RP Supervision Notified (initials)
				0.0655			

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Point Beach Nuclear Plant *** RESTRICTED DAC IN AIR CALCULATIONS

SAMPLE DATE: 4/9/2004 16:05 SAMPLE LOCATION: U1 'B' S/G PLATFORM REMARKS: SAMPLE ID: 30-125

TAKEN BY: RLK ANALYSIS BY: EK

 $\mathbb{CO}^{\mathbb{P}}$

	ISOTOPIC ANALYSIS RESULTS												
		RESTRICTED DAC	CONC	FRAC. OF	% OF								
		(uCi/cc)	(uCi/cc)	CONC.	DAC								
	CR-51	8.00E-06	2.77E-11	0.09	0.000								
	MN-54	3.00E-07	2.80E-12	0.01	0.001								
	CO-57	3.00E-07	5.39E-13	0.00	0.000								
	CO-58	3.00E-07	1.05E-10	0.35	0.035								
	CO-60	1.00E-08	2.53E-11	0.08	0.253								
	NB-95	5.00E-07	7.38E-11	0.25	0.015 🛔								
	2R-95	5.00E-08	5.69E-11	0.19	0.114								
•	RU-103	3.00E-07	7.57E-13	0.00	• 0.000								
	()6N-113	5.00E-07	2.29E-12	0.01	0.000								
	SB-125	2.00E-07	2.58E-12	0.01	0.001								
		TOTALS	2108E 10 P	1.00	0.420								

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 9.5E+03 hours.

() Sn 113 Value is actually Sn 117M + Sn 113 Values. Reference CAP 055511. gn (L. GLE-13 priver)

Reviewed by

04/09/04 10:31:59 PM

MECDose/Noble Gas Program (SWR-2001-103)

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IODINE ACTIVITY CONCENTRATIONS

LOCATION:		-1 [`] <i>B</i> "	S/G Plat	tte	11 m			RWPN	lo		
Remote	containn	ient sampling	system used?] Yes	- No	X	NA (CO		
SAMPLING	DATA:							.2.7	18 = 7		
SAMPLI	=	SAMPLE	START	T	SAMPI	E STOP		S		SAMPLER	
NUMBE	R -	DATE	TIME	+	DATE	TIME		VOL	UME, (cc)	NUMBER	INITLALS
30-12	6 1	1-8-04	23-10	4-	9.04	1605		61	K-30-		Rn
Sample start flow 30 < 1											
ANALYSIS I	DATA:										
[X] I	sotopic A	nalysis		[] MECDO	S (for DAC d	lata))	S.I. # .		
) Date	Time	Isotope	*Concentrat (µCi/cc)	ion	By Initials	Date		Time	Isotope	Concentration (µCi/cc)	n By Initials
4/9/04	2127	I-131	<mor< td=""><td>1</td><td>in</td><td>4/4/64</td><td>14/14/21</td><td>129</td><td>CI-38</td><td>LINDA</td><td>n</td></mor<>	1	in	4/4/64	14/14/21	129	CI-38	LINDA	n
	1	1-132	1		1	· · · · · · · · · · · · · · · · · · ·			Br-82		1
		I-133					1		1	1	
- <u>-</u> -{		1.134									
		L135					+				
					N	· ·	-	-			+
т	*	Iotal						N	Additional		$ \Psi $
Total Iodine C	Concentral	tion + Total A	Additional Con	centr	ation = _	Zhi	A	μCi	/cc By (Init	ials) <u>6</u>	
[] Unit 1	[]	Unit 2	RE-211:			μCi		RE-212	2:	μCi/cc	
This form sho *RELEASE A If the Save	uld be use CCOUN concentr the charc proved by	ed for all radio TABILITY - ation of total oal filter until	oiodine analysi (for release pa for radioiodine the investigat	is res ths or es exa ion is	ults. nly) ceeds 2.28H s completed	E-09 μCi/cc, l.	fə11c	ow steps D	outlined in RA	AM 5.2.	
Revision 6 11/13 HP 1.1 - 1.7 or C	/03 3.2/P6.3	/	V						Referenc	es: HPIPs 3.52.3.5	2.2. 3.53, 5.1

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SAMPLE TYPE	RWP No							
Sample Location	: <u></u>	<u>`</u>	Plat				•	_
Remote co	ntainment sa	mpling system	used?	Yes 🗋 N		NA (\mathbb{C}) r
SAMPLING DA	<u>TA:</u>					<u> </u>		······
SAMPLE NUMBER	SAN DATE	MPLE START	E D	SAMPLER NUMBER	BY INITIALS			
30-127	4.9.0	4 160	5 4-1	0.04 0	950	3.C #7	1-45-30	RLK
Sample Start Flow Sample Stop Flow Average Sample	w w Flow	<u>30 </u>			Total ! Flow (Remar	Sample Time (mi Correction ks	n)	<u></u> .
GROSS BETA-C	AMMA CO	UNTING DAT	<u>A</u> :					
DATE	TIME	Counter Number	GROSS .cpm	BKGD cpm	NET cpm β	MULT. Y FACTOR	SAMPLE ACTIVITY (µGi/cc) ⁽¹²⁾	BY INITIALS
29-11-24	1755	1.7-13 6 374	472	35 4.	278	アス	3.5.1.0	<i>~.</i> 7
GROSS ALPHA (DATE	If sample taken from an area with known alpha contamination (e.g., refucing cavity, spent fuel pool transfer canal, activity is greater than 1E-10 μCi/cc, perform gross alpha counting and take or send sample to Chemistry for isotop ROSS ALPHA COUNTING DATA: DATE TIME Counter GROSS BKGD NET cpm Counter Counter Cpm cpm N						NET cpm βγ/ NET cpm α ⁽³⁾	b) and sample BY INITIALS
(3) If sample activi	iy ratio of net	cpm beia-gamm	10 net cpm alg	oha is less than 1	ISO, notify R	P supervision and p	l	alpha counting.
Isotopic Analy	sis 🔲	NOBLGS [] DACDOS		Ren		hr. for LLA	counting.
Date	Time		Spectrum I	ndex No				<u> </u>
ISOTOPE	A	CTIVITY (μCi/cc)	BY INITIAL	.s 1507	TOPE	ACTIVIT (µCi/cc)	Y B' INITI	Y ALS
·		· · · · · · · · · · · · · · · · · · ·					· ·	
		· · · · · · · · · · · · · · · · · · ·]
		·····						
Record RE-211 an	d RE-212 re: Unit 2	adings for all at F	-power contai RE-211:	inment air sam	ples. µCi	RE-212:		μCi/ce
Record RE-215 rec	ading and SA Unit 2	E flow for all S F	SAE air sampl RE-215:	ies.	µCi/cc	SAE Flow:		scfm

Release Accountability - (For release paths only) If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6 $^{-09} \mu$ Ci/cc, or the total for noble gases exceeds 6.86E-06 μ Ci/cc, notify the Chemistry lab supervisor and/or the Radiation Protection 5. sisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform G_{LL} screening.

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Sample Volume (cc): _____ (from Page 1)

"Record	LLD	for	the	counter	bei	ng	used	at	cacl	h count.
---------	-----	-----	-----	---------	-----	----	------	----	------	----------

COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Muli. Factor	Activity (µCi/cc)	LLD ^{.41}	Hours From C ₁	Activity Ratio/C	BY INIT.
C,	······	[
C <u>2</u>												
С;	•											
C.										-		
CLL										1		
Reviewed B	y:	- K	RP	Supervis	sion			-	Date	:: <u>4-</u> 1	io s.(

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C ₂	At T ₆	Start second count at least 2 hours after C1.	•
C3	At T _a	Start time dependent upon results of C_2 .	
C1	At T ₂₈	Start count 24 hours after C ₁ .	
CLL	At T>75	Start count at least 75 hours after T_0 .	

$$C_{1\perp} = \frac{C_2 - (C_1 e^{-\lambda_2 t})}{1 - e^{-\lambda_2 t}}$$

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VALUES OF (C2.3.4 ETC.)/C1 FOR C11 EQUAL TO ZERO

			TA	BLE 1		······································	
ΔΤ		ΔΤ	1	ΔT		ΔT	
l .	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0.6750	9.75	0.5260	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 •	20	0.2698
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4483	28	0.160
5	0.7207	8.75	0.5638	12.5	0.4410	30	0.140
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

- 1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).
- 2. If C_{1L} is greater than 7.5E-13 μ Ci/cc. notify RP supervision for review.

Date	Time	Cı	С <u>:</u>	2	اک	Сц	RP Supervision Notified (initials)
				0.0655			

3. If the C₄/C₄ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

IODINE ACTIVITY CONCENTRATIONS

Remote containment sampling system used? Yes No YeA DO DO DO SAMPLE SAMPLE START SAMPLE STOP SAMPLE (c) NUMBER NUMER NUMAR NUMER NU) LOCATION:		<u>I-``B''</u>	5/6 PI	<u>4</u>	·		RWPN	io				
SAMPLING DATA: SAMPLE START SAMPLE START SAMPLES TOP SAMPLE SAMPLE NUMBER SAMPLES SAMPLES NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER NUMBER SAMPLES SAMPLES SAMPLES NUMBER NUMER NUMER NUMER NUMER NUMBER NUMBER NUMBER NUMER NUMER	Remote	containmer	nt sampling	system used?		Yes	🗌 No [<u>Ana</u>	$\mathbb{C}($				
SAMPLE SAMPLE START SAMPLE STOP SAMPLE SAMPLE SAMPLE NTIALS $3 O - 12.8$ $t \cdot 9 \cdot c \cdot t$ $1LC5$ $4 \cdot 10 \cdot c \cdot 4$ $O 95C$ $3 \cdot C \in T$ $L \cdot 5 \cdot 5 \cdot c$ $R \cdot K$ Sample start flow $3 O - 12.8$ $t \cdot 9 \cdot c \cdot t$ $1LC5$ $4 \cdot 10 \cdot c \cdot 4$ $O 95C$ $3 \cdot C \in T$ $L \cdot 5 \cdot 5 \cdot c$ $R \cdot K$ Sample start flow $3 O - 12.8$ $T \text{ otal sample time (min)}$ 12.65 $C \cdot 5 \cdot 5 \cdot c$ $R \cdot K$ Average sample flow $4 - 10 \cdot c \cdot 4$ $O 95C$ $3 \cdot C \in T$ $L \cdot 5 \cdot 5 \cdot c$ $R \cdot K$ ANALYSIS DATA: [X] Isotopic Analysis [] MECDOS (for DAC data) $S.1.8$	SAMPLING I	DATA:				•				•			
Date TME Date TME $3 \cdot C \in T$ $L \circ S \cdot S \circ C$ $R \perp K$ Sample start flow $3 \cdot C \in T$ $L \circ S \cdot S \circ C$ $R \perp K$ Total sample time (min) $12 \cdot C \cdot S$ Sample start flow $3 \cdot C \in T$ $R \leftarrow K$ $R \leftarrow K$ $R \leftarrow K$ Average sample flow $M \leftarrow K$ $R \leftarrow K$ $R \leftarrow K$ $R \leftarrow K$ Average sample flow $M \leftarrow K$ $R \leftarrow K$ $R \leftarrow K$ $R \leftarrow K$ MALYSIS DATA: [X] Isotopic Analysis [] MECDOS (for DAC data) $S1. \#$ $M \leftarrow K$ $NALYSIS DATA: [X] Isotopic Analysis [] MECDOS (for DAC data) S1. \# M \leftarrow K M \leftarrow K M \leftarrow K Date Time Isotope Concentration By M \leftarrow K M \leftarrow K Date Time Isotope Concentration By M \leftarrow K M \leftarrow M M \leftarrow K M \leftarrow K M \leftarrow K M \leftarrow K$	SAMPLE NUMBER		SAMPLE	START		SAMPI	.E STOP	S.	MPLE UME. (cc)	SAMPLER NUMBER	INITIALS		
Sample start flow 30 $12m$ Total sample time (min) 1265 Average sample flow 4 Flow correction factor 6.944 ANALYSIS DATA: [X] Isotopic Analysis [] MECDOS (for DAC data) S.I. # \overline{Date} Time Isotope $(\mu CU/cc)$ Initials \overline{Date} Time Isotope $(\mu CU/cc)$ Initials $\overline{V_{+}V_{-}e_{+}}$ (53) 1.131 $\overline{C_{+}33}$ $\overline{I_{+}132}$ $\overline{V_{+}V_{-}e_{+}}$ (53) 1.133 $\overline{C_{+}33}$ $\overline{I_{+}133}$ $\overline{V_{+}V_{-}e_{+}$ (53) 1.133 $\overline{C_{+}53}$ $\overline{I_{+}133}$ $\overline{V_{+}V_{-}e_{+}$ (53) 1.133 $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{V_{+}1133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{V_{+}1133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{V_{+}1133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}133}$ $\overline{I_{+}236}$ Total lodine Concentration + Total Additional Concentration = \mathcal{MOA} $\mu CU/ce$ By (Initials) $\underline{I_{+}236}$	30-128 4.9-c4 1605 4-10-04 0950 3_0E7 LUS-30 RL.									RLK			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	San San Ave ANALYSIS D [X] Is	Sample start flow 30 1pm Total sample time (min) 1265 Sample stop flow Flow correction factor 0.944 Average sample flow Remarks ANALYSIS DATA: [X] Isotopic Analysis [] MECDOS (for DAC data) S.I. #											
$\frac{4.10-64}{1.532}$ $\frac{1.131}{1.132}$ $\frac{1.132}{1.133}$ $\frac{1.133}{1.133}$ $\frac{1.133}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.135}{1.131}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.133}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.133}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.134}$ $\frac{1.135}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.135}$ $\frac{1.134}{1.134}$ $\frac{1.134}{1.144}$ $\frac{1.134}$	Date	Time	Isotope	*Concentrati (µCi/cc)	ion	By Initials	Date	Time	Isotope	Concentratio (µCi/cc)	n By Initials		
$\frac{ 1.132 }{ 1.133 }$ $\frac{ Br-82 }{ 1.133 }$	4-10-04	1532	I-131						CI-38				
$\frac{1.133}{1.134}$ $\frac{1.134}{1.135}$ $\frac{1.135}{1.135}$ $\frac{1.135}{1$. ;		1-132						Br-82				
Image: Initial initiali initialini initini initial initial initial initial initial ini	i		I-133										
Image: I-135 Image: Image	ļ		I-134										
Total Iodine Total MMA Kub Total Additional CMOA f^{cu3} Total Iodine Concentration + Total Additional Concentration = $\pounds MMA$ $\mu Ci/cc$ By (Initials) $\pounds u3$ [] Unit 1 [] Unit 2 RE-211: μCi RE-212: $\mu Ci/cc$ This form should be used for all radioiodine analysis results. *RELEASE ACCOUNTABILITY - (for release paths only) If the concentration of total for radioiodines exceeds 2.28E-09 $\mu Ci/cc$, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed. Date: $\frac{1}{1/1-\gamma}$			I-135							· · · · · · · · · · · · · · · · · · ·			
Total Iodine Concentration + Total Additional Concentration = $\[\] \mathcal{LMPA}\] \mu Ci/cc$ By (Initials) $\[\] \mathcal{LPA}\]$ [] Unit 1 [] Unit 2 RE-211: μCi RE-212: $\mu Ci/cc$ This form should be used for all radioiodine analysis results. *RELEASE ACCOUNTABILITY - (for release paths only) If the concentration of total for radioiodines exceeds 2.28E-09 $\mu Ci/cc$, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed. Approved by: Date: $\[\] \mathcal{LPA}\]$			Total Iodine	6MDA	-	Fib			Total Additional	Lmo.A	1- 6-3		
This form should be used for all radioiodine analysis results. *RELEASE ACCOUNTABILITY - (for release paths only) If the concentration of total for radioiodines exceeds 2.28E-09 μCi/cc, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed. Approved by: Date: 1/(1/2)	Total Iodine Concentration + Total Additional Concentration = $LMPA$ µCi/cc By (Initials) <u>K-3</u>												
	This form should be used for all radioiodine analysis results. *RELEASE ACCOUNTABILITY - (for release paths only) If the concentration of total for radioiodines exceeds 2.28E-09 μ Ci/cc, follow steps outlined in RAM 5.2. Save the charcoal filter until the investigation is completed. Approved by: Date: $\frac{1}{1/1/2}$												

PBF-4002 Revision 6 11/13/03 HP 1.1 - 1.7 or C3.2/P6.3

References: HPIPs 3.52, 3.52.2, 3.53, 5.1

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SAMPLE TY Ø AP	PE: ias 🔲 Other	AD	RBOR:	Point Beac NE RADI	h Nuclea OACT	r Plant IVITY S	SURV	each Nuclear Plant DIOACTIVITY SURVEY					
Sample Locáti	ion: U	8 %	PLAT	TFORM	•						 .		
Remote	containment s	ampling system	used?	🗌 Yes	🗌 Ne		NA	$\mathbb{C}($		\mathbb{O}			
<u>SAMPLING E</u>	<u>DATA</u> :			<u> </u>									
SAMPLE NUMBER	SA DATI	MPLE START	1E	SAM DATE	PLE STO	OP TIME	SA VO	MPLE LUME cc)	SAN NUN		BY INITIALS		
30 - 133	1-10-	64 045	0	4-10-24	2	255	2,2	127	Lus	.30	Ru		
Sample Start F Sample Stop F Average Sampl	Sample Start Flow 30 + 0m Total Sample Time (min) 785 Sample Stop Flow Flow Correction 0-94 Average Sample Flow Remarks												
GROSS BETA	-GAMMACC	UNTING DAT	[<u>A</u> :			·				1 (DI D	· · · · · · · · · · · · · · · · · · ·		
DATE TIME Counter GROSS BKGD NET MULT. ACTIVITY BY Number cpm cpm By FACTOR (HCided) NITIALS													
4-10-04	2236	Pi20 2	31.2	2 0	.8	30.1		4.2	2.0	J E-12	1 Pm		
GROSS ALPH. DATE	Cater than 1E-10	0 μCi/cc. perform 5 DATA: Counte Numbe	r r	GROSS cpm	BK	GD	ple to Ch NE cpn	emistry fo T n α	NET SP ISOIOPIC NET SPM β NET CPM 0	analysis.	BY		
L					1								
13' If sample act I Isotopic Ana Date	ivity ratio of net tlysis 🔲 Time	NOBLGS	a to net c DACI Specti	pm alpha is le DOS rum Index N	ss than 18	80. notify R Retu	P superv urn to R	rision and P by	perform lo	ong-lived	alpha counting.		
ISOTOP	PE	\CTI\'ITY (μCi/ce)		BY TIALS	ISOT	OPE	, =	ACTIVII (µCi/ce)	[Y]	INITI	ALS		
		<u></u>								· .			
		<u></u>							· · · ·				
		······											
Record RE-211 :	and RE-212 re Unit 2	adings for all a	1-power (RE-211:	containment	air samp	les. μCi	R	E-212:			μCi/cc		
Record RE-215 1 Unit 1	reading and SA Unit 2	XE flow for all . I	SAE air s RE-215:	samples.		μCi/cc	S.	AE Flow:			scím		

<u>Release Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds $5^{-0} - 9^{0} \mu C l/cc$, or the total for noble gases exceeds $6.86E-06 \mu C l/cc$, notify the Chemistry lab supervisor and/or the Radiation Protection suj. (1807). Save the air particulate filter antil the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{LL} screening.

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		· · · · · · · · · · · · · · · · · · ·	4					Record LL	D for the co	unter bein	g used at o	each coi
COUNT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Muli. Factor	Activity tµCi/cc)	LLD'"	Hours From C ₁	Activity Ratio/C ₁	BY INIT.
C1]]	••••	
C2	•									·		
C,												
C1	·						<u>├</u> ───┼			+		
CLL										++	·	<u> </u>
eviewed B)::	Z		Supervis			l	-	Date	<u></u>	/07	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

Cı	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)	
C2	At T ₆	Start second count at least 2 hours after C1.	
C3	At T,	Start time dependent upon results of C ₂ .	
C.	At T ₂₈	Start count 24 hours after Ci.	
CLL	A1 T>75	Start count at least 75 hours after To.	

$$C_{11.} = \frac{C_2 - (C_1 e^{-\lambda_2 t})}{1 - e^{-\lambda_2 t}}$$

VALUES OF (C23.4, ETC.)/C1 FOR CLL EQUAL TO ZERO

			TA	BLE 1			
ΔT		ΔΤ	1	ΔΤ	77	ΔT	T
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198
2.25	0.8630	6	0 6750	9.75	0.5280	13.5	0.4130
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063
2.75	0.8352	6.5	0.6533	10.25	• 0.5110	14	0.3997
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506
3.25	0.8083	7	0.6322	10.75	0.4945	18	0.3076
3.5	0.7951	7.25	0.6220	11	0.4865 ·	20	0.2698
3.75	0.7622	7.5	0.6119	11.25	0.4766	22	0.236
· 4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.208
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182
4.75	0.7326	8.5	0.5731	12.25	0.4463	28	0.160
5	0.7207	S.75	0.5638	12.5	0 4 4 1 0	30	0.1-10
5.25	0.7090	9	0.5546	12.75	0.4338		

NOTES:

1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be \leq 7.5E-13 µCi/cc).

2. If CLL is greater than 7.5E-13 µCt/cc, notify RP supervision for review.

Date	Time	С,	C:	<i>ì</i> .	اک	Сщ	RP Supervision Notified (initials)
				0.0655			

3. If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53. Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

		IODINE .	Point Beach ACTIVITY	Nuclear Plan CONCEN	TRATIO	NSC		·.
LOCATION:	<u>un B76</u>	PLATFUL	2~		RWP N	io. <u>04-</u>	142	
Remote cont: SAMPLING DAT:	ainment sampling A:	system used?	🗌 Yes	🗌 No 🛛 [ZNA			
SAMPLE	SAMPLE	START	SAMPL	E STOP	د.S	MPLE	SAMPLER	
NUMBER	DATE	TIME	DATE	TIME	V'OL'	UME, (cc)	NUMBER	INITIALS
30-134	4-10-24	0950	4-10-64	2355	<u>, 2, 2</u>	167	<u>ius-30</u>	in
Sample s Sample s Average ANALYSIS DATA	tart flow top flow sample flow :	<u>30 - pm</u> 		Total sa Flow co Remarks	mple time (rrection fac	min) tor	785 ().94	
[X] Isotopi	ic Analysis		[] MECDOS	S (for DAC d:	ita)	S.I. #	•·	
Date Ti	me Isotope	*Concentration (µCi/cc)	on By Initials	Date	Time	Isotope	Concentratic (µCi/cc)	n By Initials
4/1/01 01	13 1-131	< MDA	6.0	4/11/84	0/13	CI-38	< MDA	IN
	1-132					Br-S2		
	1-133		·		<u>-</u>			
	I-134			/				
d 1	I-135 Total Iodine	Ð	Ð	ð	\mathcal{P}	Total Additional		\forall
Total Iodine Concer	ntration + Total A	dditional Conce	entration =	ZMDA	<u>. </u>	/cc By (Ini	tials) Sta	/
[] Unit 1	[] Unit 2	RE-211: _		μCi	RE-212	::	μCi/cc	:
This form should be *RELEASE ACCOL If the conce Save the ch	used for all radio UNTABILITY - entration of total surcoal filter until	biodine analysis (for release path for radioiodines the investigatio	results. is only) exceeds 2.2SE on is completed	-09 μCi/cc. fα	ollow steps	outlined in R	AM 5.2.	
: Approve	d by:	zor	2		D:	nte: <u>4/1</u>	1/04	
PBF-4002 Revision 6 11/13/03 HP 1.1 + 1.7 or C3.2-PG.3	• •	/				Referen	ces: HPIPs 3 52, 3 1	52.2. 3 53. 5.1

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SAMPLE TYPE: Point Be: AP Gas Other AIRBORNE RAD							ach Nuclear Plant HOACTIVITY SURVEY					RWP No. <u>じナ-1ナス</u>	
Sample Locati	ion: <u> </u>	1 8 5/6	<u>. PI</u>	<u>;</u> t							\\//	-	
Remote	containment s	ampling system	used?	🗌 Ye	s [] Ne		N.A (们	Ì		
<u>SAMPLING I</u>	<u>DATA</u> :	·····						, ——		·		·	
SAMPLE NUMBER	SAMPLE SAMPLE START NUMBER . DATE TIME		SAMPLE STOP DATE TIM		DP IME	VOLUME (cc)		SAM NUN	PLER 1BER	BY INITIA	LS		
30-138	4-10-	64 22	55	4-11	-04	10	17	1.4	1 = 7	- 49	30	RLK]
Sample Start F Sample Stop F Average Samp		Total Sample Time (min) Flow Correction Remarks						69	<u>682</u> 0.94				
GROSS BETA	-GAMMA CO	DUNTING DAT	[<u>A</u> :								MDLE		
DATE	TIME	Counter Number	GR(cp	DSS m	BKGD cpm		NET cpm β	Ŷ	MULT. FACTOR	ΑC ΑC (μC	MPLE TIVITY (i/ce) ^(1,2)	BY INITIA	.LS
4-11-04	10+0	CAN.8	67,	8	27.	Ż	40		9,4	-3-7	\$ 8.3	RLK	<u> </u>
¹²¹ It sample tal activity is gr <u>GROSS ALPH</u> DATE	ken from an are caler than 1E-1 A COUNTIN TIME	a with known alp 0 μCi/cc. perform <u>G DATA</u> : Counte Numbe	ha conta n gross a r r	mination Ipha coun GROS cpm	ic.g., ref ting and	ucling take o BK	cavity, spet r send samp GD om	nt fue ple to	el pool transfe o Chemistry fo NET cpm α	r canal, re r isolopic NET cpm β NET	actor head analysis.) and samp BY INITIAL	s s
										<u> </u>			
131 If sample act	ivity ratio of n	ri cpm beia-gamn	a to net	cpm alph:	a is less 1	than 18	0. notify R	P suj	pervision and	perform la	ong-lived :	ilpha coun	ting.
🔲 Isotopic An:	ilysis	NOBLGS		DOS			Retu	urn to	o RP by	hr.	for LLA	counting	•
Date	Tim	e	Spec	irum Ind	lex No.								
ISOTOF	°E	ACTIVITY (µCi/cc)	11	BY INITIALS		ISOTOPE		ACTIVITY (µCi/cc)		Y	BY INITIALS		
											.		
												{	
Record RE-211	and RE-212 r	eadings for all a	1-power RE-211	contain :	ment air	samp	les. μCi		RE-212:			µCi/cc	
Record RE-215	reading and S Unit 2	AE flow for all	SAE aiı RE-215	samples	5. 		µCi/cc	••	SAE Flow:	<u></u>		scfm	

<u>Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 09 µCi/cc, or the total for noble gases exceeds 6.86E-06 µCi/cc, notify the Chemistry lab supervisor and/or the Radiation Protection a, ...tsor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an irborne release.

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If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{L1} screening.

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COLINT	DATE	TIME	Counter No.	Gross (cpm)	Bkgd (cpm)	Net (cpm)	Mult. Factor	Activity InCi/cc)	LLD ⁻⁴¹	Hours From C ₁	Activity Ratio/C1	BY INIT.
C,		1	1									
C:	•											
C,												
C.												
CLL										+	·	
eviewed B	<u>v:</u>	3	RP	Supervis				f	Dat	e: <u>4/11</u>	64	

COUNTING INFORMATION FOR LONG LIVED ALPHA

Count Time

C,	At T ₄	Start first count 4 hours after sample stop time. (Essentially all radon decayed.)
C2	At T ₆	Start second count at least 2 hours after C1.
С,	At T _a	Start time dependent upon results of C_2 .
C1	At T ₂₈	Start count 24 hours after C ₁ .
CLL	A1 T>75	Start count at least 75 hours after To.

$$C_{1\perp} = \frac{C_2 - (C_1 e^{-\lambda \Delta t})}{1 - e^{-\lambda \Delta t}}$$

VALUES OF (C2.3.4, ETC.)/C1 FOR C11 EQUAL TO ZERO

	TABLE 1										
ΔΤ		ΔΤ	1	TΔ	· · · · · · · · · · · · · · · · · · ·	ΔT	1				
1	0.9366	5.5	0.6975	9.25	0.5456	13	0.4268				
2	0.8772	5.75	0.6862	9.5	0.5367	13.25	0.4198				
2.25	0.8630	6	0.6750	9.75	0.5280	13.5	0.4130				
2.5	0.8490	6.25	0.6641	10	0.5194	13.75	0.4063				
2.75	0.8352	6.5	0.6533	10.25	. 0.5110	14	0.3997				
3	0.8216	6.75	0.6427	10.5	0.5027	16	0.3506				
3.25	0.8083	7	0.6322	10.75	. 0.4945	18	0.3076				
3.5	0.7951	7.25	0.6220	11	0.4865 •	20	0.2698				
3.75	0.7822	7.5	0.6119	11.25	0.4786	22	0.236				
4	0.7695	7.75	0.6019	11.5	0.4708	23	0.222				
4.25	0.7570	8	0.5921	11.75	0.4632	24	0.205				
4.5	0.7447	8.25	0.5825	12	0.4557	26	0.182				
4.75	0.7326	8.5	0.5731	12.25	0.4463	28	0.160				
5	0.7207	8.75	0.5638	12.5	0 4 4 1 0	30	0.140				
5.25	0.7090	9	0.5546	12.75	0.4338						

NOTES:

1. If the ratio of activity $(C_{2,3}, etc.)/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu Ci/cc$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

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Date	Time	C,	· C:	ì.	اد	С _ш	RP Supervision Notified (initials)
				0.0655			

 If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53. Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.
					•									
SAMPLE TYPE:					Point Beach Nuclear Plant						RWPNO BU-140			
			AIR	BOR	ORNE RADIOACTIVITY SURVEY									
Sample Locatio	on:	<u>ur.</u>	<u> 5- 5/0</u>	ś <u>.</u>	D.(Re	<u>.~c.</u>	AL						
Remote o	containment	sampling s	system	used?	□ Y	es	🗌 No	Ø	NA		C		\mathbb{R}^{2}	
SAMPLING D	<u>ATA</u> :						•						<u>[</u>]	
SAMPLE	<u>s</u>	AMPLE S	TART			SAMP	LE STO)P	S V	OLUME	SAN	1PLER	BY	
NUMBER	ABER DATE TI		11M	E			<u> </u>		4-5	+++	1-11.11		Ren Ren	
30-113	1 4.8.	- 64	234		4-3	-0.(6	<u> </u>		13 56	<u> </u>	<u>s-77</u>		
Sample Start Fl Sample Stop Fl Average Sample	ow ow e Flow	<u>// 3</u> 	<u>crn</u>					Total Flow Remai	Samp Corre rks	etion	nin) 	(
GROSS BETA	<u>GAMMA (</u>	OUNTIN	<u>G DAT</u>	<u>A</u> :										
DATE	TIME	Cour Num	nter ber	GR(OSS om	вко	GD m	NET cpm β	Υ	MULT FACTO	. ΑC R (μ(AMPLE TIVITY Ci/ce) ^(1,2)	BY INITIALS	
4-9-04	0011	f120-	1	739	17.2	0.	5	7376	.7	4.1	1.	21 5-8	im	
 If sample act Chemistry fc ⁽²⁾ If sample tak activity is group 	ivity is great or isotopic and on from an ad eater than 1E	r than or ec ilysis. ea with kno 10 μCi/cc.	jual to 5 win alph perform	E-10 µ la conta gross a	Ci/ce, no minatior Ipha cou	otify RP 1 (c.g., re inting an	supervis efueling d take o	cavity, spe r send sam	nn gro nt fue ple to	l pool transi Chemistry f	inting and fer canal, re for isotopic	take of sen eactor head c analysis.	and sample to	
GROSS ALPH!	<u>a countir</u> T	G DATA	:		·						NE	T		
DATE	DATE TIME		Counter Number		GROSS cpm		ុ BK ហ្វ	GD m	c	NET cpmα	cpm NE cpm	cpm βγ/ NET cpm α ⁽³⁾		
4-9-64	0011	- F	PR1-1		7.4		٥.٥	o Í		7.4	a 4999	6.0	Pin	
(3) If sample act	ivity ratio of a	ict cpm het	a-gamm	a 10 nei	cpm alp	ha istes	subanel (0. notify I	RP sup	crvision an	d perform	long-lived :	ilpha counting	
J. Isotopic Ana Date <u>4/9/02</u>	lysis [/] NOBLO	is 5		CDOS ctrum In	dex No	<u> </u> <u> </u>	An		RP by <u>C</u>	0 <u>330</u> h	r. for LLA	counting.	
ISOTOP	E	ACTIVIT (µCi/cc	Г <u>Ү</u>)	12	BY NITIAL	s !	J.t. ISOT	OPE 4	भ	ACTIVI (µCi/c	TY c)	BY INITI	ALS	
Mn-542	W 8.1	2E-12			y.		B; 2	14	-+-	896- 10		-1	any pin	
6057	-+-(36-12			4/5/5/5-		(058		7.04 E-10		.61			
(253	4File 1	17-E-H			<u>p</u>		260		<u> .</u> :	76E-10	> 	a		
2060	2 y gill	- 36-63	<u>іі</u>		1	<u>i</u>	<u>Vb95</u>		_6	.08E-	9	a		
55125	et carriero	- <u>325</u> -	1	4		2	x 95		3	<u>516-</u>	<u> </u>	3/		
(r 51		3. 596	5-10		w		5n 112	3 		756	/ C	15		
<u> Mr 54</u>		6.305	• 11	4	·		5in 11	F M	-2- 	14 5		G	<u> </u>	
Record RE-211	and RE-212] Unit 2	readings f	or all ai I	I-powe RE-21	r contai: l :	nment a	ir samp	les. μCi	21	RE-212:	<u>,</u>		µCi/cc	
Record RE-215	reading and] Unit 2	SAE flow	for all ! F	SAE ai RE-21	r sampli 5:	es.		µCi/cc		SAE Flow	v:		scfm	
NOTE: Alleste		umples		0	- L for to-		uloba (See hault	ide o	fform				

NOTE: All release path air samples must be counted for long-lived alpha. See back side of form.

<u>Release Accountability</u> - (For release paths only). If the total concentration for particulates (excluding naturally occurring isotopes) exceeds 6.88E-09 μ Ci/cc, or the total for noble gases exceeds 6.86E-06 μ Ci/cc, notify the Chemistry lab supervisor and/or the Radiation Protection supervisor. Save the air particulate filter until the investigation is completed. The sample should be investigated to determine its significance as an airborne release.

LONG LIVED ALPHA COUNTING DATA							If the ratio of (C_2/C_1) is greater than the value given in Table 1, and if C_2 is greater than 7.5E-13, perform C_{11} screening.						
	Sample V	olume (cc):		<u>.</u>	(fron	n Page 1)		•	"Record LL	D for the cou	nter beir	ne used at c	ach count.
		<u> </u>		Counter	Gross	Bked	Net	Muli	Activity	I	Hours	Activity	RY]
	COUNT	DATE	ME	4-3-84 P	(cpm)	(cpm)	(cpm)	Facior	(µCi/cc)	LLD ^(J)	From C,	Ratio/C	INIT.
9m	<u>C</u> 1	4-5-04	0330	A-5-2	2.04	ETT	1.96	5.2	3.36 E-12	3.45 6-13	••••		For
<u>;</u> 0	C2	49-04	0730	1272	2:14	0.1	2.04	4.3	3-5-5-12	3.99 8-13	<i>۴</i> ۴	1,041	RLK
	C3	+.4.64	1330	7272	1.94	O.I	1.84	4.3	ラ、15 ^{-ビ・バス}	3.49 4-13	10	4397	FLK
50	C1	1.10 0.1	0330	7272	2.16	0.i	2.06	4.3	3,53 5-12	5.99 5.13	24	1,0500	Rn
20	C _{LL}	4-12-04	0230	7272	1.64	0.2	1.44	4.3	Z17 E-12	47: 2-13	.75		an
												J	
	Reviewed E	3y:			Supervis	sion			-	Date:	• • • • •	<u></u>	
				_	Duper	51(11)							
(COUNTIN	G INFOR	MATION	FOR LO	NG LIVI	ED ALPI	HA			• •			
	· <u>C</u>	<u>ount Tim</u>	e			•						:	
	С	, At T	Γ.	Start	first con	nt 4 hour	s after to	umple cu	on time (Eco	entially all ray	ton decas	(ad)	
	C	At T	6	Start	second o	count at l	east 2 ho	urs after	C_1		ion necaj	. (20.)	
	Ċ	- At T	, ,	Start	time dep	endent u	DON resu	lts of C ₁	-11			•	
	C.	At T	28	Start	count 24	hours af	ier Ci.	··· ·· ••					
	C,	LL At T	>75	Start	count at	Jeast 75	hours aft	er T _o .					
						<u>.</u>	#11.4 C	•. •					
				y C	u =	<u> (C₁ e</u>	· <u>···</u>)		,				
				۹. -۱.	1	- C **31							
,	ALLIES				EOHAI		0						
r					=				***********				
. [_				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			TABLE	<u> </u>					
Ľ	<u></u>			ΔΤ				ΔΤ			ΔT		
		0.	9366	5.5		0.6975		9.25	0.545	6	13	0.426	8
-	2	0.1	8772	5.75		0.6862		9.5	0.536	7 1	3.25	0.419	8
-			8630	6		0.6750		9.75	0.528	0	13.5	0.413	0
- I-			6363	6.23	<u> </u>	0.6641		10	0.519	4 1	3.75	0.406	3
			216	6.7		0.6533		10.25	0.511	<u> </u>	14	0.399	<u></u>
		- 0.0	5210	0.7.	<u> </u>	0.6427		10.5	0.502	<u></u>	16	0.3500	<u> </u>
			2051			0.0322		10.75	0.494	<u></u>	18	0.3070	<u></u>
⊩	3 75		7877			0.0220		11.76	0.486	<u>, , , , , , , , , , , , , , , , , , , </u>	<u></u>	0.2098	<u> </u>
∦			76052			0.0119		11.20	0.478	<u> </u>	<u> </u>	0.230	<u> </u>
-	4 25	بر ل ان ۲۰	2570			0.0019		11.5	0.470	<u> </u>		0.222	{
┣-	4.5		7447			0.3921		11./5	0.403	<u>-</u>	<u>∠</u> +	0.208	
⊩	4.75		7326	ر ۶ ج		0.1021		12 75	0.433	<u></u>	20	0.16	
	5		2207			0.5639		176	0.448.	<u></u>	20	0.100	{
	5.25		7090	0.7.1	<u> </u>	0.5030		17.75	0.433		50	0.140	I
P						0		14.13	I U.4228				

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NOTES:

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1. If the ratio of activity $(C_{2,3}, \text{etc.})/C_1$ is equal to or less than that indicated in Table 1, or if the activity of any count is less than LLD, airborne alpha activity will be considered as not present (the LLD must be $\leq 7.5E-13 \ \mu\text{Ci/cc}$).

2. If C_{LL} is greater than 7.5E-13 μ Ci/cc, notify RP supervision for review.

Date	Time	C,	C ₂	λ.	اک	Сц	RP Supervision Notified (initials)
4-12-04	1615	3.366-12	3.5 8-12	0.0655	4	N/A	

3. If the C₄/C₁ ratio is greater than that in Table 1, refer to HPIP 3.53, Counting of Air Samples for Low Level, Long-Lived Radioactive Alpha Particulate Contamination.

Point Beach Nuclear Plant RESTRICTED DAC IN AIR CALCULATIONS ***



SAMPLE DATE: 4/8/2004 23:30 SAMPLE ID: 30-113 SAMPLE LOCATION: U1 B S/G D.P **REMARKS:**

TAKEN BY: RM ANALYSIS BY: EK

	ISOTOPIC ANALYSIS RESULTS								
ISOTOPE	RESTRICTED DAC (uCi/cc)	CONC (uCi/cc)	FRAC. OF CONC.	% OF DAC					
CR-51	8.00E-06	3.59E-10	0.03	0.004					
MN-54	3.00E-07	6.30E-11	0.01	0.021					
CO-58	3.00E-07	9.04E-10	0.08	0.301					
CO-60	1.00E-08	1.76E-10	0.01	1.760					
NB-95	5.00E-07	6.08E-09	0.51	1.216					
ZR-95	5.00E-08	3.51E-09	0.30	7.020					
()SN-113	5.00E-07	2.15E-10	0.02	0.043					
SB-125	2.00E-07	5.14E-10	0.04	0.257					
	TOTALS	4118E-08	1.00	10.623					

Based on a 40 hour work week, the maximum stay time for the listed concentrations is: 376.5 hours.

() Sn113 concentration = Sn 117 M + Sn113 Activity. W

Reviewed by: _____ Date:

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Just-In-Time Operating Experience

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