

Beaver Valley Power Station Route 168 P.O. Box 4 Shippingport, PA 15077-0004

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July 22, 2003 L-03-111

U. S. Nuclear Regulatory Commission Attention: Document Control Desk Washington, DC 20555-0001

Subject: Beaver Valley Power Station, Unit No. 1 and No. 2 BV-1 Docket No. 50-334, License No. DPR-66 BV-2 Docket No. 50-412, License No. NPF-73 **Beaver Valley Power Station Emergency Preparedness Plan Implementing Procedures (Volume 2)**

In accordance with 10 CFR Part 50.4, this letter forwards recent revisions of the Beaver Valley Power Station Emergency Preparedness Plan Implementing Procedures (Volume 2) to the Nuclear Regulatory Commission. The changes do not decrease the effectiveness of the Plan and the Plan, as changed, continues to meet the requirements of Appendix E of 10 CFR 50. Therefore, 10 CFR Part 50.54(q) requires that these changes be submitted for information only.

There are no regulatory commitments contained in this letter. If there are any questions concerning this submittal, please contact Ms. Susan L. Vicinie, Manager, Emergency Preparedness at 724-682-5767.

Sincerely,

L. William Pearce

Enclosure 1 – Summary of Changes Enclosure 2 – Procedure revisions

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Beaver Valley Power Station, Unit No. 1 and No. 2 BVPS EP Plan Implementing Procedures (Vol. 2) L-03-111 Page 2

States to be

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Central File - Keywords: Emergency Preparedness Plan

Reference: NPD3MEP:0239

Enclosure 1 Summary of Changes

Revisions to Beaver Valley Power Station Emergency Preparedness Plan Implementing Procedures (Volume 2)

The following is a brief summary of the changes made to the Emergency Preparedness Plan Implementing Procedures.

EPP/Implementing Procedures:

EPP/IP-1.7 "Emergency Response Organization (ERO) Teams"

Revision 11 standardized the format to be consistent with EP procedures and updated current titles. Steps 8.2.3.2.2, 8.2.3.2.3, 8.4.1.1, 8.4.1.1.1 and 8.4.1.1.3 were clarified. Information regarding the conduct of critiques was added to Attachment A.

EPP/IP-2.7 "Liquid Release Estimate"

Revision 8 corrected a typographical error in Attachment J, Step 1.

EPP/IP-3.3 "Emergency Contamination Control"

Revision 8 standardized the format to be consistent with EP procedures and made editorial title changes.

EPP/IP-5.4 "Emergency Personnel Monitoring"

Revision 9 clarified Step 8.2.1.1 by changing "should" to "shall".

EPP/IMPLEMENTING PROCEDURES - EFFECTIVE INDEX

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INSTRUCTIONS

EPP/I-1a	Recognition and Classification of Emergency Conditions	Revision 4
EPP/I-1b	Recognition and Classification of Emergency Conditions	Revision 4
EPP/I-2	Unusual Event	Revision 19
EPP/I-3	Alert	Revision 18
ЕРР/І-4	Site Area Emergency	Revision 18
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1.1	Notification	Revision 31
1.2	Communications and Dissemination of Information	Revision 18
1.3	Turnover Status Checklist ED/ERM	Revision 9
1.4	Technical Support Center (TSC) Activation, Operation and Deactivation	Revision 18
1.5	Operations Support Center (OSC) Activation, Operation and Deactivation	Revision 14
1.6	Emergency Operations Facility (EOF) Activation, Operation and Deactivation	Revision 16
1.7	Emergency Response Organization (ERO) Teams	Revision 11
	CONTROLLED BVPS UNIT 3	REVISION

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2.5 Emerg	ency Environmental Monitoring	Revision 11
2.6 Enviro Project	onmental Assessment and Dose tion Controlling Procedure	Revision 14
2.6.1	Dose Projection - Backup Methods	Revision 11
2.6.2	Dose Projection - ARERAS/MIDAS With FSAR Defaults	Revision 12
2.6.3	Dose Projection - ARERAS/MIDAS With Real-Time Inputs	Revision 12
2.6.4	Dose Projection - ARERAS/MIDAS With Manual Inputs	Revision 13
2.6.5	Alternate Meteorological Parameters	Revision 10
2.6.6	Dose Projections By Hand Calculation - Known Isotopic Release	Revision 6
2.6.7	Dose Assessment Based on Field Measurements	Revision 7
2.6.8	Dose Assessment Based on Environmental Measurements and Samples	Revision 6
2.6.9	Integrated Dose Assessment	Revision 6
2.6.10	Ground Contamination Assessment and Protective Action	Revision 7
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	2.6.12 Dose Projection -ARERAS/MIDAS With Severe Accident Assessment	Revision 9
2.7	Liquid Release Estimate	Revision 8
	2.7.1 Liquid Release Estimate - Computer Method	Revision 9
EPP/IP	<u>3 Series - Onsite Protective Actions</u>	
3.1	Evacuation	Revision 8
3.2	Site Assembly and Personnel Accountability	Revision 13
3.3	Emergency Contamination Control	Revision 8
3.4	Emergency Respiratory Protection	Revision 8
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EPP/IP	<u> 5 Series - Aid to Personnel</u>	
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9.3	Activation, Operation and Deactivation of the Emergency Public Information Organization Emergency Operations Facility (EOF)	Revision 4
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Annex A -	Westinghouse Emergency Response Plan	Revision 8
Annex B -	DELETED	
Annex C -	Major Injury Involving Radioactive Contamination For The Medical Center, Beaver	Revision 9
Annex D -	Procedure for Transferring Radiation Casualties to the Radiation Emergency Response Program (UPMC Presbyterian)	Revision 8
Annex E -	Reserved	

Beaver Valley Power Station

Unit 1/2

EPP/IP 1.7

EMERGENCY RESPONSE ORGANIZATION (ERO) TEAMS

Document Owner Manager, Emergency Preparedness

Revision Number	11	
Level Of Use	General Skill Reference	
Safety Related Procedure	Yes	



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itle:			Unit:	Level Of Use:
73.41771			Revision:	Page Number:
	KGEN	CT RESPONSE ORGANIZATION (ERO) TEAMS	11	iofi
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	8.3	ERO Activation		
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	[ACH	MENT A ERO EXPECTATIONS		
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	Be	eaver Valley Power Station	Procedure N	umber:
Title:			Unit:	Level Of Use:
			<u>1/2</u>	General Skill Reference
EMERG	ENCY I	RESPONSE ORGANIZATION (ERO) TEAMS	11	1 of 14
1.0	<u>PURPO</u>	SE		
1.1	This pro Emerger	cedure provides the guidance for maintaining the Bency Response Organization (ERO) and ERO augment	aver Valley l tation.	Power Station
2.0	SCOPE			
2.1	This pro Organiza overall c	cedure describes the Beaver Valley Power Station (I ation (ERO) Teams including: designations, assignr coordination and ERO expectations.	SVPS) Emergenents, respon	gency Response sibility, transfers,
3.0	<u>REFER</u>	ENCES AND COMMITMENTS		
3.1	Referen	<u>ces</u>		
3.1.1	1 Bea	ver Valley Power Station Emergency Preparedness I	Plan.	
3.1.2	2 NU Em	REG-0654/FEMA-REP-1 "Criteria for Preparation a ergency Response Plans and Preparedness in Suppor	nd Evaluatio t of Nuclear 1	on of Radiological Power Plants."
3.1.3	3 Titl	e 10, Code of Federal Regulations Part 50, Appendix	E .	
3.1.4	4 NP Pov	DAP 2.14 "Fitness-For-Duty Program For FirstEnerg ver Station".	y Employees	s at Beaver Valley
3.1.	5 Cor	adition Reports		
3	.1.5.1	00-4309		
3	.1.5.2	01-6025		
3	3.1.5.3	02-00444-6		
3	6.1.5.4	02-10225-1		
3	3 1 5 5 03-02032-06			

- 3.1.5.6 03-02103-03
- 3.1.5.7 03-02034-03
- 3.1.5.8 03-02034-10
- 3.1.5.9 03-02103-02
- 3.2 <u>Commitments</u>
 - 3.2.1 None

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Beav	er Valley Power Station	Procedure N	umber: EPP/IP 1.7	1
Title:		Unit: 1/2	Level Of Use: General Skill Refe	rence
EMERGENCY RESI	PONSE ORGANIZATION (ERO) TEAMS	Revision: 11	Page Number: 2 of 14	
4.0 <u>RECORDS</u>	AND FORMS		2. 38 p 4. 2 4 p 4. 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
4.1 <u>Records</u>				
4.1.1 None				Ċ
4.2 <u>Forms</u>				
4.2.1 EPP-IP-	1.7.F01, On-Call ERO Response Team Transfer I	Form		4 - Paralos
5.0 <u>RESPONSE</u>	BILITIES			
5.1 <u>Manager, En</u>	nergency Preparedness			
5.1.1 Is respon List.	nsible for the overall coordination of the ERO Tea	ams and the	associated Call-	
5.2 <u>ERO Membe</u> personnel (G	ers (assigned to a dedicated response team (Red, V breen))	White, Blue)) or ERO Pool	
5.2.1 Are resp	oonsible for the actions described in this procedure	5. -		
5.3 <u>BVPS Emer</u>	gency Response Organization	,		C
5.3.1 Will cor Primary personn	nsist of three (3) dedicated response teams, each w and Secondary responders, supplemented by desi el. The teams will be identified by colors (i.e., Re	vith required gnated supp ed, White, B	l designated port (call-tree) lue).	
5.3.1.1 Pr	imary Responders			
5.3.1.1.1	Shall report to their emergency facility as soon instances, within one (1) hour of notification of emergency classification.	n as possibl of an Alert,	e, and in all or higher,	
5.3.1.2 Se	condary Responders	÷.		
5.3.1.2.1	Shall report to their emergency facility as soon instances, within two (2) hours of notification emergency classification.	n as possible of an Alert	e, and in all , or higher,	
5.3.1.3 De	esignated Support (call-tree) Personnel			
5.3.1.3.1	Are to report to their emergency facilities as so notification.	oon as possi	ible following	
			, , , , , , , , , , , , , , , , , , ,	
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Beaver Valley Power Station		Procedure Number: EPP/IP 1.7		
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EMERGENCY RESPONSE ORGANIZATION (ERO) TEAMS	Revision: 11	Page Number: 3 of 14		

- 5.3.1.4 ERO Personnel Not Assigned to One of the Three (3) Dedicated Response Teams
 - 5.3.1.4.1 Will be assigned to the ERO Team Pool, and shall report as soon as possible following notification. The Team Pool will also be identified by color (Green).

5.4 Emergency Preparedness Personnel

5.4.1 Initial team assignments will be determined by Emergency Preparedness personnel. ERO response team transfers shall be approved by the Manager, EP. Temporary transfers are described in Section E.3 of this procedure.

6.0 PRECAUTIONS AND LIMITATIONS

- 6.1 <u>Precautions</u>
 - 6.1.1 None
- 6.2 Limitations
 - 6.2.1 None

7.0 PREREQUISITES

- 7.1 This IP remains in effect at all times to ensure a full state of readiness is maintained.
- 7.2 All ERO personnel shall be aware of the requirements stipulated in this procedure.
- 7.3 Transfers of ERO personnel responsibility shall follow the guidance provided in this procedure.

8.0 <u>PROCEDURE</u>

- 8.1 ERO Team Response Assignments/Responsibilities
 - 8.1.1 Dedicated Response Teams will rotate between the following response categories: On-Call, Stand-By and Back-Up.
 - 8.1.1.1 On-Call responders are those personnel who shall respond immediately when notified. An On-Call team shall consist of Primary Responders, Secondary Responders, and designated support personnel.
 - 8.1.1.2 Stand-By responders have no response responsibility for the week that they are designated as Stand-By. A Stand-By team shall consist of Primary Responders, Secondary Responders, and designated support personnel.

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	beaver valley rower Station		EPP/IP 1.7
		1/2	General Skill Referen
EMERGEN	CY RESPONSE ORGANIZATION (ERO) TEAMS	Revision: 11	Page Number: 4 of 14
8.1.1.	Back-Up responders are the designated relief per Call responders. A Back-Up team shall consist of Responders, and designated support personnel.	sonnel (12-ho of Primary Res	ur shifts) for the On- ponders, Secondary
8.1.2	ERO Response Teams shall rotate weekly.		
8.1.2.	1 Rotation assignments shall be as follows (ERO F BVWeb, EPP Web Page):	totation Calen	dar available on
	 On-Call to Stand-By Stand-By to Back-Up Back-Up to On-Call 		
8.1.2.	2 Rotation shall occur every Monday at 0800 hours	5.	
8.1.3	On-Call Team Fitness For Duty (FFD) requirements.		
8.1.3.	1 Personnel designated "On-Call" Primary and Sec Fitness For Duty (FFD) requirements per NPDA	ondary Respon P 2.14.	nders shall adhere to
8.1.3.	2 Personnel conducting a call-out must ask the indialcohol within the last 5 hours."	ividual "If the	y have consumed
8.1	1.3.2.1 Personnel responding to a call-out must me	et FFD requir	ements.
8.1.3.	3 If deemed necessary, FFD testing shall be conducted duties.	cted prior to be	ginning ERO
8.1.4	ERO personnel shall adhere to the ERO Expectations (Attachment 1)	•
8.2 <u>Bee</u>	per/Responsibility Assignments and Transfers	•	2
8.2.1	All personnel assigned to an ERO position as either a F shall be assigned a beeper unless otherwise noted.	rimary or Sec	ondary responder
8.2.2	On Call personnel arranging transfer of ERO responsib Preparedness per Form EPP-IP-1.7.F01.	ility shall noti	fy Emergency
8.2.3	Transfer of assignment responsibility for On-Call Tean (3) categories.	n Responders s	shall fall into three
NOTE:	Individuals shall consult the ERO Call-List to c personnel for their ERO position for On Call tr Call-List is distributed in paper format and is al Preparedness Web page (most current list).	letermine the i ansfer of respo lso available o	dentity of qualified onsibility. The ERO n the Emergency

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Title:		Unit: 1/2	Level Of Use: General Skill Reference
EMERGENCY RESP	ONSE ORGANIZATION (ERO) TEAMS	Revision:	Page Number: 5 of 14
NOTE: If or G T	personnel in the On-Call category will not be aver ne week rotation, they shall arrange for a qualified REEN or Stand-by Team prior to requesting a re- eam.	vailable for ed replacement	any portion of their ent from the from the Back-up
that	n 24 hours shall do the following:	iespona ie	n a period of <u>1035</u>
NOTE: E	mergency Preparedness DOES NOT need to be in exponsibilities for less than 24 hours occurs.	informed w	hen a transfer of
8.2.3.1.1	Ensure their position is covered by another que position	alified indi	vidual for that ERO
8.2.3.2 On that	-Call Team personnel who will be unavailable to n 24 hours shall do the following:	respond fo	or a period of greater
8.2.3.2.1	Ensure their position is covered by another que position by completing form EPP-IP-1.7.F01, Team Transfer Form"	alified indi "On-Call F	vidual for that ERO - ERO Response
8.2.3.2.2	Mail (or FAX @ PAX 5777) form EPP-IP-1.7 Emergency Preparedness. If during off-norms Emergency Preparedness and provide the info Mail (or FAX) a completed document to the M Preparedness.	7.F01, to that working formation on Manager, En	ne Manager, hours, contact Attachment 2. mergency
8.2.3.2.3	On-Call Team personnel who will be unavaila illness (NOI&I) or personal emergency should replacement. If a replacement can not be loca Preparedness.	able to resp l attempt to ted, contact	ond due to sudden locate a t Emergency
8.2.4 All perso (i.e., char times (an beeper ac	nnel assigned beepers are responsible for maintanging batteries when necessary). Personnel shall d in the audible mode when appropriate) and restivations.	ining opera keep their l pond accord	bility of that beeper beepers "on" at all dingly to <u>ALL</u>
8.3 <u>ERO Activati</u>	on		
8.3.1 Beaver V	alley Emergency Response System (BVERS) No	otification	
NOTE: B	VERS is a computer aided Voice Mail system th RO Beepers and accept personnel call backs.	at will be u	sed to activate the
8.3.1.1 Bea On	epers will be activated for ERO notifications with -Call ERO Team phone: 724-643-4370 (or 330-3	n the follow 315-4380).	ving Actual Event –

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Bea	ver Valley Power Station	Procedure Nu	mber: EDD/ID 1 7
tle:		Unit:	Level Of Use:
MERGENCY RE	SPONSE ORGANIZATION (ERO) TEAMS	1/2 Revision:	Page Number: 6 of 14
8.3.1.1.1	Only On-Call ERO Team personnel sha dialing <u>724-643-4370/330-315-4380</u> , as re	ll call back in equired.	to BVERS by
8.3.1.2	Beeper Holder Response		ta al €
8.3.1.2.1	Upon calling into BVERS, you will be provided in the second secon	ompted to enter res a touch ton pressing "9" (ye	your Plant Photo e phone. BVERS es) or "6" (no).
8.3.1.2.2	A message will be provided at this time sta classification declared and the basis for the	ating the Unit, t e declaration.	time and emergency
NOTE:	BVERS will have information on all qualified its data base, and will know who you are and for currently qualified by your I.D. entry. Personn access the system immediately, or receive a bus should be able to access the system within a fer	ERO personne or which ERO el calling into l sy signal. Pers w minutes.	l programmed into position you are BVERS will either onnel calling back
8.3.1.2.3	BVERS will ask the following questions:		
	 BVERS will ask if you understand "6" (no). 	the message b	y pressing "9" (yes) or
	* BVERS will ask if you are Fit For pressing "9" (yes) or "6" (no).	Duty and ask y	ou to acknowledge by
. •	* BVERS will ask if you are able to by pressing "9" (yes) or "6" (no).	respond and as	k you to acknowledge
:	* BVERS will ask you to enter y minutes (enter your travel time from facility).	your Estimated om your locati	l Time of Arrival in on to your emergency
	* BVERS will then terminate the cor	nnection.	
8.3.1.2.4	BVERS will print out reports for the Contr Facility, and Joint Public Information Cent who have called in.	rol Room, Eme ter identifying t	rgency Response hose personnel
8.3.1.2.5	The ERO Team designated as Back-Up do report 12-hours after emergency declaration	es not need to on, unless other	call-in but shall wise notified.
	If BVERS determines that a specific ERO position	on has not been	staffed, it will

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•	Beaver	Valley Power Station	Procedure Nu	mber: EPP/IP 1.7
5	Title:		Unit:	Level Of Use: General Skill Reference
	EMERGENCY RESPO	NSE ORGANIZATION (ERO) TEAMS	Revision:	Page Number: 7 of 14
)	8.3.1.3.1	Any ERO Beeper Holder receiving a Bee 330-315-4380 SHALL call into BVERS, and report to their designated emergency fa Call individual is unable to respond.)	eper Code of 7 answer the que acility. (This as	24-643-4370 or stions requested ssumes that the On-
	8.3.1.3.1.1	If the ERO position has been filled, a respond to the position will be informavailable.	any other person ned that there a	nnel calling in to re no positions
	8.3.1.3.1.2	If the On-Call individual becomes av BVERS and report to their emergence	vailable, he/she zy facility.	shall call into
	8.3.1.4 If BV will posit	/ERS determines that <u>a specific ERO position</u> perform the following notifications for person ion:	on has still not o onnel in that <u>sp</u>	called in, BVERS ecific ERO
	*	Call the individual PAX phone numbers of	of personnel in	that specific position,
	*	Call the individual Home phone num position, and	bers of person	nnel in that specific
Û	*	Again, activate the individual Beepers position.	for personnel	in that specific ERO
	*	This will continue until the ERO position	is filled.	
	8.3.2 ERO Voic	e Mail System (ERO-VMS) Notification		
	NOTE: The Be system according to the system according	e ERO-VMS is a typical voice mail system t epers and accept personnel call backs in the stem is unavailable. The ERO-VMS utilizes cessing features. There is only one beeper ca	hat is used to a event that the s the ERF switc Ill back number	ctivate the ERO primary BVERS th and has remote t for ERO-VMS.
	8.3.2.1 Beep	pers will be activated for ERO notifications w	with the followi	ing Beeper Codes:
	*	Actual events "99999	95080"	
	*	Actual events - Site Inaccessible "00000	05080"	· · · · · ·
	8.3.2.1.1	Only On-Call ERO Team personnel sha by dialing <u>724-682-5080 (PAX 5080)</u> .	ll call back int	o the ERO-VMS
\bigcirc	8.3.2.1.2	ERO-VMS call-back number is listed on the	e ERO Call-Li	st.

DUUT	er Valley Power Station	Procedure N	umber:	D 1 7	
		Unit:	Level Of	Use:	
EDCENCY DESD		1/2 Revision:	Gener Page Nu	al Skill Ref	ference .
	UNSE ORGANIZATION (ERO) TEAMS	1		8 of 14	
8.3.2.2 Be	eper Holder Response				
8.3.2.2.1	The ERO-VMS will inform you that an eme ask that you provide the following informat alcohol in the last 5 hours, (personnel must at the sound of the tone):	ergency has b ion. If you ha verbally prov	een decl ave not c ide this	ared and consumed informati	l on
	* Your name (please spell last name)				
	* ERO position				
	* Estimated time of arrival (Time of I	Day, i.e., 214	5 Hrs., 0	115 Hrs.))
8.3.2.2.2	If you have consumed alcohol in the last 5 h your emergency position.	nours, contact	an alter	nate for	
NOTE: E ti w	RO-VMS has a maximum of 4 incoming lines he next call received will be answered. If no lin vill be received.	As a line be nes are availa	comes a ble, a bu	vailable, sy signal	
ERO Respons	se During Working and Non-working Hours		÷ į	· · ·	
8.4.1 Response	e During Working Hours			1	
8.4.1.1 "O Tre	n-Call" ERO Personnel (Primary, Secondary as ce) personnel SHALL respond as follows:	nd designated	Support	t (Call-	
8.4.1.1.1	Primary and Secondary responders SHALL Emergency Response System (BVERS) prio emergency location (This includes personne	call the Beav or to respondi el onsite).	er Valle ng to the	y eir	
				cy facilit	y.
8.4.1.1.2	ALL "On-Call" ERO personnel SHALL res	pond to their	emerger		
8.4.1.1.2 8.4.1.1.3	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen	pond to their t, as necessar	emergen y.		•
8.4.1.1.2 8.4.1.1.3 8.4.1.2 All	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen Other ERO Personnel	pond to their t, as necessar	y.		
8.4.1.1.2 8.4.1.1.3 8.4.1.2 All 8.4.1.2.1	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen Other ERO Personnel SHALL report to their emergency facility.	pond to their t, as necessar	y.		
8.4.1.1.2 8.4.1.1.3 8.4.1.2 All 8.4.1.2.1 8.4.1.2.2	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen Other ERO Personnel SHALL report to their emergency facility. Take direction from the "On-Call" ERO per	pond to their t, as necessar rsonnel.	emergen y.		
8.4.1.1.2 8.4.1.1.3 8.4.1.2 All 8.4.1.2.1 8.4.1.2.2 8.4.2 Response	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen Other ERO Personnel SHALL report to their emergency facility. Take direction from the "On-Call" ERO per During Non-Working Hours	pond to their t, as necessar	emergen y.		
8.4.1.1.2 8.4.1.1.3 8.4.1.2 All 8.4.1.2.1 8.4.1.2.2 8.4.2 Response 8.4.2.1 "Or	ALL "On-Call" ERO personnel SHALL res Determine manpower needs and supplemen Other ERO Personnel SHALL report to their emergency facility. Take direction from the "On-Call" ERO per During Non-Working Hours n-Call" ERO Personnel	pond to their t, as necessar	y.		

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- 8.4.2.1.2 Determine manpower needs and "call-out" additional personnel, if necessary.
- 8.4.2.2 All Other ERO Personnel

- 8.4.2.2.1 Beeper Holders SHALL remain alert for further instructions (call-out, shift rotation, etc.).
- 8.4.2.2.2 All other ERO personnel will be called-out, if necessary.

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	EKO EXPECIATIONS		
	Duty Expectations/Pager Response Ex	spectatio	ons
٠	All ERO personnel shall understand, and adhere to, the require Emergency Response Organization (ERO) Teams.	ements of p	procedure EPP/IP 1.7
•	All ERO personnel assigned ERO Pagers are expected to weat within the Pager Service Area (located on the EPP Webpage/ERC to messages. The following are some unacceptable responses messages:	r their Pag D Info) and S for NOT	ers at all times when respond appropriately responding to Pager
	 Pager left in vibrate when not being worn Pager left in other location too far to hear audible alarm (i.e.: b Weak/dead battery 	oathroom, s	hower, etc.)
•	All ERO notifications initiated by BVERS shall display one of the	following	messages:
	 "Actual Event-On-Call ERO Team call 724-682-4730", or, "This is a Drill-On-Call ERO Team call 724-682-4730" (An alternate phone number that may be displayed for BVERS) 	' is 330-315	-4380)
	 When the above messages are displayed, ALWAYS call th These are the ONLY two alpha messages initiated by BVI (other alpha messages are for information, or non-ERO res 	e number p ERS that re ponse).	rovided. quire ERO response
•	Only On-Call ERO personnel are to initially call-in to BVERS.		
•	If only the BVERS phone number (724-682-4730 or 330-315-438 searching to fill a specific ERO position), then any individual recerrespond and upon being accepted, report for your position as require	0) is display iving this n red.	ved (BVERS pessage shall call-in,
•	For an <u>actual event</u> , or Drill/Exercise, a BVERS Pager message NOTES alpha-numeric message describing the event and emergen	e shall be f cy declarati	ollowed by a LOTU on time.
•	Upon notification, On-Call ERO personnel shall report to their I but no later than their assigned response times from the time of includes elleming for Facility estimation time)	ERO position	ons as soon as possib gency declaration (t

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ATTACHMENT A Page 2 of 4 ERO EXPECTATIONS		
Duty Expectations/Pager Response Expe	ectations	(cont.)
• On-Call ERO personnel are expected to maintain response ti response facilities (1 or 2 hours from the time of event declaration	mes to their n, not the tin	r respective emergency ne of Pager activation).
• For <u>actual events</u> , personnel are to respond appropriately BVERS/Lotus Notes), Plant Page Party System, phone or BV report to emergency facilities, report to alternate facilities, etc.).	v when not ERS phone	ified by Pager (via call. (i.e.: take cover,
• For Drills or Exercises, personnel are to respond appro (BVERS/Lotus Notes), Plant Page Party System, phone or BVER to emergency facilities, report to alternate facilities, call-in Drill/	priately wh S phone call OST only).	en notified by Pager l (i.e.: take cover, report
• In the event alphanumeric messaging is not available, ERO Pager message codes:	rs will be act	ivated with one of these
 9999995080 (Actual Event/Site Accessible), On-Call ERO emergency facilities. 	personnel 1	eport to their assigned
 2) 0000005080 (Actual Event/<u>Site Inaccessible</u>), On-Call ERO Alternate EOF per procedure. 	Managers/Co	pordinators report to the
• The ERO call-back phone number for this response is 724	-682-5080.	
• ERO personnel On-Call are expected to maintain fitness-for-duty	per 10CFR2	26.
• For <u>actual events</u> occurring during normal working hours (0700 expected to report to their appropriate emergency facility to sup Call ERO personnel call-in to BVERS).	-1700 hrs), <u>a</u> pport the On	all ERO personnel are -Call Team (only On-
• ERO personnel are not to call the Control Room upon notic specifically requested.	fication of a	an emergency, unless
• On-Call ERO personnel are expected to have their FirstEnergy reporting to their respective facilities.	y ID Badge	and Dosimetry when
• If an On-Call ERO member becomes incapable of performing the another qualified person for that position and transfer On-Call repersonnel of the transfer is per EPP/IP 1.7.).	eir ERO duti esponsibility	es, they are to contact . (Notification to EPP

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ERO EXPECTATIONS		
Duty Expectations/Pager Response Exp	ectations	(cont.)
• Emergency Facility Leads should define their expectations cognizant of Facility activation timing requirements (i.e.: deleg events, involve the Team in response, etc.).	for their Teate activities,	eam while remaining , maintain overview of
• ERO personnel must provide information, not just data points, i.e.:	to each other	and the Facility Lead
• Explain the meaning of a data point provided to the Team (tripped off and was the only remain power supply)	(i.e.: D/G #1	tripped off vs. D/G #1
• ERO communications shall use three-way communications and	noun descript	tors.
• Following Actual Events, Drills/Exercises or staffing of Emerge support, each Emergency Facility SHALL conduct and documer	ency Facilities at a critique.	to provide plant
• The critique will be lead by the Facility Lead.		
 A Condition Report will be written for each Delta (Area Fonecessary by the Facility Lead. 	r Improveme	nt) as deemed
• The person presenting the comment warranting the Condition Condition Report.	on Report SH	ALL write the
• Each Delta presented, whether a Condition Report was war presenters name written beside the comment.	ranted or not,	SHALL have the
• Emergency Preparedness will be notified of each Condition	Report writte	en.
• Facility equipment, procedure or supply challenges that occur du Exercises SHOULD have a resolution attempted during the Actu simply commented upon during the critique.	uring Actual I 1al Event, Dri	Events, Drills or Ill or Exercise, not

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ATTACHMENT A Page 4 of 4 ERO EXPECTATIONS		
ERO Training and Drill Participation	Expectat	ions
• Attend appropriate Initial ERO Classroom Training for assigned	position.	
• Attend appropriate Continuing ERO Classroom Training for assi	gned position	1.
 Attend assigned ERO Team Drills/Exercises (Drill participation as a NRC Performance Indicator.) 	for key ER	O positions is trac
• Managers and supervisors shall ensure that each ERO member u qualified at all times to respond to an emergency.	nder their su	pervision remains
• Ensure ERO participation in training and Drills is documented.	• •	
 Participate in Drill/Exercise critiques and identify areas for appropriate corrective actions can be taken. 	or improven	nent and strength
• ERO personnel shall initiate Condition Reports, and notify EPP,	as necessary.	
• ERO personnel shall respond to, or assist EPP personnel, with the	e response to	Condition Reports
• Ensure their emergency response facility is in a state of readiness	prior to leav	ing the facility.
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Beaver Valley Power Station

Unit 1/2

EPP-IP-2.7

LIQUID RELEASE ESTIMATE

Document Owner Manager, Emergency Preparedness

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Safety Related Procedure	Yes

CONTROLLED BVPS UNIT 3

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ለ ጥጥ	A CURAENT D	UNIT 1 NDC-EC CALCUL ATION (DDC)	ESS MONITOD M	
AII	ACHMENT D	UNIT I NRC-EC CALCULATION (FROM	MINATION	EINOD).
ΔTT	ACHMENT F	LINTT 1 FPA-MPC CALCUL ATION (PRO	CESS MONTTOR I	METHODI PAG
		DETERMINATION		
ATT	ACHMENT F	UNIT 1 UNMONITORED LIQUID DISCH	ARGE PATHWAN	/s
ATT	ACHMENT G	UNIT 2 NRC-EC CALCULATION (SAMP	LE METHOD): U	NUSUAL EVENT
		AND ALERT DETERMINATION		
ATT	ACHMENT H	UNIT 2 EPA-MPC CALCULATION (SAM	PLE METHOD):	PAG
		DETERMINATION		
ATT	ACHMENT I	UNIT 2 NRC-EC CALCULATION (PROC	ESS MONITOR M	ETHOD):
		UNUSUAL EVENT AND ALERT DETER	MINATION	-
ATT	ACHMENT J	UNIT 2 EPA-MPC CALCULATION (PRO	CESS MONITOR I	METHOD): PAG
		DETERMINATION	********	
ATT	ACHMENT K	UNIT 2 UNMONITORED LIQUID DISCH	ARGE PATHWAY	۲S
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1.0 <u>PURPOSE</u>

1.1 This procedure provides various methods of determining the fractions of NRC -EC's and EPA-MPC's following an unplanned or uncontrolled release of radioactive materials via a monitored or unmonitored pathway to the Ohio River. The Environmental Assessment and Dose Projection Coordinator is responsible to ensure that actions outlined in this procedure are implemented when necessary.

2.0 <u>SCOPE</u>

- 2.1 This procedure provides several different calculation methods for determining the concentration in the discharge or the drinking water after an unplanned release. The method used will be determined by the availability of sampling or radiation monitoring data along with release rate and dilution rate information. Brief descriptions of the different procedures (methods) are described in Section 8.0.
- 2.2 IF a liquid discharge is occurring at Unit 1 and Unit 2, THEN perform the appropriate attachment calculations for NRC-EC and EPA-MPC determination for both sites and all discharge pathways. Interpret the results as follows:
 - 2.2.1 Use the <u>maximum</u> calculated NRC-EC fraction from both sites and all discharge pathways for comparisons against Unusual Event and Alert EAL criteria as follows:
 - 2.2.1.1 IF the <u>maximum</u> fraction is >2, and the release is ≥ 60 minutes, THEN an Unusual Event is declared.
 - 2.2.1.2 IF the <u>maximum</u> fraction is >200 and the release is \geq 15 minutes, THEN an Alert is declared.
 - 2.2.2 Use the <u>sum total</u> of the EPA-MPC fraction that is calculated from both sites and all discharge pathways for comparisons against PAG criteria as follows:
 - 2.2.2.1 IF the <u>sum total</u> fraction is >12, THEN a protective action recommendation is made per EPP/IP 4.1.

3.0 <u>REFERENCES AND COMMITMENTS</u>

3.1 References

- 3.1.1 Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
- 3.1.2 Appendix B, Table 2, Col. 2 to 10 CFR Part 20.1001-20.2401.
- 3.1.3 Appendix I to 10 CFR Part 50.
- 3.1.4 <u>Plan for Nuclear Power Generating Station Incidents</u> Commonwealth of Pennsylvania Dept. of Environmental Resources/Bureau of Radiation Protection.

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3.1.5	NUREG-0654/FEMA-REP-1 Criteria for Prepa Emergency Response Plans and Preparedness in	ration and Evaluation Support of Nuclear	of Radiological Power Plants.
3.1.6	Maximum Permissible Body Burdens and Maxi Radionuclides in Air and in Water for Occupation Commerce, National Bureau of Standards, Hand	mum Permissible Co onal Exposure, U.S. 1 lbook 69.	ncentrations of Department of
3.1.7	DLC Calculation Package No. ERS-ATL-93-03	0, EPP/IP 2.7 Proced	ure.
3.1.8	Offsite Dose Calculation Manual, including pro 1/2-ODC-3.03, Controls for RETS and REMP p	cedure 1/2-ODC-2.01 programs.	l, Liquid Effluents,
3.2 <u>Cor</u>	nmitments		
3.2.1	None		
4.0 <u>RE</u>	CORDS AND FORMS	· ;	9
4.1 <u>Rec</u>	<u>:ords</u>		
4.1.1	The following QA Records are generated by this	s procedure:	in an
4.1.1	.1 Attachment B, Unit 1 NRC-EC Calculation	on (Sample Method):	Unusual Event and
4.1.1	.2 Attachment C, Unit 1 EPA-MPC Calculat Determination	ion (Sample Method): PAG
4.1.1	.3 Attachment D, Unit 1 NRC-EC Calculation Event and Alert Determination	on (Process Monitor I	Method): Unusual
4.1.1	.4 Attachment E, Unit 1 EPA-MPC Calculat Determination	ion (Process Monitor	Method): PAG
4.1.1	.5 Attachment F, Unit 1 Unmonitored Liquid	l Discharge Pathways	}
4.1.1	.6 Attachment G, Unit 2 NRC-EC Calculation	on (Sample Method):	Unusual Event and
4.1.1	.7 Attachment H, Unit 2 EPA-MPC Calculat Determination	tion (Sample Method)): PAG _l
4.1.1	.8 Attachment I, Unit 2 NRC-EC Calculation Event and Alert Determination	n (Process Monitor M	lethod); Unusual
4.1.1	.9 Attachment J, Unit 2 EPA-MPC Calculati	on (Process Monitor	Method): PAG

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4.1.1.10	Attachment K, Unit 2 Unmonitored Liquid D	ischarge Pathway	S
4.2 Forms			
4.2.1 None	• • • • • • • • • • • • • • • • • • •		
5.0 <u>RESPON</u>	ISIBILITIES		
5.1 Environm	nental Assessment and Dose Projection Coordi	nator	
5.1.1 Resp neces	onsible to ensure that actions outlined in this party.	procedure are impl	emented when
6.0 <u>PRECAU</u>	JTIONS AND LIMITATIONS		
6.1 <u>Precaution</u>	ns		
accor	mmodate operational flexibility needed for effl	uent releases. Th	erefore, the limits
accor assoc <u>C</u> onc 2 of 1 of 50 factor	mmodate operational flexibility needed for efflective with liquid release concentrations (i.e., the contration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 10 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m	uent releases. The he OEC ODCM <u>E</u> is stated in Append 0 is justified becau S Technical Spec- arem (new 10 CFR	erefore, the limits ffluent lix B, Table 2, Col. use the annual dose ification bases) is a EC bases).
accor assoc <u>C</u> onc 2 of 1 of 50 factor 6.2 <u>Limitation</u>	mmodate operational flexibility needed for effi- tiated with liquid release concentrations (i.e., the centration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 10 0 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m	uent releases. The he OEC ODCM <u>E</u> is stated in Append 0 is justified becau is Technical Spect rem (new 10 CFR	erefore, the limits ffluent lix B, Table 2, Col. use the annual dose ification bases) is a EC bases).
accor assoc 2 of 1 of 50 factor 6.2 <u>Limitation</u> 6.2.1 The c releas Treat the E	mmodate operational flexibility needed for effi- tiated with liquid release concentrations (i.e., the centration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 10 0 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m ns estimation methods in this procedure are based sed activity within the river water. The actual tern Plant may vary as a function of mixing. ast Liverpool Water Treatment Plant intake.	luent releases. The he OEC ODCM E is stated in Append 0 is justified becau is Technical Spect rem (new 10 CFR on a uniform dist concentrations at Mixing is project	erefore, the limits ffluent lix B, Table 2, Col. use the annual dose ification bases) is a EC bases). ribution of the the Midland Water ed to be complete at
accor assoc 2 of 1 of 50 factor 6.2 <u>Limitation</u> 6.2.1 The or release Treate the E	mmodate operational flexibility needed for effi- tiated with liquid release concentrations (i.e., the centration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 16 00 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m ns estimation methods in this procedure are based sed activity within the river water. The actual term Plant may vary as a function of mixing. East Liverpool Water Treatment Plant intake. DUISITES	luent releases. The he OEC <u>O</u> DCM <u>H</u> is stated in Append 0 is justified becau S Technical Speci rem (new 10 CFR on a uniform dist concentrations at Mixing is projected	erefore, the limits ffluent lix B, Table 2, Col. ise the annual dose ification bases) is a EC bases). ribution of the the Midland Water ed to be complete at
accor assoc 2 of 1 of 50 factor 6.2 <u>Limitation</u> 6.2.1 The or releas Treat the E 7.0 <u>PREREC</u> 7.1 An unplay is immine	mmodate operational flexibility needed for effi- tiated with liquid release concentrations (i.e., the centration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 16 00 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m ns estimation methods in this procedure are based sed activity within the river water. The actual timent Plant may vary as a function of mixing. East Liverpool Water Treatment Plant intake. DUISITES nned or uncontrolled release of radioactive matern, or is suspected.	luent releases. The he OEC <u>O</u> DCM <u>H</u> is stated in Append 0 is justified becau S Technical Spect from a uniform dist concentrations at Mixing is project terials to the Ohio	erefore, the limits ffluent lix B, Table 2, Col. use the annual dose ification bases) is a EC bases). ribution of the the Midland Water ed to be complete at River has occurred,
accor assoc 2 of 1 of 50 facto 6.2 <u>Limitation</u> 6.2.1 The or releas Treat the E 7.0 <u>PREREC</u> 7.1 An unplas is immine 8.0 <u>PROCEE</u>	mmodate operational flexibility needed for effi- tiated with liquid release concentrations (i.e., the centration) are based on 10 times the NRC-EC 10 CFR 20.1001-20.2401. The multiplier of 10 00 mrem (old 10 CFR 20 MPC bases, and BVP r 10 times higher than the annual dose of 50 m ns estimation methods in this procedure are based sed activity within the river water. The actual tenent Plant may vary as a function of mixing. East Liverpool Water Treatment Plant intake. DUISITES nned or uncontrolled release of radioactive matern, or is suspected. DURE	luent releases. The he OEC ODCM E is stated in Append 0 is justified becau S Technical Spect rem (new 10 CFR on a uniform dist concentrations at Mixing is project terials to the Ohio	erefore, the limits ffluent lix B, Table 2, Col. use the annual dose ification bases) is a EC bases). ribution of the the Midland Water ed to be complete at River has occurred,

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8.1.1 The graph represents a means to determine the Ohio River Flow Rate necessary for obtaining various dilution factors used in the calculations of EPP/IP 2.7.

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- 8.2 ATTACHMENT B (Unit 1) and G (Unit 2), NRC-EC Calculation (Sample Method): Unusual Event and Alert Determination
 - 8.2.1 This method determines the concentration in the release prior to dilution by the Ohio River, and compares the result to the appropriate Technical Specification/ODCM limits. The resulting factor is used as the basis of the Unusual Event and Alert Emergency Action Levels. This method requires an isotopic or gross beta-gamma sample from the discharge or directly from the source (i.e., from a tank). IF a source sample is taken, THEN an appropriate dilution factor between the discharge flow and the cooling tower blowdown/emergency outfall structure flow must be applied, unless the release is directly to the river via the Catch Basin System.

8.3 ATTACHMENT C (Unit 1) and H (Unit 2), EPA-MPC Calculation (Sample Method): PAG Determination

- 8.3.1 This method determines the concentration in the Ohio River (at the Midland Water Treatment Plant Intake) following dilution by the river, and compares the results to the appropriate EPA Drinking Water Standard. This concentration is assumed to be in the drinking water at Midland and East Liverpool; and is the basis to provide a protective action to downstream water treatment plants. This method requires isotopic or gross beta gamma sample from the discharge source (i.e., the appropriate tank) and a dilution factor between the discharge flow and the flow of the Ohio River. This attachment may also be used for a sample from the Midland Water Treatment Plant without a dilution factor.
- 8.4 ATTACHMENT D (Unit 1) and I (Unit 2), NRC-EC Calculation (Process Monitor Method): Unusual Event and Alert Determination
 - 8.4.1 This method duplicates the methods of Attachment B and G except that a process monitor reading is used in lieu of an actual sample. The criteria for use of these Attachments requires an upper alarm indication on one or more of the following radiation monitors:

<u>Unit 1</u>
RM-1LW-104
RM-1LW-116
RM-1RW-100
RM-1RW-101
RM-1RW-100A,B,C,D
1000-100

<u>Unit 2</u>

2SGC-RQ100 2SWS-RQ100A,B,C,D 2SWS-RQ101 2SWS-RQ102

8.5 ATTACHMENT E (Unit 1) and J (Unit 2), EPA - MPC Calculation (Process Monitor Method): PAG Determination

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8.5.1	This method duplicates the methods of Atta monitor reading is used in lieu of an actual s Attachments requires an upper alarm indica radiation monitors:	chment C and H exce sample. The criteria f tion on one or more o	pt that a proo or use of the f the following	cess se ng
	<u>Unit 1</u>	Uni	<u>t 2_</u>	
	RM-1LW-104 RM-1LW-116 RM-1RW-100 RM-1RW-101 RM-1RW-100A,B,C,D RM-1DA-100	2SGC-R 2SWS-R 2SWS-R 2SWS-R	Q100 Q100A,B,C Q101 Q102	5,D
8.6 A	TACHMENT F (Unit 1) and K (Unit 2), Unr	nonitored Liquid Disc	harge Pathw	ays
8.6.1	This method determines the release rate and unmonitored release of radioactive material this attachment requires knowledge of the a duration of the release. After completion of dilution rate into Attachments B and C or G	dilution rate of an un via leakage of a stora mount of liquid releas this attachment, enter and H (as appropriate	planned and ge tank, etc. ed and the ex the release c) and contin	Use of stimated rate and ue the

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Beaver Valley Power Station	Procedure Number: EPP-IP-2.7		
Title:	Unit: 1/2	Level Of Use: General Skill Reference	
LIQUID RELEASE ESTIMATE	Revision:	Page Number: 7 of 28	
ATTACHMENT A			

Page 1 of 2 GRAPHICAL RIVER FLOW RATE DETERMINATION

IF the Stage Height method is used to determine the River Flow Rate in ft^3 /sec, THEN call the Montgomery Dam at 724-643-8400 to obtain the Lower Gauge Height (ft) (stage height) (ft) of the Ohio River at the dam site. Find this value on the vertical axis and move horizontally on the graph (Attachment A) to the solid line marked flow rate. At this point, move vertically down the graph to the associated River Flow Rate on the horizontal axis. The value is in the necessary unit of ft/sec. This number is used in determining various dilution factors of liquid waste discharge.



	Bear	ver Valley	/ Po	ower Stati	ion		Procedure Na	umber: EPP-IP-2.7
Title:							Unit:	Level Of Use:
		ECTRA TT					Revision:	Page Number:
цŲ	UID KELEASE	ESIMATE					8	9 of 28
				ATTACH	MEN	NT B		UNIT 1
				Page 1	l of 2	2		
	UNIT 1 NRC-E	C CALCULA	TION	N (SAMPLE N	ÆT.	HOD): UNUS	UAL EVE	ENT AND ALERT
				DETERMI	NA.	TION		
Limi	i Release Estimate							
Unit 1	I: NRC - EC Calculation (Sample Method)			_	•		CALCULATIONS (RTL A5. 2.7-2F 11/1994
Unus Alert	al Event Determination Determination	. (Criteria: >2 x TS/ODC . (Criteria: > 200 x TS/	CM Lim DDCM I	it, and release is > or = 6 Limit, and release is > or	$0 \min_{n=15 \text{ m}}$	inutes)		
Samp	le Location:					Sample Date:		@ hrs
Relea	se Start: @	hrs.	Release	Stop:	e.	hrs.	Release Time:	= minutes
		ColA	ז ר	CallB	<u>ייי</u>		,	
		Sample		TS/ODCM Limit		Col C	IF sample	was taken from the outfall
	Nuclide	(uCi/ml)		10 x NRC-EC (uCi/ml)		(Col A / Col B) Fraction of Limit	structure o	r cooling tower blowdown, THE
	Be-7		┼┯╢	6E-03	┤═┤		enter 1.0 i	n Block (4) and determine
_	Cr-51		1	5E-03	=		Block (5)	
P A	Fe-59		+/-	<u>3E-04</u> 1E-04		· · · · · · · · · · · · · · · · · · ·		
R	Co-57		17	6E-04	=	·	Otherwise	, do the following:
T	Co-58		17	2E-04			Enter I /-	id Weste Balance Bate L
Ċ	Ni-59	+	┼┼┨	3E-05 3E-03			enner ridt	na wasie keiezse kaie in
Ŭ	Ni-63		亡	1E-03	-		Block (2)	
L	Zn-65		<u>+</u>	5E-05	=		n	Release Rate = **
Ť	Nb-97		+;-+	2E-04 3E-03			Enter the	Cooling Tower Blowdown in
E	Mo-99		$\overline{1}$	2E-04			Block (3),	as obtained from:
S	Tc-99m		11	1E-02	*		()FT-IC	W-101-1
	Ag-110m Sb-124		┼┼┤	6E-05 7F_05				
	Sb-125		$\frac{1}{1}$	3E-04	-		(3)	Dilution Rate =
1	I-131		1	1E-05	=			
0	I-133		14	<u>7E-05</u>			Divide Bk	ck (2) by Block (3), then
ī	Cr-134		+/-+	<u>9E-06</u>	-			
N	Cs-137		$\overline{\tau}$	1E-05			(4)	DF=
E	Ba/La-140		14	8E-05	•		Multiply I	lock (1) by Block (4), then
5	Ce-141		+;-+	3E-04 3E-05			enter the r	esun mi Block (5)
	W-187		$\frac{1}{1}$	3E-04			கா	Fr of NRC Limit =
								· · ·
!	H-3		+/-1	1E-02	╞═┥		Note 1.	TE Block (5) is > 2 and the
Ť	Sr-89		┼┼┨	1E-03 8E-05	╞═┥	<u> </u>	THORE 1:	is > or = 60 minutes. THEN
•	Sr-90		1	SE-06	=		1	declare an Unusual Event.
	Gr Beta-Gamma		,	1E-07			Note 2:	IF Block (5) is > 200 , and the
		Sum Total	(Undih	uted Fraction of Limit)	_	_ (1)	{ }	declare an Alert.
		•	. –				Note 3:	IF more than one release is
	Use the latest appropriate Use only if isotopic sampl	composite sample analys e analysis is not available	is. 			<u> </u>		ongoing, THEN calculate a Blo (5) for each release. Use the m Block (5) to classify the event.
Calcu	lations By:			Date:	e_	hrs.		() No Emergency
Revie	wed By:			Date:	•	hrs.		() Unusual Event Emergency
								······
								() () () () () () () () () () () () () (

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		Beaver Vall	lev Power Station	Procedure N	lumber:
+1m		Deaver van	icy rower station	87-14	EPP-IP-2.7
16:		,		1/2	General Skill Referen
IQUI	ID R	ELEASE ESTIMAT	TE	Revision:	Page Number:
			ATTACIDATION		<u>_10 of 28</u>
			ATTACHMENT B		UNIT 1
U	NIT	1 NRC-EC CALCU	LATION (SAMPLE METHOD)	UNUSUAL EV	ENT AND ALERT
ianid I	Dalasc	•			÷
Iguid I Init 1: 1	NRC	e - EC Calculation (Sample Met	hod)	INSTRI 2.7-2R	UCTIONS (RTL A5.715FG) 11/1994
1.	Obtai	n an isotopic sample from the	source (e.g.: the Liquid Waste Discharge Line) of	r from the Cooling Tower	Blowdown.
Í	1.1	IF the radioactivity is a result	t of a leaking heat exchanger, THEN obtain the s	ample from the Combined	Cooling Tower Blowdown.
2.	Ente	r the nuclide concentration	ns (uCi/ml), or gross beta-gamma concentr	ation (uCi/ml) in the Co	blumn A.
3.	Divid (Frac	e the nuclide concentration (a tion of Limit).	aCi/ml) in Column A by the TS/ODCM Limit	(uCi/ml) in Column B.	Enter the results in Column C
	3.1	Note that the TS/ODCM Lin - 20.2401, Table 2 Col. 2.	nit Values are based on 10 times the NRC-EC of	oncentrations listed in 10 C	FR 20 Appendix B to 20.1001
4.	Sum	the Fraction of TS/ODCM Lim	it values. Enter the Undiluted Praction of TS/O	DCM Limit total in Block ((1).
5.	IF the proce	e sample was taken from the ou ed to Step 9.	utfall structures, the cooling tower blowdown, or	the Catch Basin System, T	HEN enter 1.0 in Block (4) and
6.	IF the Block	e sample was taken from the Li t (2).	quid Waste System, THEN obtain the Release R	ate (gpm), for the appropria	ate pathway. Enter the value in
7.	Obtai (gpm	n the combined Cooling Tow). Enter the appropriate value	ver Blowdown Flowrate from FT-1CW-101-1 (in Block (3).	(gpm), or obtain any othe	r applicable Dilution Flowrate
8.	Deter Bloch	mine the Dilution Factor by di (4).	ividing the Release Rate (gpm) in Block (2) by	the Dilution Rate (gpm) in	Block (3). Enter the result in
9.	Deter Facto	mine the Diluted Fraction of 7 r in Block (4). Enter the result	IS/ODCM Limit by Multiplying the Undiluted 1 t in Block (5).	Praction of TS/ODCM Lin	it in Block (1) by the Dilution
	9.1	IF the Diluted Fraction of T. Event.	S/ODCM Limit from Block (5) is > 2 , and the	release is > or = 60 minu	tes, THEN declare an Unusual
	9.2	IF the Diluted Praction of TS	ODCM Limit from Block (5) is > 200, and the	release is > or = 15 minutes	, THEN declare an Alert.
	9.3	IF more than one release is o Use the highest Block (5) val	ongoing, THEN calculate a Diluted Fraction of lue for event classification.	TS/ODCM Limit as shown	in Block (5), for each release.
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	Bea	ver Valley	Po	ower Stati	on		Procedure No	EPP-IP-2.7
Title:							Unit: 1/2	Level Of Use: General Skill Re
	TID PEI EASE	TAMTE					Revision:	Page Number:
							8	<u>11 of 28</u>
				ATTACHI	MEN	NT C		UNIT 1
				Page 1	of 2	2		
	UNIT 1 EP.	A-MPC CALCU	LA	TION (SAMP	LE	METHOD): P	AG DETI	ERMINATION
Liquid Unit 1	1 Release Estimate : EPA - MPC Calculation	a (Sample Method)						CALCULATIONS (RTL / 2.7-3F 11/1994
PAG	Determination (Criteri	a > 12 x EPA - MPC Limit)						
Sampi	le Location:				<u></u>	Sample Date:		@
Relea	se Start:	@ hrs, Rel	case	Stop:	•	hrs, Release Time		= minutes
	1		ſ	Cal B				
	Nuclide	Sample Concentration		EPA-MPC Limit EPA-570 (vCi/ml)		Col C (Col A / Col B) Fraction of Limit	IF sample Water Tre	was taken from the Midland
<u> </u>	·	(w.w.u.u)						-1. 142 and datamains
<u> </u>	Be-7 Cr-51	- <u> </u> <u> </u>	$\frac{1}{2}$	6E-06			LU UL DR	CK (4) BUG OCUCIUBIN
P	Mn-54		<u>/</u>	3E-07			Biock (5)	
R R	Fe-59 		+		-		otherwise	, do the following:
Ţ	Co-58		$\overline{1}$	3E-07			Emplie	- + + Kting Dalagas Data in
	Co-60 Ni-59		+	3E-07	-		Etticr rad	uid wasie keicase kaic m
Ŭ	Ni-63		7	5E-08			Block (2)	
	Zn-65 Zr/Nb-95		$\frac{1}{1}$	<u>3E-07</u> 2E-07	-		((2)	Release Rate =
T	Nb-97		1	3E-06			Eater Ohi	o River Flowrate in Block (3)
E S	Mo-99 Tc-99m		\mathcal{H}	<u>6E-07</u> 2E-05	=		() table v	alue for month of
	Ag-110m		/	9E-08	=		() other:	
<u> </u>	<u>Sb-124</u> Sb-125		+	6E-08 3E-07	=		(3) Ohio 1	River Flow =
I	I-131		1	3E-09	=		Divide D	ash (1) bu Diash (2) than m
<u>⊢</u> ₽−	<u>I-133</u>	-	$\frac{\prime}{\prime}$	<u>1E-08</u> 3E-08	=	<u> </u>	2.23E-3.	ock (2) by Block (3), then in Enter the result in Block (4)
I	Cs-134		1	\$E-08				DE -
E	Cs-137 Ba/Ls-140		+	<u>2E-07</u> 6E-08			Multiply 1	Block (1) by Block (4), then
S	Ce-141		1	3E-07	=		enter the	result in Block (5)
<u> </u>	<u>Ce-144</u> W-187		$\frac{1}{1}$	0E+00 2E-07	=		(5) Fr of 1	PA Limit =
				477.444]	
•	H-3 Fe-55		/	2E-05 2E-06	=		Note 1:	IF Block (5) is > 12, THEN
•	Sr-89		<u>/</u>	2E-08	-			implement the PAG per EP
	51-90		/	8E-09	-		Note 2:	IF more than one release is THEN calculate a Block (5)
**	Gr Beta-Gamma		/	9E-11	.=			release. Sum the Block (5)
 		Sum Total (U	Indil	uted Fraction of Limit)	=	· (1)		THEN implement the PAG
•	Use the latest appropriate Use only if isotopic same	e composite sample analysis. ple analysis is not available.]	EPP/IP 4.1. () Sum EPA-MPC <12, N
Calcu	ulations By:	Date:			e	hrs.		Required. () Sum EPA-MPC >12, P
Revie	:wed By:	Date:			e	brs.		Kequrea.
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		Beaver Valley Power Station	Procedure N	
ile:			- Init:	EPP-IP-2./
			1/2	General Skill Refer
IOI	UID)	RELEASE ESTIMATE	Revision:	Page Number:
_			8	<u>12 of 28</u>
		ATTACHMENT C		UNIT 1
		Page 2 of 2		
Liquid Unit 1	i Release i: EPA -	Estimate MPC Calculation (Sample Method)		CALCULATIONS (RTL AS.7 2.7-3R 11/1994
٢	1.	Obtain an isotopic sample from the source or from the Midland Water Treatment Plant intal		
1	2.	Enter the anolide concentrations (uCi/mi), or pross heta-pamma concentrations (uCi/mi) in	the Column A.	.
	3.	Divide the nuclide concentration (uCi/ml) in Column A by the EPA-MPC Limit (uCi/ml) in C (Praction of Limit).	Column B. En	ter the results in Column
		 Note that the EPA-MPC Limit Values are from the Interim Drinking Water Regulation Calculation Package No. ERS-DKY-82-022. 	ons (EPA-570/9	-76-003), and from DLC
	4.	Sum the Fraction of EPA-MPC Limit values. Enter the Undiluted Praction of EPA-MPC Li	init total in Bloc	:k (1).
	5.	IF the sample was taken from the Midland Water Treatment Plant intake, THEN enter 1.0 is	i Block (4) and [proceed to Step 9.
	6 .	Determine the Release Rate (gpm), by one of the following methods, and enter the value in I	Block (2).	
		 For a sample taken from a tank or piping; Release Rate = gpm = Discharge Rate For a sample taken from the CT Blowdown; Release Rate = gpm = CT Blowdown; For a sample taken from the Catch Basin; Release Rate = gpm = Catch Basin F 	: from tank or pi wn Flowrate. lowrate.	iping.
ł	7.	Determine the Ohio River Flowrate (cuft/sec) by one of the following methods, and enter the	e value in Block	(3).
		PRIMARY METHOD		
		() Call the National Weather Service - 412-262-1882 or 412-262-1984 and request the f	ollowing:	
	ł	() cuft/sec = Ohio River Flowrate at the Montgomery Dam.		
		BACKUP METHOD	- 	
		() Call the National Weather Service - 412-262-1882 or 412-262-1984 and request one of	of the following:	
		 () ft = Ohio River Stage Height at the Wheeling Dam () or the Montgomery Convert this value to cuft/sec using the graph on Attachment A. 	Dam ().	
	ŀ	() Use one of the following approximations based on the average reported monthly Ohio	River Flowrates:	
		() 53,000 cuft/sec = January () 44,000 cuft/sec = May () 11,00 () 55,000 cuft/sec = February () 23,000 cuft/sec = June () 16,00 () 77,000 cuft/sec = March () 15,000 cuft/sec = July () 28,00 () 64.000 cuft/sec = April () 12,000 cuft/sec = August () 43,00	10 cuft/sec = Sep 10 cuft/sec = Oct 10 cuft/sec = No 10 cuft/sec = De	stember tober vember
ł	i	() Determine the Ohio River Flowrate By determining the Stage Height from one of the f	ollowing onsite	methods.
1	i	() ft = Ohio River Stage Height as read from the Intake Structure.		
	ļ	Convert this value to cuft/see using the graph on Attachment A. () ft = Ohio River Stage Height as read from 1LR-CW-101 (located in Intak/ Convert this value to cuft/see using the graph on Attachment A.	# Structure).	si s
	8.	Determine the Dilution Factor by dividing the Release Rate (gpm) in Block (2) by the Ohic multiply by a conversion factor of 2.2E-3. Enter the result in Block (4).	> River Flowrate	; (gpm) in Block (3) and
	9.	Determine the Diluted Praction of EPA-MPC Limit By Multiplying the Undiluted Praction Dilution Factor in Block (4). Enter the result in Block (5).	of EPA-MPC 1	imit in Block (1) by the
	ŀ	9.1 IF the Diluted Praction of EPA-MPC Limit from Block (5) is > 12, THEN implement ?	the PAG per EPI	P/IP 4.1.
	1	9.2 IF more than one release is ongoing, THEN calculate a Diluted Fraction of EPA-MP	C Limit as show	m in Block (5), for each

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	Be	eaver Valle	ey Power Stat	Procedure Number: EPP-IP-2.7		
Title:					Unit:	Level Of Use:
		CE ECTRAATE	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Revision:	Page Number:
	CLCA	SE ESTIMATE	3 		8	13 of 28
			ATTACH	IMENT D		UNIT 1
			Page	1 of 2		
UNITIN	NRC-1	EC CALCULAI	TION (PROCESS M ALERT DETE	IONITOR METHO RMINATION	OD): UNUX	SUAL EVENT ANI
Liquid Release Es Unit 1: NRC - EC	stimate C Calcula	ation (Process Monitor Met	hod)			(RTL A5.715FJ) 2.7-4F 11/1994
Unusual Event De Alert Determination	eterminati ion	ion (Criteria: > 2 x TS/C (Criteria: > 200 x TS	DDCM Limit, and release is > or = S/ODCM Limit, and release is > or	60 minutes) = 15 minutes)		
Release Start:			hrs, Release Stop:		hrs, Relea	ase Time: = minutes
A. DETER	RMINAT	TION OF DILUTED FR	ACTION OF TS/ODCM LIM	IT FOR VARIOUS PLAN	r systems	
1. U	iauid W	aste System Release (Ci	riteria: Monitor Reading Exce	eeds The HI HI Alarm Setp	mint)	
1	.1 Obt	ain the Release Rate for	the appropriate pathway usin	one of the following met	hods:	
	() ()	RM-1LW-116: Releas RM-1LW-104: Releas	se Rate = gpm; As r se Rate = gpm; As r	read from FR-1LW-103, or read from FR-1LW-104		
1.	.2 Obt	ain the Cooling Tower I	Blowdown Flowrate as follow:	s:		
		U1/2 CTBD Flowrate	= gpm; As read from	n FT-1CW-101-1		· · · · · · · · · · · · · · · · · · ·
1.	.3 Detr	ermine the Dilution Fac	tor as follows:			
	-	DF = (Release Rate _	gom) / (U1/2 CTBD F	Flowrate gpm) = _		
1.	.4 Dete	ermine the Diluted Frac	tion of TS/ODCM Limit using	g one of the following meth	iods:	
	0	RM-1LW-116: & TSA RM-1LW-104: & TSA	ODCM Limit = (DF) ODCM Limit = (DF)	x (Mon Reading n x (Mon Reading n	юрт) x (1.36E-3) юрт) x (1.36E-3)	ت , Ot ع
2. R	eactor P	lant River Water Syster	m Release (Criteria: Monitor I	Reading Exceeds The HI H	I Alarm Setpoint)	
2.	.1 Deta	ermine the Release Rate	e for the appropriate pathway r	asing one of the following i	methods:	
		RM-1LW-100: RM-1LW-101:	Release Rate = (90 Release Rate = (91	000 gpm per RPRWP) x (000 gpm per RPRWP) x (RPRWF	$p^{(s)} = $ gpm, or $p^{(s)} = $ gpm, or
	* ()	RM-ILW-100 ABCD	: Release Kate = (Za	250 gpm per RPKWP) x (_	RPKWr	"s) = gpm
	Doi	not use if in a CIB	T Do not use un	lless IRM-RW-100 is incl	PERABLE	
<u>۴</u>	.2 Ubu	ain the Cooing Tower r	Blowdown Piowrates as tonov	<i>w</i> s:		
		U1 CTBD Flowrate = U1/2 CTBD Flowrate	gpm; As read from gpm; As read from security gpm; As read fro	FT-1CW-101, and m FT-1CW-101-1		
2.	.3 Dete	ermine the Cooling Tow	ver Recirculation Flowrates as	follows:		
		CT Recirc Rate = (12)	7,000 gpm per CTP) x (CTP's) = gp	m	
2.	.4 Detr	ermine the Dilution Fact	tor as follows:			
		Release Rate	enm) x (U1 CTBD	Flowrate gpm)		
	DF	E			*	
				wrate spury		
2.	.5 Dete	ermine the Diluted Fract	tion of TS/ODCM Limit using	s one of the following meth	ods:	
	0	RM-1RW-100	fr TS/ODCM Limit = (DF_		ncpm) x (3	.44E-04) =, or
•	V	KNI-IKW-IVI.) X (NION Reading _		

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	Beaver V	alley Pow	er Station		Procedure 1	Number:	IP-2.7	
tle:					Unit:	Level	Of Use: aral Skill Defe	
IQUID REI	LEASE ESTIM	IATE		,	Revision:	Page N	Number:	
		4	ATTACHMENT D)	I0		<u>UNIT 1</u>	
UNIT 1 NI	RC-EC CALCU	JLATION (PRO ALE	Page 2 of 2 DCESS MONITOR RT DETERMINA	R METHO FION	D): UNL	JSUAL	EVENT AN	Ð
lquid Release Estir Juit 1: NRC - BC (nate Calculation (Process Moni	itor Method)					(RTL AS.715FJ) 2.7-4R 11/1994)
A. DETERM	INATION OF DILUT	ED FRACTION OF T	VODCM LIMIT FOR VAR	IOUS PLANT S	YSTEMS (C	ontinued)		٦
3. Aux	iliary Feed Pump Bay	Drain System Release	(Criteria: Monitor Reading	Exceeds The F	II HI Alarm S	etpoint)		ľ
3.1	Determine the Dilute	d Fraction of TS/ODC	M Limit as follows:	lina	nenm) = (3.46	а Тара		
	KM-1DA-IW.		(0.353 DF) X (MODILUE RC2)		ncpin) x (2.40	≡ (+-4) :		
							•	
			<u> </u>			· · · · · ·		-3
					•			
2. IF ti 3. IF n	he Diluted Fraction of nore than one release is	TS/ODCM Limit is > 2 s ongoing, THEN calcu	200, and the release is $>$ or $=$ 0 late a Diluted Fraction of T	 15 minutes, T S/ODCM Limit 	HEN declare : for each relea	an Alert. ase.		
2. IF ti 3. IF n Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit values gency	c, and the release is > or = 0 200, and the release is > or = alate a Diluted Fraction of T ue for event classification.	I5 minutes, T S/ODCM Limit	HEN declare : for each relea	an Alert. 25 e .		
2. IF ti 3. IF n Use () ()	he Diluted Praction of nore than one release in the highest Praction of No Emergency Unusual Event Emer Alert Emergency	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	z, and the release is > or = 0 200, and the release is > or = that a Diluted Fraction of T ue for event classification.	15 minutes, T S/ODCM Limit	HEN declare : for each relea	an Alert. ase.		
2. IF ti 3. IF n Use () () ()	he Diluted Praction of nore than one release in the highest Praction of No Emergency Unusual Event Emer Alert Emergency	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit van gency	200, and the release is > or = 0 200, and the release is > or = that a Diluted Fraction of T ue for event classification.	15 minutes, T S/ODCM Limit	HEN declare :	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Praction of No Emergency Unusual Event Emer Alert Emergency	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit van gency	200, and the release is > or = 0 200, and the release is > or = thate a Diluted Fraction of T ue for event classification.	15 minutes, T S/ODCM Limit	HEN declare : for each rele:	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Praction of No Emergency Unusual Event Emer Alert Emergency Calculations By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit values gency	200, and the release is > or = 0 200, and the release is > or = thate a Diluted Fraction of T ue for event classification.	15 minutes, T S/ODCM Limit	HEN declare : for each rele:	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN caler (TS/ODCM Limit valu gency	200, and the release is > or = 0 200, and the release is > or = thate a Diluted Fraction of T ue for event classification.	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu (TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: bra. bra.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hrs. hrs.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release it the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF ti 3. IF m Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hra. hra.	an Alert. ase.		
2. IF ti 3. IF n Use () () ()	he Diluted Fraction of nore than one release is the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hrs. hrs.	an Alert. ase.		
2. IF th 3. IF m Use () () ()	he Diluted Fraction of hore than one release it the highest Fraction of No Emergency Unusual Event Emer Alert Emergency Calculations By: Reviewed By:	TS/ODCM Limit is > 2 s ongoing, THEN calcu f TS/ODCM Limit valu gency	Date:	• 15 minutes, T S/ODCM Limit	HEN declare : for each rele: hrs. hrs.	an Alert. ase.		

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Beaver Valley Power Station	P	rocedure Num	iber: EPP-IP-2.7
itle:	Ŭ	hit: 1/2	Level Of Use: General Skill Referen
IQUID RELEASE ESTIMATE	R	levision:	Page Number:
ATTACHMENTE	<u>_</u>	8	<u>15 of 28</u>
Page 1 of 2	•		UNIT 1
UNIT 1 EPA-MPC CALCULATION (PROCESS MONITOR	R METHOD): PAG I	DETERMINATION
Liquid Release Estimate			(RTI AS 715EK)
PAG Determination (Criteria: $> 12 \times EPA - MPC Limit)$			2.7-5F 11/1994
Release Start: @ hrs, Release Stop: 0	ē	hrs, Release	e Time: = minutes
A. DETERMINATION OF OHIO RIVER FLOW RATE			
PRIMARY METHOD			
() Call the National Weather Service – 412-262-1882 or 412-262-1984 and requ	uest the following:	:	
() cuft/sec = Ohio River Flowrate at the Montgomery Dam.			
BACKUP METHOD			
() Call the National Weather Service - 412-262-1882 or 412-262-1984 and requ	uest one of the foll	lowing:	
 () cuft/sec = Ohio River Flowrate at the Wheeling Dam. () ft = Ohio River Stage Height at the Wheeling Dam () or the Mon Convert this value to cuft/sec using the graph on Attachme 	ntgomery Dam (). ent A.		
() Use one of the following approximations based on the average reported i	monthly Ohio Riv	er Flowrates:	
() 53,000 cuft/sec = January () 44,000 cuft/sec = May	() 11,	.000 cuft/sec =	September
() $77,000$ cuft/sec = March () $15,000$ cuft/sec = July	() 18,	000 cull/sec = 000 cull/sec =	November
() 64,000 cuft/sec = April () 12,000 cuft/sec = August	() 43,	000 cuft/sec =	December
() Determine the Onio Kiver Proviate By determining the Stage Height no	ure	wing ousie m	emo <u>us</u> .
Convert this value to cuff/sec using the graph on Atta	achment A.	moture)	
() if = Onio River Stage Height as read from TLR-CW-101 (to Convert this value to cuft/sec using the graph on Atta	chment A.	ractare).	
B. DETERMINATION OF DILUTED FRACTION OF EPA-MPC LIMIT FOR VARK	OUS PLANT SYS	TEMS	
1. Liquid Waste System Release (Criteria: Monitor Reading Exceeds The HI HI	Alarm Setpoint)		
1.1 Obtain the Release Rate for the appropriate pathway using one of the fol	llowing methods:		
 () RM-1LW-116: Release Rate = gpm; As read from FR-1. () RM-1LW-104: Release Rate = gpm; As read from FR-1. 	ILW-103, or ILW-104		
1.2 Determine the Dilution Factor as follows:			
(Release Rate gpm) x (2.23E-3)			
DF=	_		
(Ohio River Flowrate cuft/sec)	· · ·		
1.3 Determine the Diluted Fraction of EPA-MPC Limit using one of the follo	lowing methods:		
() RM-1LW-116: fr EPA-MPC Limit = (DF) x (Mon Readin	ng ncpm) 1	x (1.95E+0) =	, or
() RM-1LW-104: fr EPA-MPC Limit = (DF) x (Mon Readin	ng ncpm) ;	x (1.95E+0) =	
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Beaver V	alley Power Station	Procedure Na	imber:	
		Finite	EPP-IP-2.7	
		1/2	General Skill Refer	rence, *
IQUID RELEASE ESTIN	ÍATE	Revision:	Page Number:	
	ATTACHMENTE	8	<u>1 10 of 28</u>	\neg
;	Page 2 of 2		UNIT 1	
UNIT I EPA-MPC CALC	ULATION (PROCESS MONITOR	METHOD): PAG	DETERMINATIO	DN
		•		
Liquid Release Estimate)			 • .	
Unit 1: EPA - MPC Calculation (Process Mo.	nitor Method)		(RTL A5.715FK) 2.7-5R11/1994	
B DETERMINATION OF DILL	TED FRACTION OF EPA-MPC LIMIT FOR VARIOU	S PLANT SYSTEMS (Con	tinued)	
2 Reactor Plant River Wate	r System Release (Criteria: Monitor Reading Exceeds	The HI HI Alarm Setuciat)		-
2.1 Determine the Rele	ase Rate for the appropriate pathway using one of the f	allowing methods.	1 51 2	
() RM-1RW-100	Release Rate = (900) onm ner RPE		či) = mm or	
• () RM-1RW-101	: Release Rate = (9000 gpm per RPF	WP) x (RPRWI	*s) = gpm, or	
•• () KM-1RW-100	ABCD: Release Rate = (2250 gpm per RPF	(WP) X (RPRW]	7\$) = gpm	
	Do not use unices IRM-RW-10	UU IS INOPERABLE		
	auwa Diuwuuwa Filowiaka as Tollows:	n A		ļ
23 Determine the Cool	wrate = gpin; As icad nom F1-ICW-IUI, a	ng		1
2.4 Determine the Dibu	$\lim_{n \to \infty} \operatorname{Enstate}_{n \in \mathbb{Z}} \operatorname{follower}_{n \in \mathbb{Z}} \operatorname{Cur}_{n \in \mathbb{Z}} \operatorname{Cur}_{n$	gpm		
2.4 Determine us Drun (Balance Pate	The Factor as follows:	(1 12 2) a (1 12 2)	: :	
DF=		@pmi) x (z.z52-5)		Ĩ
CT Recirc Rat	te gpm) x (Ohio River Flowrate	cuft/sec)	· · · · ·	Tigur.
2.5 Determine the Dilut	ed Practica of TS/ODCM Limit using one of the follow	wing methods:		
() RM-1RW-100 () RM-1RW-101) fr TS/ODCM Limit = (DF) x (Mon] : fr TS/ODCM Limit = (DF) x (Mon]	Reading ncpm) x (7 Reading ncpm) x (1	.92E-1) =, or .95E+0) =, or	
() RM-1RW-100	ABCD: fr TS/ODCM Limit = (DF) x (Sum N	Aon Rdngs ncpm) x	(7.92E-1) =	
3. Auxiliary Feed Pump Bay	y Drain System Release (Criteria: Monitor Reading Ex	ceeds The HI HI Alarm Set	point)	
3.1 Determine the Dilut	ed Factor as follows:	·		
DF = (120)	gpm Release Rate) x (2.23E-3) =			
			*. 	
3.2 Determine the Dilut	ed Fraction of TS/ODCM Limit as follows:	:	4 1	·
RM-1DA-100	: fr TS/ODCM Limit = (DF) x (Monitor Read	ling ncpm) x (1.0	2E+0) ≃	
		· · · · · · · · · · · · · · · · · · ·		
C DETERMINATION OF EVEN			· 	- 1
C. DBIERWINATION OF BYEN	$\frac{1}{2} CLASSICATION$	tive Action Cuide (DAC) n		
7. IF more than one release	anoning THEN calculate a Diluted Praction of FDA.	MPC Limit for each release	A LACITUR 4.1.	ł
Sum the values for each r	elease. IF the sum is > 12 , THEN implement the PAG	per EPP/IP 4.1		
() Sum EPA-MPC < 1	2, No PAG Required			
() Sum EPA-MPC > 1	2, PAG Required (Implement PAG per EPP/IP 4.1)		8- 5- 1-	
L		<u> </u>		
Calculations R	v: Date	@ hre	: 	1
		****		5
Reviewed By:	Date:	@ hrs.		
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,如果我们的人,我看着一个小子,你不能不是你的,我们不是你的,你不是你的?""你是你的?""你们,你们不是你的,你不是你的?""你们,你们们也不是你看你?""是是你

Beaver Valley Power Station	Procedure	Procedure Number: EPP-IP-2.7		
Title:	Unit:	Level Of Use:		
LIOUID RELEASE ESTIMATE	Revision:	Page Number:		
ATTACHMENT E	8	<u>17 of 28</u>		
Page 1 of 1		UNIT 1		
UNIT 1 UNMONITORED LIQUID DISCHA	RGE PATHWA	AYS		
Liquid Release Estimate		(RTL A5.715		
1 Unmonitored Release Origin		2.7-6 11/1994		
1. This type of unmonitored discharge can occur in the outside yard area	by means of			
abnormal leakage from a storage tank. The pathway for this type of disci the yard area curbs, to the Catch Basin system, and then directly to the Choose one of the following options:	harge is over Ohio River.			
() 1QS-TK-1: Refueling Water Storage Tank (RWST)	C	Capacity = 452,000 gallo		
This tank is filled with borated water supplied by the Boric Acid B tank provides suction head for the Quench Spray Pumps during provides a return path for these pumps during normal operation. Sim is used in the reactor cavity during refueling, it is highly contaminated.	lender. The a CIB, and ce this water			
() 1BR-TK-6A: Primary Grade Water Storage Tank () 1BR-TK-6B: Primary Grade Water Storage Tank		Capacity = 75,000 gallon Capacity = 75,000 gallon		
These tanks receive processed water from the Boron Recovery System Treatment System. These tanks can contain low level particulate conta generally high levels of tritium.	or the Water minants, but			
() 1LW-TK-7A: Steam Generator Drain Tank () 1LW-TK-7B: Steam Generator Drain Tank		Capacity = 34,500 gallon Capacity = 34,500 gallon		
These tanks generally receive processed water from the Liquid Waste water in these tanks can contain low-to-high level particulate contain generally high levels of tritium.	System. The minants, and			
() Other:				
2. Unmonitored Release Calculations				
2.1 Determine the amount of liquid released.				
22 Determine or estimate the duration of the release				
Release Time =				
2.3 Calculate the Release Rate as follows:				
() Release Rate = $(1 \text{ cmid Release} \text{ gal}) / (Release Time m$	in) = enm			
Enter this Release Rate in Block (2) of Attachment B, and Block (2) of Att	tachment C.			
2.4 Determine or estimate the Dilution Rate for the release.				
() Dilution Rate = grom				
Enter this Dilution Rate in Block (3) of Attachment B. IF the Dilution Flo	wrate is zero. or IF	the Dilution Flowrate		
cannot be determined, THEN consider the Dilution Factor to be 1.0 and en	nter 1.0 in Block (4)	of Attachment B.		
Calculations Ru. Date.	A	hre		
Calculations by Date:	~	. 1113.		
Reviewed By: Date:	@	hrs.		

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Beaver Valley Power Station	Procedure Nu	nber:	
Title:	Unit:	EPP-IP-2.7 Level Of Use:	
	1/2	General Skill Re	ferenc
LIQUID RELEASE ESTIMATE	Revision:	Page Number:	A. C.
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Ю	UID RELEASE	ESTIMATE					Revision:	Page Num	ber:		
_							8		9 of 28		
				ATTACH	ME	NT G		U	NIT 2		
				Page 1	of	2					
	UNII 2 NKC-E	C CALCULAI	10	N (SAMPLE N DETERMI	NA'	HOD): UNUS TION	UALEVE	INI ANL	ALERI		
Unit Unit	to Release Esumate 2: NRC – EC Calculation sual Event Determination	on (Sample Method)	rs /0	DCM Limit, and relea	se is >	or = 60 minutes)	CALCUI	ATIONS (R1	7 L A5.715 FG) 2.7-7F 11/1994		
Aler Sam	mle Location	(Criteria: > 200	XI	SODCM Limit, and n	elease	$\frac{15 > 0r = 15 \text{ minutes}}{\text{Sample Date:}}$		@	hre		
Rele	ase Start:	@ hrs,	Relea	ase Stop:	@	brs, Release Ti	me:	_ = minutes	1113		
	r]	Col B	7] [
	Nuclide	Sample Concentration (uCi/ml)		TS/ODCM Limit 10 x NRC-EC (uCi/ml)		Col C (Col A / Col B) Fraction of Limit	IF sample structure	e was taken fr	om the outfall ver blowdown,		
	Bc-7		17	6E-03	=		THEN en	ter 1.0 in Blo	ck (4) and		
	Cr-51		1	5E-03	=		determin	•	•••		
P	Mn-54	<u></u>	1.	3E-04	=	 	Block (5)	•			
A R	Fe-39		+-	1E-04 6E-04	=		Otherwis	Otherwise, do the following:			
T	Co-58	1	F	2E-04	=		Guici Wis	nerwise, do the following.			
I	Co-60		1	3E-05	=		Enter Liq	uid Waste Re	lease Rate in		
С	Ni-59		1	3E-03	=						
U	Ni-63		<u> /</u>	1E-03	=		Block (2))			
L A	20-03 7-010-05		ť÷	3E-03	-	[(2) Relea	se Rate =	goi		
Ť	Nb-97		17	3E-03			Enter the	Cooling Tow	er Blowdown in		
Ē	Mo-99		T	2E-04			Block (3)	, as obtained	from:		
S	Tc-99m		1	1E-02	E		() FT-1C	W-101-1			
	Ag-110m		1	6E-05	=		() other:		··· <u></u>		
&	Sb-124	<u> </u>	<u> </u>	7E-05	=		(3) Dilusi	on Rate -	-		
r	<u>30-123</u>		⊬	3E-04	<u> </u> =	[··· ···· ··· ····	š		
0	I-133		t⁄~	7E-05			Divide B	ock (2) by Bl	ock (3). then		
D	I-135		1	3E-04	=		enter the	result in Bloc	k (4)		
I	Cs-134		T	9E-06	-						
N	Cs-137		Ľ-	1E-05	-		(4) DF =				
e S	Davia-140	+	++	8E-03 3E_0/	╞		enter the	DUCK (1) Dy l result in Rload	Diock (4), (1081) k (5)		
5	Ce-144		tr	3E-04				m proti	- (-)		
	W-187		17	3E-04	=		(5) Fr of 1	NRC Limit =			
	U 2	+	F	10.00	-		Note 1:	E Diach (6) !	- 1 and 44 -		
•	Fe-55	<u> </u>	t ′	1E-02 1F-03		<u> </u>	NOTE 1:	$\frac{1}{n} \frac{1}{n} \frac{1}$	s = 60 minutes		
*	Sr-89		$\dot{\tau}$	8E-05				THEN declar	e an Unusual		
•	Sr-90		1	5E-06	=			Event.			
++	Gr Beta-Gamma		1	1E-07	=		Note 2:	IF Block (5) i release is > or	s > 200, and the $s = 15$ minutes.		
		Sum Total (Un	lilute	d Fraction of Limit)	-	(1)		THEN declar	e an Alert.		
* **	Use the latest appropr Use only if isotopic as	iate composite sample mple analysis is not av	analy ailab	rsis. le.			Note 3:	IF more than ongoing, THE Block (5) for	one release is IN calculate a each release.		
Calc	culations By:	Date	:		_e	hrs.		Use the max l classify the ev	slock (5) to Vent.		
Rev	icwed By:	Date	:		@	hrs.		() No Emerge	acy		
								() Unusual E	vent Emergency		

		Beaver Valley	Power St	ation		Procedure Nu	mber:		
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•		•				1/2	Gene	ral Skill Refere	ence,
UI	D RI	LEASE ESTIMATE				Revision:	Page N	umber:	7
				TIN (ENT		8		20 of 28	<u> </u>
		с.		CHIVIENI V	J		-	UNIT 2	
UN	TT 2	NRC-EC CALCULAT	ION (SAMPL DETER	E METHO MINATIO	D): UNUSI N	JAL EVE	NT AN	ND ALERT	-
uid R	elease	Estimate						c.	
t 2: N	IRC 1	C Calculation (Sample Method)				INSTRUC	CTIONS	(RTL A5.715FG) 2.7-7R 11/1994) ;
1.	Obtai Emerg	an isotopic sample from the source ency Outfall Structure.	e (e.g.: the Liquid W	aste Discharge L	ine) or from the C	ooling Tower l	Blowdown	, or from the	
	1.1	IF the radioactivity is a result of a Blowdown or the Emergency Outf System, THEN consult EADP per	leaking heat exchang all Structure, as appro- sonnel for an appropr	er, THEN obtain opriate. Howeve iate Dilution Fac	the sample from (, IF the sample is tor.	he Combined (obtained from	Cooling To the Servic	ower Vater	
2.	Enter	the nuclide concentrations (uCi/ml), or gross beta-gamm	a concentrations	(uCi/ml) in the ap	propriate colu	m n .		
3.	Divid C (Fr	the nuclide concentrations (uCi/n ction of Limit).	al) in Column A by th	e TS/ODCM Lir	nit (uCi/ml) in Co	lumn B. Enter	the result	in Column	
	3.1	Note that the TS/ODCM Limit Va 20.1001 – 20.2401, Table 2 Col. 2	lues are based on 10	times the NRC-E	C concentrations	listed in 10 CF	R 20 App	endix B to	
4.	Sum	he Fraction of TS/ODCM Limit va	lucs. Enter the Undil	uted Praction of	rs/odcm Limit	total in Block ((1).		
5.	IF the (4) an	sample was taken from the outfall I proceed to Step 9.	structures, the cooling	g tower blowdow	n, or the Catch Ba	isin System, T	HEN enter	1.0 in Block	۲
б.	IF the value	sample was taken from the Liquid in Block (2).	Waste System, THEN	l obtain the Rele	ase Rate (gpm) fo	r the appropria	te pathway	Enter the	
7.	Obtai Flow	a the combined Cooling Tower Blo ate (gpm). Enter the appropriate va	wdown Flowrate from alue in Block (3).	a FT-1CW-101-1	(gpm), or obtain	any other appl	icable Dih	ution .	
8.	Deter result	nine the Dilution Pactor by dividin in Block (4).	g the Release Rate (g	pm) in Block (2)	by the Dilution R	ate (gpm) in B	lock (3).	Enter the	
9.	Deter Diluti	nine the Diluted Fraction of TS/OI on Factor in Block (4). Enter the m	OCM Limit By Multip esult in Block (5).	olying the Undilu	ted Praction of TS	VODCM Limit	in Block	(1) by the	
	9.1	IF the Diluted Praction of TS/ODC Unusual Event.	IM Limit from Block	(5) is >2, and th	e release is > or =	60 minutes, Ti	HEN decla	ne an	
	9.2	IF the Diluted Praction of TS/ODC Alert.	CM Limit from Block	(5) is >200, and	the release is > or	= 15 minutes,	THEN de	clare an	
	9.3	IF more than one release is ongoin release. Use the highest Block (5)	g, THEN calculate a value for event class	Diluted Praction fication.	of TS/ODCM Lin	iit, as shown ii	n Block (5)), for each	
		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · ·					3	
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	Bea	ver Va	lley	' Po	ower Sta	atio	1	Procedure N	umber: EPP-IP-2.7
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JQ	UID RELEASE	ESTIMA	ATE					8	21 of 28
					ATTAC	HME	NT H		UNIT 2
					Pag	e 1 of	2		
	UNIT 2 EP.	A-MPC C	CALC	ULA	TION (SA	MPLE	METHOD):	PAG DETI	ERMINATION
1.1	d Delesse Petimote								
Unit PAG	2: EPA - MPC Calcula Determination	ation (Sample)	Method) a: > 12	x EPA	- MPC Limit)		. <u>.</u>	CALCU	LATIONS (RTL A5.715FH 2.7-8F 11/199
Samp	ole Location:						Sample Date:		@ hu
Relea	use Start:	@	hrs,	Releas	e Stop:	@	brs, Release	Time:	_ = minutes
		Col A	le le] [Col B		Calc	TE en mo	le une taken from the Midle
	Nuclide	Concentr	ation		EPA-570	"	(Col A / Col B)	Water T	reatment Plant Intake, THE
		(uCi/m	ป)	++	(uCi/ml)		Fraction of Limit	enter 1.0 Block (5	in Block (4) and determine
	Be-7			7	6E-0	×6 =			, , , , , , ,
в	<u>Cr-51</u>			1/1	6E-0	6 =		- Otherwi	se, do the following:
r A	Fc-59		·	+/+					
R	Co-57			$\overline{1}$	1E-(6 =			
T	<u>Co-58</u>			+/-+	<u>3E-(</u>				mid Weste Delesse Dete in
c	Ni-59	+		$\dagger \uparrow \dagger$			+		quid waste Readse Rate III
U	Ni-63			1	5E-(8 =		Block (2)
	Zn-65			┼┼	3E-((2) Relea	ase Rate = g
Ť	Nb-97			$\frac{1}{1}$	3E-0	6 =		Enter Ol	io River Flowrate in Block
E	Mo-99			/	6E-0	7 =		(See INS	TRUCTIONS)
S	<u>Tc-99m</u> Ag-110m		·	┼┼	2E-0			() table	value for month of
ð.	Sb-124			\overline{i}	6E-0	8 =			
	Sb-125			1/	3E-(7 =		(3) Ohio	River Flow = $_$ cu
0	F131	+		++	<u>3E-(</u> 1E-(9 =		Divide	lock (2) by Block (3) then
D	<u>1-135</u>			$\overline{1}$	3E-0	8 =		Multiply	by 2.23E-3. Enter the resu
I	<u>Cs-134</u> Cs 137			+/-+	8E-0	8 =		in Block	(4)
E	Ba/La-140			 / 	6E-C			Multiply	Block (1) by Block (4), the
S	Ce-141	•		1	3E-(17 =		enter the	result in Block (5)
	<u>Ce-144</u> W-187		· · · · · · ·	+++	0E-0 2E-0				EPA Limit =
•	H-3			1/	2E-(5 =			
•	Sr-89	+		┼┼┼	2E-(2F_				implement the PAG per FF
*	Sr-90			\downarrow	8E-0	9 =]	4.1.
**	Gr Beta-Gamma			/	9E-1	1 =		Note 2:	IF more than one release is
		Sum T	otal (Un	diluted	Fraction of Limi	t) =	(1)		ongoing, THEN calculate a Block (5) for each release. the Block (5)'s for each re
* **	Use the latest appropr Use only if isotopic sa	iate composite ample analysis	sample	analysi vailable	s.				IF the sum exceeds 12, TH implement the PAG per El 4.1.
Calc	ulations By:		Data	e:		@.	hrs.		() Sum EPA – MPC <12, No PAG Required
Revi	ewed By:		Date	e:		@.	brs.		() Sum EPA - MPC >12,

	Beaver Valley	Power Station	Procedure Nu	mber: FPP_IP_77
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IQUI	D RELEASE ESTIMATE		Revision:	Page Number: 22 of 28
		ATTACHMENT H		UNIT 2
	UNIT 2 EPA-MPC CALCU	LATION (SAMPLE METHOI	D): PAG DETH	ERMINATION
Liquid I Unit 2: 1	Release Estimate EPA - MPC Calculation (Sample Method)		INSTRU	CTIONS (RTL A5.715FH) 2.7-8R 11/1994
1.	Obtain an isotopic sample from the source	or form the Midland Water Treatment Plant I	Intake.	4
2.	Enter the nuclide concentrations (uCi/ml),	or gross beta-gamma concentrations (uCi/ml)) in the Column A.	
3.	Divide the nuclide concentrations (uCi/ml) C (Praction of Limit).) in Column A by the EPA-MPC Limit (uCi/n	nl) in Column B. Enter	the results in Column
	3.1 Note that the EPA-MPC Limit Valu Calculation Package No. ERS-DKY	es are from the Interim Drinking Water Regul -82-022.	lations (EPA-570/9-76	003), and from DLC
4.	Sum the Fraction of EPA-MPC Limit valu	es. Enter the Undiluted Praction of EPA-MP	C Limit total in Block (1).
5.	IF the sample was taken from the Midland	Water Treatment Plant intake, THEN enter 1	.0 in Block (4) and pro	ceed to Step 9.
6.	Determine the Release Rate (gpm) by one	of the following methods, and enter the result	in Block (2).	•
	 () For a sample taken from a tank or pipin () For a sample taken from the CT Blowd () For a sample taken from the Catch Base 	ng; Release Rate = gpm = Discharge R lown; Release Rate = gpm = CT Blow sin; Release Rate = gpm = Catch Basir	tate from tank or piping down Flowrate. 1 Flowrate.	
7	Determine the Ohio River Flowrate (cuft/s	ec) by one of the following methods, and ente	r the result in Block (3).
	() Call the National Weather Service -	- 412-262-1882 or 412-262-1984 and request	one of the following.	
	 () cuft/sec = Ohio River Fluid () ft = Ohio River Stage Here Convert this value to cuft 	owrate at the Wheeling Dam () or the Montgor sight at the Wheeling Dam () or the Montgor Nsec using the graph on Attachment A.	omery Dam (). nery Dam ().	
	() Use one of the following approximatio	ns based on the average reported monthly Oh	io River Flowrates.	
	() 53,000 cuft/sec = January () 55,000 cuft/sec = February () 77,000 cuft/sec = March	() 44,000 cuft/sec = May () 23,000 cuft/sec = June () 15,000 cuft/sec = July	() 11,000 cuft/ () 16,000 cuft/ () 28,000 cuft/	sec = September sec = October sec = November
	() 04,000 curt/sec = April	() 12,000 CUIT/SEC = AUgust	() 43,000 curl	sec = December
	() ft = Ohio River Stage H	right as read from the Intake Structure.	ane tonowing oussie his	
	Convert this value to cuf () ft = Ohio River Stage He Convert this value to cuf	Vsec using the graph on Attachment A. eight as read from 1LR-CW-101 (located in In Vsec using the graph on Attachment A.	itaks Structure).	
8.	Determine the Dilution Factor by dividing multiply by a conversion factor of 2.23B-3	the Release Rate (gpm) in Block (2) by the O l. Enter the result in Block (4).	hio River Flowrate (gp	m) in Block (3) and
9.	Determine the Diluted Fraction of EPA-M. Dilution Factor in Block (4). Enter the res	PC Limit By Multiplying the Undiluted Practi- sult in Block (5).	ion of EPA-MPC Limit	in Block (1) by the
	9.1 IF the Diluted Fraction of EPA-MP	C Limit from Block (5) is >12, THEN implem	nent the PAG per EPP/I	P4.1.
	9.2 IF more than one release is ongoing	, THEN calculate a Diluted Praction of EPA-N	MPC Limit, as shown in	Block (5), for each

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I JOITE DELEASE ESTIMATE	1/2 Revision:	Page Number:
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ATTACHMENTI Page 1 of 2		UNIT 2
UNIT 2 NRC-EC CALCULATION (PROCESS MONITOR METHO) ALERT DETERMINATION	D): UNUSI	UAL EVENT AND
Liquid Release Estimate Unit 2: NRC - EC Calculation (Process Monitor Method)		(RTL A5.715FJ) 2.7-9F 11/1994
Unusual Event Determination (Criteria: >2 x TS/ODCM Limit, and release is > or = 60 minutes) Alert Determination (Criteria: > 200 x TS/ODCM Limit, and release is > or = 15 minutes)		
Release Start: @ hrs, Release Stop: @	hrs, Reica	se Time: = minutes
A. DETERMINATION OF DILUTED FRACTION OF TS/ODCM LIMIT FOR VARIOUS PLANT SY	STEMS	
1. Liquid Waste System Release (Criteria: Monitor Reading Exceeds the HI HI Alarm Setpoint)	·	
1.1 Obtain the Release Rate using the following method:		
2SGC-RQ100: Release Rate = gpm; As read from 2SGC-HIC100		
1.2 Obtain the Cooling Tower Blowdown Flowrate as follows:		
U1/2 CTBD Flowrate = gpm; As read from FT-1CW-101-1		
1.3 Determine the Dilution Factor as follows:		
DF = (Release Rate gpm) / (U1/2 CTBD Flowrate gpm) =		
1.4 Determine the Diluted Fraction of TS/ODCM Limit as follows::		
2SGC-RQ100: fr TS/ODCM Limit = (DF) x (Mon Reading net uCi/cc) x	(2.90E+5) =	_
2. Recirculation Spray System Release (Criteria: In a CIB, and Monitor Reading Exceeds The Hi	gh Alarm Setpoir	at)
2.1 Determine the Dilution Factor (VIA Emergency Outfall Structure) using one of the follo	wing methods:	
() DF = 0.44 (For one SWSP in operation) () DF = 0.22 (For two SWSP's in operation)		
2.2 Determine the Diluted Fraction of TS/ODCM Limit as follows:		
2SWS-RQ100 ABCD: fr TS/ODCM = (DF) x (Sum Mon Rdngs net uCi/	cc) x (3.04E+4) =	·
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		Page 2 of 2			UNIT 2
UNIT	2 N	RC-EC CALCULATION (PROCESS MONITOR METHO)): UNU	SUAL EV	ENT AND
Liouid R	lessel	ALERT DETERMINATION		¢	
Unit 2: N	RC - E	C Calculation (Process Monitor Method)		a: ((RTL A5.715FJ)
			<u> </u>	_	2.7-9R 11/1994
A. DE	TERM	INATION OF DILUTED FRACTION OF TS/ODCM LIMIT FOR VARIOUS PLANT SY	STEMS (Cont	inued)	
3.	Com	ponent Cooling / Service Water System Release (Criteria: Monitor Reading Exceeds The	High Alarm So	tpoint)	
	3.1	Determine the Release Rate using one of the following methods:		•	•
		() 2SWS-RQ101: Release Rate = (1900 gpm per SWSP) x (SWSP's) = gp () 2SWS-RQ102: Release Rate = (1900 gpm per SWSP) x (SWSP's = gp	m, or B	1. 	
	3.2	Obtain the Cooling Tower Blowdown Flowrate as follows:		· · · ·	:
		U2 CTBD Flowrate = gpm; As read from 2CWS-FT101, and U1/2 CTBD Flowrate = gpm; As read from FT-1CW-101-1			
	3.3	Determine the Cooling Tower Recirculation Flowrate as follows:		1	
		CT Recire Rate = (127,000 gpm per CTP) x (CTP's) = gpm		· · ·	
	3.4	Determine the Dilution Factor (VIA U1/2 Outfall Structure) as follows:		1	
		(Release Rate gpm) x (U2 CTBD F	lowrate	gpm)	
		(CT Recirc Rate gpm) x (U1/2 CTBD Flow	rate gpr	n)	
	3.5	Determine the Diluted Fraction of TS/ODCM Limit (VIA U1/2 Outfall Structure) using	one of the follo	owing:	
		() 2SWS-RQ101: OS fr TS/ODCM = (DF) x (Mon Readingnet uCi/cc) x () 2SWS-RQ102: OS fr TS/ODCM = (DF) x (Mon Readingnet uCi/cc) x	(2.72E+4) = _ (2.72E+4) = _	or	
	3.6	Determine the Diluted Praction of TS/ODCM Limit (VIA Emergency Outfall Structure)	using one of th	e following:	
		() 2SWS-RQ101: EOS fr TS/ODCM = (0.86 DF) x (Mon Readingnet uCi/cc) x (() 2SWS-RQ102: EOS fr TS/ODCM = (0.86 DF) x (Mon Readingnet uCi/cc) x (2.72E+4) = 2.72E+4) =	or 1	
	3.7	Record the maximum diluted Fraction of TS/ODCM Limit (From Step A.3.5 or A	.3.6)		
B. DE	TERM	INATION OF EVENT CLASSIFICATION		۰.	
B. DE 1.	TERM IF th	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN	declare an Un	isual Event.	
B. DE 1. 2.	TERM IF th IF th	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THE	declare an Un N declare an A	isual Event. Alert.	
B. DE 1. 2. 3.	TERM IF th IF th IF m Frac	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THEN ore than one release is ongoing, THEN calculate a Diluted Fraction of TS/ODCM Limit fo ion of TS/ODCM Limit value for event classification.	declare an Uni N declare an A r each release.	isual Event. Mert. Use the high	csi
B. DE 1. 2. 3.	IF th IF th IF th IF m Frac () N () U	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THE ore than one release is ongoing, THEN calculate a Diluted Fraction of TS/ODCM Limit fo tion of TS/ODCM Limit value for event classification. o Emergency nusual Event Emergency lert Emergency	declare an Unu N declare an A r each release.	usual Event. Alert. Use the high	csi
B. DE 1. 2. 3.	IF th IF th IF th Prac () N () U () A	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THE ore than one release is ongoing, THEN calculate a Diluted Fraction of TS/ODCM Limit for ion of TS/ODCM Limit value for event classification. o Emergency nusual Event Emergency lert Emergency Calculations By: Date:	declare an Unu N declare an A r each release.	usual Event. Alert. Use the high	csi
B. DE 1. 2. 3.	IF th IF th IF th IF m Frac () N () U () A	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THE ore than one release is ongoing, THEN calculate a Diluted Fraction of TS/ODCM Limit for ion of TS/ODCM Limit value for event classification. o Emergency nusual Event Emergency lert Emergency Calculations By: Date:	declare an Uni N declare an A r each release. _ @ h	isual Event. Alert. Use the high rs.	cst
B. DB 1. 2. 3.	IF th IF th IF th Prac () N () U	INATION OF EVENT CLASSIFICATION e Diluted Fraction of TS/ODCM Limit is > 2, and the release is > or = 60 minutes, THEN e Diluted Fraction of TS/ODCM Limit is > 200, and the release is > or = 15 minutes, THE ore than one release is ongoing, THEN calculate a Diluted Fraction of TS/ODCM Limit for ion of TS/ODCM Limit value for event classification. o Emergency nusual Event Emergency let Emergency Calculations By: Date:	declare an Uni N declare an A r each release.	usual Event. Alert. Use the high rs.	csi

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•	Beaver Valley Power Station	Procedure Nun	nber: EPP-IP-2.7				
¥7	Title:	Unit:	Level Of Use: General Skill Deference				
	LIQUID RELEASE ESTIMATE	Revision:	Page Number:				
	ATTACHMENT J Page 1 of 2 UNIT 2 EDA MOC CALCUL ATION (PROCESS MONITOR METH)		UNIT 2				
	UNIT 2 EPA-MPC CALCULATION (PROCESS MONITOR METH) Liquid Release Estimate Unit 2: EPA - MPC Calculation (Process Monitor Method))): PAG	(RTL A5.715FK) 2.7-10F 11/1994				
	PAG Determination (Criteria: > 12 x EPA - MPC Limit) Release Start:@hrs, Release Stop:@	hrs, Relea	ase Time: = minutes				
	A. DETERMINATION OF OHIO RIVER FLOW RATE						
	1. Determine the Ohio River Flowrate by one of the following methods:						
	PRIMARY METHOD						
	() Call the National Weather Service - 412-262-1882 or 412-262-1984 and request the foll	owing.					
	() cuft/sec = Ohio River Flowrate at the Montgomery Dam.						
	BACKUP METHOD						
	() Call the National Weather Service - 412-262-1882 or 412-262-1984 and request one of	the following.					
1 .	 () cuft/sec = Ohio River Flowrate at the Wheeling Dam. () ft = Ohio River Stage Height at the Wheeling Dam () or the Montgomery Dam (). Convert this value to cuft/sec using the graph on Attachment A. 						
	() Use one of the following approximations based on the average reported monthly Ohio River	r Flowrates.					
	() 53,000 cuft/sec = January () 44,000 cuft/sec = May () 55,000 cuft/sec = February () 23,000 cuft/sec = June () 77,000 cuft/sec = March () 15,000 cuft/sec = July () 64,000 cuft/sec = April () 12,000 cuft/sec = August	() 11,000 cuft/sc () 16,000 cuft/sc () 28,000 cuft/sc () 43,000 cuft/sc	c = September c = October c = November ec = December				
	() Determine the Ohio River Flowrate by determining the Stage Height from one of the following the stage Height from one of the following the stage of the following the stage of the stage	owing onsite met	hods.				
	() ft = Ohio River Stage Height as read from the Intake Structure. Convert this value to cuft/sec using the graph on Attachment A.		1				
	()ft = Ohio River Stage Height as read from 1LR-CW-101 (located in Intake St Convert this value to cuft/sec using the graph on Attachment A.	ructure).					
	B. DETERMINATION OF DILUTED FRACTION OF EPA-MPC LIMIT FOR VARIOUS PLANT SY	(STEMS					
	1. Liquid Waste System Release (Criteria: Monitor Reading Exceeds the High Alarm Setpoint)						
	1.1 Obtain the Release Rate using the following method:						
	2SGC-RQ100: Release Rate = gpm; As read from 2SGC-HIC100						
	1.2 Determine the Dilution Pactor as follows:						
	$Dr = ((Release Rate gpin) \times (2.25E-3)) / Onto River Prowrate curvset) =$	······································					
	1.3 Determine the Dituted Fraction of EPA-MPC Limit using the following method:	() 7(E ()) -					
	2. Recirculation Spray System Release (Oriteria: In a CIB, and Monitor Reading Exceeds The H	(2.702+6) =	-				
	2.1 Determine the Dilution Factor (VIA Emergency Outfall Structure) as follows::	ifu umm ocho					
	DF = (6000 gpm Release Rate) x (2.23E-3) / (Ohio River Flowrate cuft/sec) =						
\bigcirc	2.2 Determine the Diluted Fraction of EPA-MPC Limit as follows::						
	2SWS-RQ100 ABCD: fr EPA-MPC = (DF) x (Sum Mon Rdngs net uCi/	cc) x (8.01E+7) =	•				

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Page 2 of 2 LINET 2 EPA MCC CALCHEATION (DEOCESS MONITOR MET		
UNIT 2 EFA-MIPC CALCULATION (PROCESS MONITOR MET		JELERMINATION
Liquid Release Estimate		077 15 415720
JIN 2: EFA-MIC Calculation (Frocess Molitor Method)		2.7-10R 11/1994
B. DETERMINATION OF DILUTED FRACTION OF EPA-MPC LIMIT FOR VARIOUS PLANT	SYSTEMS (Conti	nued)
3 Component Cooling / Service Water System Release (Oriteria: Monitor Reading Proceeds)	The High Alarm Se	troint)
		••••••••
5.1 Determine the U1/2 Outfall Structure (U1/2 OS), and the EOS Release Rates using	the following meth	OCS:
() 2SWS-RQ101: U1/2 OS Release Rate = (1900 gpm per SWSP) x (SWSP () 2SWS-RQ102: U1/2 OS Release Rate = (1900 gpm per SWSP) x (SWSP	s) = gpm, o s) = gpm	r j
		1
() 2SWS-RQ101: U1/2 EOS Release Rate = (3650 gpm per SWSP) x (SWS () 2SWS-RQ102: U1/2 EOS Release Rate = (3650 gpm per SWSP) x (SWS	SP's) = gpm SP's) = gpm	, or
3.2 Obtain the Cooling Tower Blowdown Flowrate as follows:		
12 CTRD Flowrate - mm: As read from 2CWS-FT101		
3.5 Determine the Cooling Tower Recirculation Flowrate as follows:		
CT Recire Rate = $(127,000 \text{ gpm / CTP}) \times ($		t,
3.4 Determine the Dilution Factors(VIA U1/2 Outfall Structure and VIA EOS) as follow	/3:	
(U1/2 OS Release Rate gpm) x (U2 CTBD	Flowrate g	pm) x (2.23E-3)
(CT Recirc Rate = gpm) x (Ohio River Flo	owrate cuft/s	sec)
(EOS Release Rate gpm) x (2.23E-3)	
EOS DF = (Ohio River Flowrate = cu	ft/sec)	
3.5 Determine the Diluted Fraction of EPA-MPC (VIA U1/2 OS and VIA EOS) as follo	W3:	
() 25000 DO101. 11/0 00 EDA MDC - (11/0 00 DE) - (14/m Ddg	(m) = (0 178+7) =	~
() 2SWS-RQ102: U1/2 OS EPA-MPC = (U1/2 OS DF) x (Mon Rdgnet uCi	$(cc) \ge (9.17B+7) = (100)$	
AND,		
() 2SWS-RQ101: EOS fr EPA-MPC = (EOS DF) x (Mon Rdgnet uCi/cc) x	(9.17E+7) =,	Or i
() 2SWS-RQ102: EOS fr EPA-MPC = (EOS DF) x (Mon Rdgnet uCi/ce) x	(9.17E+7) =	
3.6 Record the Total Diluted Praction of EPA-MPC Limit (Sum the values from	Step B.3.5)	
2. DETERMINATION OF EVENT CLASSIFICATION	-	
1. IF the Diluted Praction of EPA-MPC Limit is > 12, THEN implement the Protective Action	n Guide (PAG) per	EPP/IP 4.1.
2. IF more than one release is ongoing. THEN calculate a Diluted Fraction of EPA-MPC Lim	it for each release.	Sum the values for
each release. IF the sum is > 12, THEN implement the PAG per EPP/IP 4.1.		i –
() Sum EPA-MPC < 12, No PAG Required () Sum EPA-MPC > 12, PAG Required (implement PAG per EPP/P 4.1)		
Calculations By: Date:	@h	i i i i

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Beaver Valley Power Station		Procedure Nu	
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LIQUID RELEASE ESTIMATE	·	8	27 of 28
ATTACHMEN Page 1 of 1	NT K		UNIT 2
UNIT 2 UNMONITORED LIQUID I	DISCHARGE H	PATHWA	YS
Liquid Release Estimate Unit 2: Unmonitored Liquid Discharge Pathways			(RTL A5.71
			2.7-11 11/19
1. Unmonitored Release Origin			
1. This type of unmonitored discharge can occur in the outside yard are from a storage tank. The pathway for this type of discharge is over the storage tank.	a by means of abnorn he ward area curbs, to	nal leakage the Catch	
Basin system, and then directly to the Ohio River. Choose one of the fol	lowing options:		
() 2QSS-TK21: Refueling Water Storage Tank (RWST)			Capacity = 850,000 gal
This tank is filled with borated water supplied by the Boric Acid Bl head for the Quench Spray Pumps during a CIB, and provides a re-	ender. The tank provi turn path for these pu	ides suction mps during	
contaminated.	y during teracurity, i	n is inginy	
() Other:			
	· · · · · · · · · · · · · · · · · ·		
2. Unmonitored Release Calculations			
2.1 Determine the amount of liquid released.			
Liquid Released = gallons			
2.2 Determine or estimate the duration of the release.			
Release Time = minutes			
2.3 Calculate the Release Rate as follows:			
() Kelease Kate = (Liquid Kelease gal) / (Kelease Time)	nin) = gpm		
2.4 Determine or estimate the Dilution Pate for the release	Machineit FI.		
() Dilution Rate = onm			
Enter this Dilution Rate in Block (3) of Attachment G. IF the Dilution F	lowrate is zero, or IF t	he Dilution Fig	wrate
cannot be determined, THEN consider the Dilution Factor to be 1.0 and	enter 1.0 in Block (4)	of Attachment	G .
Calculations By: Date:		@ b	rs.
Reviewed By: Date:	· · · · · · · · · · · · · · · · · · ·	_ @ b	rs.

	Beaver Valley Power Station	- 1	Pro	cedure Ni	imber:		
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Beaver Valley Power Station

Unit 1/2

EPP-IP-3.3

EMERGENCY CONTAMINATION CONTROL

Document Owner Manager, Emergency Preparedness

Revision Number	8
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

CONTROLLED BVPS UNIT 3

·		Beaver Valley Power Station	Procedure Nu	mber: EPP-IP-3.3
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6.0	PRE	CAUTIONS AND LIMITATIONS		2
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				Peri	1/2	General Skill Reference		
EMER	GENCYC	UNTAMINATION CON			8	1 of 5		
1.0	PURPOS	<u>e</u>						
1.1	This proc contained	procedure provides general instructions to the TSC staff to supplement the guidance ained in the Health Physics Manual (HPM) and/or the Radiation Protection Procedures.						
2.0	<u>SCOPE</u>							
2.1	None							
3.0	<u>REFERI</u>	NCES AND COMMITM	MENTS					
3.1	Reference	25			•			
3.1	.1 Beav Proc	er Valley Power Station E dures.	mergency Prepare	edness Plan and	i Impl	ementing		
3.1	.2 Beav	er Valley Power Station R	adiation Protectio	on Procedures.				
3.1	.3 Title	10 Code of Federal Regul	ations Part 20 and	l Part 50.				
3.1	.4 NCR Radi	NCRP Report No. 65, "Management of Persons Accidentally Contaminated with Radionuclides".						
3.1	.5 ICRI and A	Publication 28, "The Prin Accidental Exposures of W	nciples and Genera Vorkers".	al Procedures f	or Ha	ndling Emergency		
3.1	.6 NUR Eme	EG-0654/FEMA-REP-1 " gency Response Plans and	Criteria for Prepa d Preparedness in	ration and Eva Support of Nuc	luation clear H	n of Radiological Power Plants."		
3.1	.7 BVP	S Operations Manual, Cha	pter 56A					
3.2	<u>Commitn</u>	<u>ients</u>						
3.2	.1 None		I. A.					
4.0	RECOR	DS AND FORMS			·			
4.1	Records				· . ·			
4.1	.1 None							
4.2	<u>Forms</u>							
42	.1 None	·						

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5.0 <u>RESPONSIBILITIES</u>

- 5.1 <u>Radiological Controls Coordinator</u>:
 - 5.1.1 Is responsible to implement this procedure when necessary.

6.0 PRECAUTIONS AND LIMITATIONS

6.1 <u>Precautions</u>

- 6.1.1 The Beaver Valley Power Station Radiation Protection procedures contain provisions governing the control of contamination. The requirements and guidelines of these documents shall apply to contamination control during emergency conditions except as specifically provided in this EPP/IP, the BVPS Emergency Preparedness Plan, and/or by direction of the Radiological Controls Coordinator/Emergency Director.
- 6.1.2 Most cases of skin contamination with radioactive materials can be decontaminated using methods established in Radiation Protection procedures. Since the annual SDE-WB limit for the skin is 50 rem, skin decontamination efforts should never take precedence over necessary first aid. While not life threatening, discrete radioactive particles can rapidly cause skin doses in excess of limits. Personnel should remain alert for such particles when doing skin contamination surveys.

6.2 Limitations

6.2.1 None

7.0 PREREQUISITES

- 7.1 An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
- 7.2 As a result of the emergency condition, measurable abnormal contamination levels are noted.

8.0 PROCEDURE

- 8.1 Contamination Control
 - 8.1.1 It may become necessary to extend the boundaries of the Radiologically Restricted Area (RRA). Appropriate access control and associated contamination control measures shall be established for any area in which contamination exists at levels higher than specified for a non-contaminated area in the Radiation Protection procedures.

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- 8.1.2 Personnel and equipment monitoring and release procedures and criteria shall remain in force to the extent possible. There may be exceptions applicable to emergency conditions, as follows:
 - 8.1.2.1 If background dose rates at normal monitoring locations preclude detection of levels of contamination equivalent to the non-contaminated limit, monitoring shall be moved back to a location where this can be done. However, if significant levels of contamination exist, it may be appropriate to perform a gross screening at the exit of grossly contaminated area, to be followed by a more complete monitoring at a more suitable location.
 - 8.1.2.2 If dose rates within the contaminated area (or Controlled Area) warrant an immediate evacuation, personnel monitoring shall not be required prior to evacuation. If possible, personnel exiting such areas should remove any clothing thought to be contaminated and/or don clean coveralls to minimize the spread of potential contamination, pending subsequent monitoring. In this case, appropriate monitoring should be performed at the designated assembly area.
 - 8.1.2.3 Contamination limits for release of personnel, equipment, and areas specified in the Radiation Protection procedures shall remain in effect to the maximum extent possible. The Radiological Controls Coordinator will determine when a change in contamination limits is applicable and will establish appropriate revised limits. However, under site evacuation conditions, decontamination is normally mandatory if the removable contamination exceeds 5000 dpm/100cm2.
- 8.1.3 The conditions under which a Site Evacuation would be initiated might involve significant releases with resultant contamination of environmental surfaces offsite. Under these conditions, delaying Site Evacuation to monitor and/or decontaminate personnel or vehicles would be inconsistent with maintaining exposures as low as reasonably achievable, and may be superfluous in light of the potential for recontamination offsite. The following procedures should be used:
 - 8.1.3.1 Personnel should be directed to the upwind remote assembly area for monitoring (Western Power Delivery Division or Hookstown Grange). Rad Protection shall monitor personnel on the basis of a screening process to identify contaminants in excess of 5000 dpm/100 cm2. Personnel monitoring should basically consist of checking hands, feet, and the face with an E140/HP210 or equivalent survey instrument.
 - 8.1.3.1.1 Personnel identified as contaminated should be segregated to an area for eventual decontamination.
 - 8.1.3.1.2 Documentation of the extent and magnitude of the individual's contamination will be performed after the initial segregation phase of the group monitoring.

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8.1.3.2	If the Remote Assembly Area is within sector evacuated, the Emergency Director, in coop State and county agencies shall designate an monitoring will be performed. In this event	ors from which the eration with FENO assembly area at v personnel and veh	population is being C management and which personnel nicles will be	

plans of the affected jurisdictions.
8.1.4 In situations where there is potential for the imminent death of the victim and the magnitude of radiological conditions are generally known, rescue efforts take first

monitored the same as members of the general public as provided in the emergency

- 8.1.4.1 An Emergency Squad member(s) should proceed to the scene without protective clothing to assess the situation and render first aid if personal safety permits.
- 8.1.4.2 Other Emergency Squad members should don appropriate clothing and proceed to the area to assist.
- 8.1.4.3 The initial Emergency Squad member providing assistance should leave the area and be monitored and/or decontaminated as soon as practical.
- 8.1.5 For fire-fighting efforts, normal fire-fighting gear (helmets, coats, boots, gloves, etc.) may take the place of protective clothing. This apparel will provide protection from contaminated water spray.

8.2 Decontamination

priority.

8.2.1 Personnel decontamination shall be performed as provided in the Radiation Protection procedures.

8.2.2 Contaminated/injured personnel should be decontaminated prior to transfer to the hospital, if possible, and if compatible with the extent of the injuries. Even a superficial initial decontamination to remove the loose contamination or the removal of outer clothes will help minimize the contamination of ambulances and hospital facilities and personnel. Refer to Operations Manual 56A and Radiation Protection procedures.

- 8.2.3 Most cases of skin contamination with radioactive materials can be decontaminated by Radiation Protection personnel using methods established in the Radiation Protection Procedures. Refer to 1/2-HPP-3.02.003, Decontamination Control. If the contamination has entered wounds or body openings, medical assistance should be sought. The urgency of such treatment will depend on the dose rate attributable to the contamination.
 - 8.2.3.1 Since the annual SDE-WB limit for the skin is 50 rem, skin decontamination efforts should never take precedence over necessary first aid. However, an evaluation should be conducted under direction of the Radiation Protection staff to assess the consequence of the skin dose.

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- 8.2.3.2 If skin contamination is the primary health hazard or if persistent contamination remains after decontamination efforts, Presbyterian University Hospital should be contacted. The individual should be transferred to that facility for evaluation under their Radiation Emergency Response Program.
- 8.2.4 Decontamination of persons with significant internal contamination shall be referred to medical personnel at the Presbyterian-University Hospital and their Radiological Emergency Response Plan (RERP) program for evaluation and treatment. In the event of a significant uptake of radioiodine, potassium iodide may be administered in accordance with EPP/IP-3.4, "Emergency Respiratory Protection".

8.3 Final Conditions

8.3.1 The use of this procedure shall be terminated when monitoring results indicate contamination control is not necessary and all applicable documentation has been completed.

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EMERGENCY PERSONNEL MONITORING

Document Owner Manager, Emergency Preparedness

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Safety Related Procedure	Yes

CONTROLLED **BVPS UNIT 3**

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1.0 <u>PURPOSE</u>

1.1 This procedure provides general guidance to the TSC staff, and in particular, the Radiological Controls Coordinator, for establishing personnel monitoring suitable for the radiological conditions observed or expected at the time of the accident. Three modifications/exemptions are addressed in this EPP/IP. The first is expanded use of personal monitoring devices. The second is accelerated collection and processing of personal monitoring devices. The third is increased bioassay analyses.

2.0 <u>SCOPE</u>

2.1 This procedure is used during a declared emergency to establish appropriate actions for internal and external personnel radiation monitoring.

3.0 REFERENCES AND COMMITMENTS

3.1 <u>References</u>

- 3.1.1 Beaver Valley Power Station Emergency Preparedness Plan and Implementing Procedures.
- 3.1.2 Title 10, Code of Federal Regulations Part 20.
- 3.1.3 Regulatory Guide 8.9 Revision 1 "Interpretation of Bioassay Data".
- 3.1.4 Beaver Valley Power Station Health Physics Procedures.
- 3.1.5 NUREG-0654/FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants."
- 3.1.6 Regulatory Guide 8.34 "Monitoring Criteria and Methods to Calculate Occupational Radiation Dose".

3.2 Commitments

3.2.1 None

4.0 RECORDS AND FORMS

4.1 <u>Records</u>

4.1.1 None

4.2 <u>Forms</u>

4.2.1 None

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EMERGENCY PERSONNEL MONITORING

5.0 <u>RESPONSIBILITIES</u>

- 5.1 Radiological Controls Coordinator
 - 5.1.1 Is responsible for establishing personnel monitoring suitable for the radiological conditions observed or expected at the time of the accident.

6.0 PRECAUTIONS AND LIMITATIONS

6.1 <u>Precautions</u>

Title:

- 6.1.1 The Beaver Valley Power Station Radiation Protection procedures contain standards for personnel monitoring, including bioassay requirements and dosimetry requirements for issuing, using, collecting and processing of dosimetry devices. The provisions of these documents shall apply to emergency conditions except as specifically provided in this EPP/IP or in the BVPS Emergency Preparedness Plan, or as provided by the Radiological Controls Coordinator.
- 6.1.2 During emergencies when there is a great demand for dosimetry, compounded by delays in processing and recording the exposures in the exposure record system (due to the large number of devices in use, and/or inaccessibility to dosimetry processing data systems, etc.), caution shall be exercised to ensure that the exposure recorded on the dosimetry is credited against the proper individual, and that all exposures are recorded.
- 6.1.3 To facilitate later evaluation of exposures, all dosimeter issue and processing documents should be marked with the date and <u>time</u> the document was completed or processed.
- 6.1.4 Personnel radiation doses, which exceed regulatory limits, shall be reported to the NRC in accordance with 10CFR20.2202 and 20.2203, as applicable.

6.2 Limitations

6.2.1 None

7.0 PREREQUISITES

- 7.1 An emergency condition has been declared at the Beaver Valley Power Station as provided in the BVPS Emergency Preparedness Plan.
- 7.2 As a result of the emergency condition, radiation and/or airborne radioactivity levels significantly higher than normal are observed or are likely to be encountered.

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8.0 <u>PROCEDURE</u>

8.1 Expanded Use of Personal Monitoring Devices

- 8.1.1 As a general rule, personnel remaining within the Controlled Area following a site evacuation should wear dosimetry at all times. Monitoring teams (onsite or offsite) shall wear their normal and high range dosimetry as required by Radiation Protection (RP) Supervision.
- 8.1.2 Under non-emergency conditions, regulations require occupational exposure monitoring if it is likely that an external monitoring threshold will be exceeded. This practice should be maintained under emergency conditions. Monitoring thresholds are:
 - 500 millirem/year Deep Dose Equivalent (DDE)
 - 1500 millirem/year Eye Dose Equivalent (LDE)
 - 5000 millirem/year Shallow Dose Equivalent Whole Body (SDE-WB)
 - 5000 millirem/year Shallow Dose Equivalent Extremity (SDE-ME)
- 8.1.3 Under emergency conditions, exposed individuals who are not normally issued dosimeters, shall be assigned appropriate dosimeters if it is likely that an external monitoring threshold will be exceeded, or if the radiological status of the area that they occupy is not known.
- 8.1.4 Any individual authorized to receive emergency exposure shall be assigned appropriate dosimeters.
- 8.1.5 Electronic alarming radiation dosimeters (EAD) should be issued if available. Indicating range of an assigned direct-reading dosimeter-pocket ion chamber (DRD) should be such that a 75% of full scale reading will not be exceeded given the expected stay time and known or expected exposure rate.
- 8.1.6 Extremity dosimeters and neutron dosimeters should be issued and worn as indicated in RP procedures.
- 8.1.7 Beta radiation may become a significant dose contributor in radiological emergencies. For this reason, if any skin surface or the eyes are unshielded, the TLD front should be unshielded. If shielding is provided (e.g., respirator and full Anti-C clothing), the TLD should be worn within the shielding so that accurate eye and shallow dose equivalents can be assessed.

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3.2 <u>Accele</u>	rated Dosimeter Collection and Processing		
8.2.1 1/ ad	2-ADM-1601 provides for TLD processing under no dition:	n-emergency c	conditions. In
8.2.1.1	Daily exposure tracking shall be performed durin during recovery operations until such time as exp and normal access and exposure control methods shall be done for any Site Area or General Emer- release of radioactivity to the Site, or to the envir	ng the emergen posure trends h s have been ree gency that has ronment.	ncy and, initially, have been identified established. This resulted in the
8.2.1.2	In the event of an accidental exposure, or a plant TLD's of the individuals involved shall be proce following exposure. Further exposure of these in until the results of their TLD badge reading are a	ned emergency ssed as soon as ndividuals sho available and h	exposure, the s practicable uld not be allowed ave been evaluated.
8.2.1.3	All assigned personal monitoring devices should after a radiological emergency situation is recogn dose history information and a basis for future de	be processed nized. This pro ose limitation/	as soon as practical ovides for updated authorization.
8.3 <u>Increa</u>	sed Bioassay Analyses		
8.3.1 1/ co	2-ADM-1601 and 1/2-HPP-3.04.002 of the BVPS R ntains provisions for the bioassay program. In addit	adiation Protection:	ction procedures
8.3.1.1	If whole body count results indicate significant f Sr-90 uptake is suspected, in-vitro bioassay mean addition to whole body counting. A preliminary urinalysis is indicated is <u>70nCi of I-131</u> , if the U days prior to the accident. Arrangements have b appropriate analyses if this screening level is exc Coordinator will establish screening levels based radioactivity mix following the accident, if the U	ission products surements will screen level for nit has been at een made with ceeded. The Ra I on the actual Juit has been sl	s, such that Sr-89 or be performed in or above which power within 40 offsite vendors for adiological Controls airborne hutdown longer than

- 8.3.1.2 If a long-term recovery effort is necessary, periodic comparison of whole body counting and urinalyses/fecal analyses should be performed on a random sampling of radiation workers to establish the adequacy of the monitoring program. DAC-hour calculations could also be used in this evaluation. Urine and/or fecal analyses should include gamma scans, Sr-89, Sr-90 and Pu-241 determinations, tritium determinations, and alpha determinations.
- 8.3.1.3 Special whole body counts (and urinalyses/fecal analyses, if indicated) should be performed in accordance with 1/2-ADM-1601. However, under emergency conditions, priority should be given to those individuals who have known or suspected intake, which exceeds 0.1 ALI.

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- 8.3.1.4 If the result of the bioassay analysis indicates that a given individual has an intake of radionuclide, or combinations of radionuclides, that exceeds 0.1 ALI, an investigation shall be performed and documented. Recounts or additional samples/analyses shall be performed to determine the validity of the result. If the result is valid, the following minimum additional actions should be taken:
 - Restrict the access of the individual to prevent additional exposure until the nature of the intake can be determined.
 - Arrange a schedule of additional analyses as necessary to support dose assessment.
 - Evaluate, using suitable models and calculational methods, the Committed Effective Dose Equivalent (and Committed Dose Equivalent for the maximally exposed organ, if appropriate) from the intake. Document all assumptions and calculations.

8.4 Post Accident Exposure Evaluation

- 8.4.1 In those situations in which an individual has been contaminated and some persistent contamination has remained following decontamination; and/or the individual has received significant external or internal exposure in excess of 10 CFR 20 limits as indicated by bioassay, personal dosimeters or survey data, perform an evaluation of the individual's Total Effective Dose Equivalent and other appropriate dose quantities.
- 8.4.2 Rad Protection personnel, in conjunction with outside consultation (such as Presbyterian-University Hospital), shall perform this evaluation using accepted health physics dosimetry practices as outlined in guidance documents such as ICRP-30, ICRP-54, Federal Guidance Report No. 11 and the MIRD pamphlets. This evaluation will be documented, reviewed by the Plant Operations Review Committee (PORC), and filed in the individual's exposure record.

8.5 Final Conditions

8.5.1 This procedure shall be terminated when conditions at the Site have returned to normal or upon direction of the Radiation Controls Coordinator and/or Emergency Director.

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