for

RESUMPTION OF IRTS OPERATIONS

High Level Waste Treatment Phase II - Sludge Wash

#### REVIEWED ACTIVITY

### 1. Facility:

West Valley Demonstration Project IRTS (Integrated Radwaste Treatment System) High Level Waste Treatment - Sludge Wash Phase II

#### 2. Cognizant Division Director:

T. J. Rowland, Director, West Valley Project Office

#### 3. Completion Milestone:

Final report and recommendation submitted to ID Manager: March 27, 1992

### 4. ORR Number:

#### PURPOSE

By DOE Order 5480.5, Safety of Nuclear Facilities, DOE Idaho Order 5480.5A, Safety of Nuclear Facilities, and as described by DOE-ID-ER&WM Procedure 603, and DOE-HQs NE-2 Memorandum, Nuclear Facility Restart Procedure, dated July 31, 1991, DOE is required to review the operational readiness of any nuclear facility having an approved process objective.

This is an "independent" DOE Operational Readiness Review (ORR) and is in addition to the internal readiness review conducted by the on-site operating contractor West Valley Nuclear Services Co., Inc. (WVNS).

#### SCOPE

West Valley has a mandate to demonstrate the vitrification of High-Level Radioactive Waste (HLW). To do so, five process steps are anticipated:

1) Supernatant treatment

2) Sludge wash

3) Acid waste neutralization

4) Zeolite transfer and waste blending

5) Vitrification

The first step was declared complete in April 1991 using the Integrated Radwaste Treatment System (IRTS). The second step was divided into two phases. Phase I consisted of the addition of five mixing pumps in Tank 8D-2, installation of a caustic addition system, and commencement of operations to mobilize the HLW sludge. It was declared operationally ready in October 1991. The first sludge mixing campaign is now complete. The pumps are de-energized, and sludge settling is occurring. Treatment of the liquid wash water supernatant will begin soon and is the subject of the Phase II Sludge Wash ORR activities.

Execution of Phase II sluage wash is to be accomplished by the continuation of IRTS Operations. Using the same equipment and facilities, treatment of the sludge wash water will duplicate the operations used in the supernatant treatment step. The washing process, now underway and driven by several in-tank mixing pumps, causes certain chemical "salts," primarily sulfates, to dissolve into the wash water. The resultant liquid, after the sludge resettles, will again be fed to the IRTS as in the supernatant treatment step. And again the HLW components, which will now include not only cesium remnants but also trace amounts of plutonium and possibly other radionuclides, will be stripped by ion-exchange. The resultant low-level waste will be converted to a Class C cement waste form.

It is important to recognize that Phase II is not a start-up of a new operational facility, nor is it the restart of a previous operation shut down for safety reasons or equipment failure. It is the continuation of an active operation wherein the "feed" to the system has changed from pesium loaded supernatant to a dissolved salts loaded supernatant. All of the IRTS subsystems have remained operational since November of 1990. Each of the IRTS subsystems have been operated periodically, some as frequently as weekly, others monthly and quarterly. New equipment has been added to repair failed parts or subsystem elements where needed (preventative maintenance). Procedures remain up-to-date and exercised regularly. The greatest difference from supernatant treatment to sludge wash treatment is the change in the ion exchange material to be used to capture the HLW radionuclides. A changeover to a titanium coated ion exchange media will be done as Phase II operations begin.

Although the resumption of operations is a relatively minor activity, DOE-WVPO will conservatively evaluate the readiness of the operating contractor to proceed with operations. An ORR will be conducted that examines five major areas of interest from the perspective of performance, as well as the current vogue - "compliance."

### READINESS REVIEW ORGANIZATION

To determine "readiness" a team of reviewers will be assembled forming an official DOE Operational Readiness Review Board (ORRB). The team will consist of a variety of experts in a wide range of disciplines - safety, nuclear criticality, environment, engineering design/construction, operations, etc.

The Board will meet periodically in accordance with an established schedule, and will prepare, approve, and utilize an ORR "tree" and a "checklist" covering the proposed operations. The Board's objective will be to issue a recommendation of acceptance of the state of readiness of WVNS and the proposed sludge wash operation to the approving official.

The Board will consist primarily of DOE members from the Project Office and Field Office as well as two representatives from the New York State Energy and Research Development Authority (NYSERDA). The Board will perform its activities over a period of approximately two months keeping pace with the contractor's progress towards readiness.

Appendix A is the makeup of the Board.

#### APPROVAL AUTHORITY

Authority to start or restart operations of nuclear facilities is described in DOE Order 5480.5, Safet, of Nuclear Facilities, SEN-16A-90, SEN-16B-91, and an NE-2 Memorandum, dated July 31, 1991. None of these explicitly address the West Valley situation on the continued operation of an existing facility. However, based on a review of the guidance with HQ's program management, it has been determined that the Field Office Manager has the authority to continue operations of a nonreactor nuclear facility where the program objectives have been established and approved earlier.

The DOE Board will prepare an independent recommendation characterizing the readiness condition of the proposed operations for transmittal to the ID Field Office Manager for approval with copies to the DOE-HQs Program Manager for information. In addition, interested HQs organizations will be invited to visit the Project during the readiness review preparation, and in particular to attend an "observers" meeting upon completion of the review, but prior to authorization to commence operations.

#### SUMMARY WORK PLAN

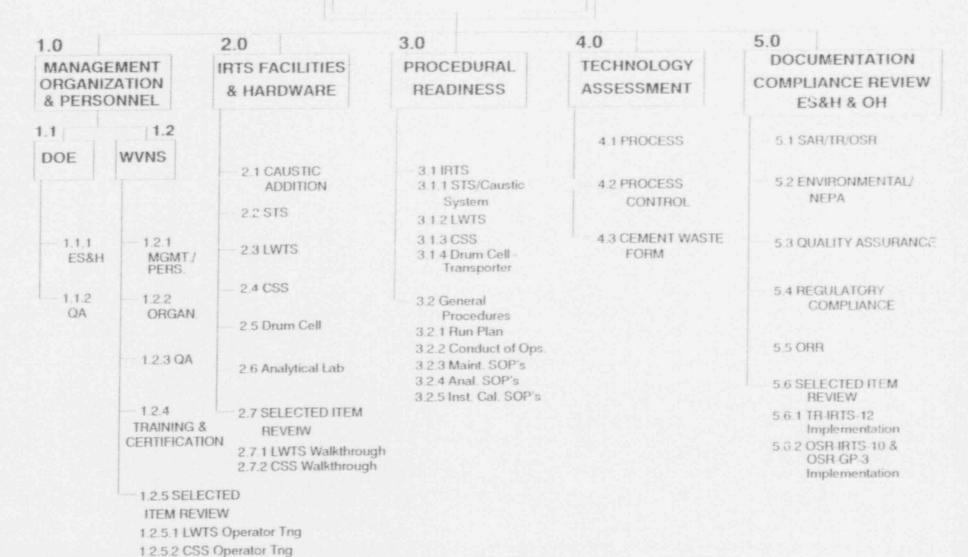
The readiness review work plan follows five major areas of interest shown in the ORR "tree" (Figure 1). These are management and personnel; equipment and hardware; procedures; technology; and safety, environmental and regulatory compliance.

1. Organization and Personnel: Both the DOE and WVNS organizations will be examined to determine whether the responsible groups have sufficient resources to provide sustained support for the operations of the sludge wash system. This will include the status of the management control and reporting systems, "off-normal" reporting, emergency control, and procedures by which management and support groups provide assistance to operations.

Engineering support will be examined to ascertain if sufficient technical support is available to provide technical resolution of upset conditions, corrective action needs, and technical consultation on a sustained basis.

Operations itself will be reviewed to determine if sufficient manpower is dedicated to sustain full scale operations and if sufficient resources are provided to properly maintain and upgrade the system as needed.

# SLUDGE WASH



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Figure 1

- 2. Facilities and Hardware: The IRTS will be evaluated from a "mechanical readiness" viewpoint keeping in mind the fact that this system is currently "operational" and is not a new system. Documentation assuring that the IRTS has been maintained during the period of modification and changeover to sludge wash will be reviewed.
- 3. Operating Procedures: Procedural readiness will be examined by reviewing the procedures, technical requirements (TR), operational safety requirements (OSR), as well as operator training and certification.

The procedures will include a full set for each of the process steps. For example, operational control and monitoring of the waste tank, the ion exchange system (STS), the evaporator cycle, cement solidification system (CSS), cross site waste transfer, Drum Cell storage operations, etc. Integration of the procedures for each of the interrelated operational steps will be examined, and the provisions for handling operational upsets, or "disconnects" between steps will be considered. Provisions for emergency responses and tie-ins to the West Valley Emergency Plan will be examined.

The TRs and OSRs will be compared to the proposed operations and procedures. A systematic review to judge the operational options available for "workarounds" and recovery from upset conditions will be done.

Training and certification of operators will be examined. Training records and operator certifications will be reviewed for currency and technical application. The composition of shift crews will be evaluated for the proper mix of experienced and novice operators.

4. <u>Technology Assessment</u>: Final testing results in support of the process chemistry, plutonium suppression and ion exchange efficiency will be reviewed.

The development process for the cement waste form will be examined. The methodology and scientific approach used to perform the testing and qualification of the "recipe" will be evaluated. The completeness of the documentation will be reviewed.

5. <u>Documentation Compliance</u>: In this area, the review will focus on the adequacy of the implementation of DOE orders, ES&H requirements, quality assurance, and related regulatory requirements throughout the proposed system. Satisfactory

"closure" of environmental/NEPA issues will be examined. A "compliance" review of the W.NS internal ORR process will be performed. Adequacy of the quality assurance programs applied to the sludge wash activities will be reviewed. Approvals and closure of all safety analysis work and documentation will be included.

Appendix B is the ORRB Checklist to be used by the Board to assist in examining each of the areas described above. The checklist is as comprehensive as can be done in advance, however, additions may be made during the review process as new information is made available to the Board.

#### SCHEDULE

The ORR will be scheduled to coincide with the development of documents needed by WVNS to fully characterize the "state of readiness" of the sludge washing process. The on-site members of the ORR Board will attend all WVNS readiness review presentations which are planned through the month of February 1992. The entire DOE Board will meet during the week of March 9, 1992, to close out any remaining checklist items, or actions. Finally, an overview and status presentation to interested HQs and Field Office representatives is scheduled for March 19, 1992, prior to submitting the Board recommendation to the authorizing official. Appendix C is the proposed schedule.

#### ADMINISTRATION

The Board will document and track its activities on a daily basis or as appropriate. Open items will be monitored on the WVNS Open Items tracking system as "J2" actions. Signoffs of all items on the checklist will be the "affidavits" of the Board members. Finally, a recommendation report will be prepared and transmitted through the concurrence chain to the ID Manager for final approval.

#### APPENDIX A

### DOE WEST VALLEY PROJECT OFFICE

# OPERATIONAL READINESS REVIEW BOARD

for

# RESUMPTION OF IRTS OPERATIONS -SLUDGE WASH

#### MEMBERSHIP

Persons listed below are official board members and are responsible for supporting the DOE Phase-II Operational Readiness Review in accordance with the approved Plan.

#### Chairman

W. Stephen Ketola

DOE-WVPO

#### Members

Alan Yeazel

Rick Provencher

Joe Desormeau

Ted Sonntag

Paul Piciulo

Jack Sanders

Joel Case

DOE-WVPO, Operations

DOE-WVPO, ES&H/QA

DOE-WVPO, Qualification

NYSERDA, Equipment

NYSERDA, Technology

DOE-ID, Procedures

DOE-ID, Compliance

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MAN	NAGEMENT AND ORGANIZATION	COMPLETED DATE/INITIALS
1.1 DOI		
1.1.1	ES&H	
1.1.1.1	Are there Safety, Environment, Health and Operating goals established for operations to measure operating effectiveness?	
Action:		
1.1.1.2		
Action:		
1.1.1.3	Are safety and operating limits and administrative controls for the facilities part of the working knowledge required by DOE ES&H personnel and is the training in place to ensure that this information is routinely provided to the overview staff?	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MANAG	EMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.1 DOE (	Continued)	DATE/INITIALS
1.1.1	ES&H (Continued)	
1.1.1.4		
Action:		
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1.1.1.5		
9		
Action:		
1.1.2	Quality Assurance	
1.1.2.1	Is there a policy in place explaining the DOE Project Office QA role?	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MAN	AGEMAN, AND ORGANIZATION (CONTINUED)	COMPLETED
1.1 DOE	(Continued)	DATE/INITIALS
1.1.2	Quality Assurance (Continued)	
1.1.2.2	Is there a required reading program/file implemented for DOE Project Office staff covering operations, support, overview, etc.?	
Action:		
1.1.2.3		
Action:		
1.1.2.4		E N 型 路 型 型 型 型 型 型 型 型 之 元
Action:		

# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MA	NAGEMENT AND ORGANIZATION (CONTINUED)	COMPLETED DATE/INITIALS
1.2 WV	NS	EDAET ANALANIS
1.2.1	Management and Personnel	
1.2.1.1	Is the Phase II IRTS Sludge Wash scope described in a Program Plan, or similar document, in sufficient detail to clearly show all operating systems? Does this include justification for the system to be used, yet not reviewed for readiness? (E.g., corrosion monitoring, level control, etc.)	
Action:		
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1.2.1.2		
Action:		
	Is there an Industrial Safety Program in place?	
Action		

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#### DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW BOARD for

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 1	MANAC	EMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2	WVNS	(Continued)	DATE/INITIALS
1.2.1		Management and Personnel (Continued)	
2.1	. 4	Is a Program/Project Management Plan in place and approved which covers the scope of the IRTS resumption and the scheduled activities once operations commence?	
Actio	n:		
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Actio	n:		
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1.2.1			
Actio	n:		
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# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0	MANA	GEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2	WVNS	(Continued)	DATE/INITIALS
1.2	. 2	Organization	
1.2	2.1	Are responsibilities/authority clearly defined and documented down to the operator level?	water water consideration productions
Act	ion:		
10.00.00	= io # = a/ =		
1.2	.2.2	Demonstrate sufficient staffing to provide necessary calibration and preventive maintenance for IRTS operations.	
Act	ion:		
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1.2	. 2 . 3	Demonstrate sufficient staffing for sample taking and subsequent analysis during IRTS operations for all anticipated shifts.	
Act	ion:		
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RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0	MANA	GEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2	WVNS	(Continued)	DATE/INITIALS
1.2.	2	Organization (Continued)	
1.2.	2.4		
Acti	mm r		
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NO.	11 10 10 10 10 10 10 10 10 10 10 10 10 1		
1.2.	2.5		
Acti	on:		-
MENN	*****		
1.2.	3	Quality Assurance	
		Is there a reporting/recording system in place t	
		document operating problems, assessments of problems and corrective actions to be taken to	of .
		improve operations performance?	-
Acti	on:		
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# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MANA	GEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1,2,3	Quality Assurance (Continued)	DATE/INITIALS
1.2.3.2		
Action:		
1.2.3.3		
Action:		With the state of
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******		
1.2.4	Training and Certification	
1.2.4.1	Is there an on-the-job training program documented and in place for personnel under instruction?	
Action:		
*****		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MAN	NAGEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2.4	Training and Certification (Continued)	DATE/INITIALS
1.2.4.2	Is there an operator and shift supervisor qualification program formally documented, including classroom requirements, written exam/results, and instructor qualification?	
Action:		
N IN THE IS IN		
1.2.4.3	Does certification of operators include one-on-one instruction at the work station?	
Action:		
	Is a refresher training program in place for operators and shift supervisors?	
Action:		
FLHERRE		
1.2,4.5	Is there a required reading program implemented for both operators and shift supervisors to cover such materials as changes to procedures, Safety Analysis/OSR's, equipment modifications, etc.?	
Action:		
	************************************	

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST PHASE II

1.0 MANA	AGEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2.4	Training and Certification (Continued)	DATE/INITIALS
1.2.4.6	Does training include SA/OSR working knowledge?	
Action:		
1.2.4.7		
Action:		
1.2.4.8	Does training for one one training for the contract of the con	
	Does training for CSS operators include requalification requirements?	
Action:		
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1.2.4.9	Have operators been trained to requirements of new cement recipe?	
Action:		
		*********

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MANA	GEMENT AND ORGANIZATION (CONTINUED)	COMPLETED
1.2.4	Training and Certification (Continued)	DATE/INITIALS
1.2.4.10		
Action.		
		*****
1.2.4.11		
Action:		
1.2.5	SELECTED ITEM REVIEW	
1.2.5.1	LWTS Operator Training	
Action:		
		10 10 10 10 10 10 10 10 10 10 10 10 10 1

# DOE WEST VALLEY PROJECT OFFICE 1-21-92 OPERATIONAL READINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# MANAGEMENT/ORGANIZATION AND PERSONNEL CHECKLIST

1.0 MANA 1.2.5	GEMENT AND ORGANIZATION (CONTINUED)	COMPLETED DATE/INITIALS
	SELECTED ITEM REVIEW (Continued)	
1.2.5.2	CSS Operator Training	
Action:		
		***************
1.2.5.3		
Action:		
1.2.5.4		
Action:		
	R. 以此此种种,我就是我们的自己的,我们可以不是有的,我们也可以有什么的。	

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.1 Caust	tic Addition System (Modifications for Phase II)	DATE/INITIALS
2.1.1	Has hard piping been installed and inspected?	****
Action:	Need to walk over hard piping and review inspection	reports.
*********		
2.1.2	Have P&ID's been changed to reflect the new hard pipe changes?	
Action:	Need revised P&ID's.	
2.1.3	Is a system test for new hard piping planned? What are test parameters versus design and/or operating?	
Action:	Need test plan or procedure.	
2.1.4	Are demin water storage tanks and supply system large enough to handle expected maximum throughput?	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

2.0	IRTS	FACILITIES & HARDWARE	COMPLETED
2.1	Caust (Cont	ic Addition System (Modifications for Phase II)	DATE/INITIALS
2,1,	5		
Acti	on:		
No. and a	0 44 50 00 14 70 01		**********
2.1.	6		
Act:	ion:		
		***************************************	RESEESSEESSEES
2.2		STS Resumption for Sludge Wash:	
2.2	.1	What changes and/or lessons learned have been incorporated into facilities and hardware?	
Act	on:		

# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

## Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.2	STS Resumption for Sludge Wash: (Continued)	DATE/INITIALS
2,2,2	Have P&ID's been revised to reflect changes needed to incorporate use of Ti-zeolite and/or changes deemed necessary from lessons learned?	
Action:	Need latest P&ID's.	
2.2.3	Have OPDR's or ECN's been prepared? Are they dispositioned?	
Action:	Need deficiency logs for outstanding items.	
2.2.4	Is testing and/or system check-out planned?	
Action:	Need test plan document.	
2.2.5	Will a new system be added to collect and recycle zeolite wash water?	
Action:	Decision based upon whether or not SPDES permit requimodification.	uires

# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW FOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

2.0	IRTS	FACILITIES & HARDWARE	COMPLETED
2.2		STS Resumption for Sludge Wash: (Continued)	DATE/INITIALS
2.2.	5.1	If new system is to be added, has design been prepared, reviewed, and approved?	
Acti	on:	Need design specifications and drawings.	
2.2.	5.2	If new system is to be added, is testing/check-out planned?	
Acti	on:	Need test plan document.	
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2.2.	6		
Acti	on:		
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Acti	on:		
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# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

# PHASF II

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.3	LWTS Resumption for sludge wash:	DATE/INITIALS
2,3,1	What changes and/or lessons learned have been incorporated into facilities and hardware?	
Action:		
2.3.2	Have P&ID's been revised to reflect changes needed to accommodate sludge wash solutions in the LWTS and/or changes deemed necessary from lessons learned?	
Ar ion:	Need latest P&ID's.	
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2.3.3	Have OPDR's or ECN's been prepared? Are they dispositioned?	
Action:	Need deficiency logs for outstanding items.	
2.3.4	To tosting and/or quater above the continuous and	**********
Action:	Is testing and/or system check-out planned?	
ACCION:	Need test plan document.	

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

2.0	IRTS	FACILITIES & HARDWARE	COMPLETED
2,3		LWTS Resumption for sludge wash: (Continued)	DATE/INITIALS
2.3.	5		
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2,3,	6		
Acti	on:		
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2.4		CSS Resumption for sludge wash:	
2.4.	1	What changes and/or lessons learned have been incorporated into facilities and hardware?	
Acti	on:		
****			

# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

## Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.4	CSS Resumption for sludge wash: (Continued)	DATE/INITIALS
2.4.2	Have P&ID's been revised to reflect changes needed to accommodate new recipe for sludge wash solutions and/or changes deemed necessary from lessons learned?	
Action:	Need latest P&ID's.	
	不存在其可有的學科學是可能的學科學的學科學的學科學的學科學的學術學的學科學的學科學的學科學的學科學的學科學	2年以前 20年
2.4.3	Have OPDR's or ECN's been prepared? Are they dispositioned?	
Action:	Need deficiency logs for outstanding items.	
2.4.4	Is testing and/or system check-out planned?	
Action:	Need test plan document.	
2.4.5		
Action:		
********		

# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL REAUINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

## Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.4	CSS Resumption for sludge wash: (Continued)	DATE/INITIALS
2.4.6		
Action:		
2.5	Drum Cell Resumption for sludge wash:	
2.5.1	What changes and/or lessons learned have been incorporated into facilities and hardware?	Service and the service and th
Action:		
		<b>表现的存在性的证明和中还可能</b>
2.5.2	Have P&ID's been revised to reflect changes deemed necessary from lessons learned?	AND SELECTION AND ADDRESS OF THE PARTY.
Action:	Need latest P&ID's.	

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.5	Drum Cell Resumption for sludge wash: (Continued)	DATE/INITIALS
2.5.3	Have OPDR's or ECN's been prepared? Are they dispositioned?	
Action:	Need deficiency logs for outstanding items.	
2.5.4	Is testing and/or system check-out planned?	
Action:	Need test plan document.	
*******		
2.5.5		
Action:		With the Asset Constitution of the Constitutio
2.5.6		
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Facilities & Hardware Checklist

FACILITIES & HARDWARE	COMPLETED
Analytica' Lab, Resumption for Sludge Wash	DATE/INITIALS
What new hardware and/or equipment has been added to provide analysis during sludge wash processing?	
Has new equipment been calibrated and tested?	
Need calibration and testing records.	
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	What new hardware and/or equipment has been added to provide analysis during sludge wash processing?  Has new equipment been calibrated and tested?  Need calibration and testing records.

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

## Facilities & Hardware Checklist

2.0	IRTS	FACILITIES & HARDWARE	COMPLETED
2.6		Analytical Lab, Resumption for Sludge Wash (Continued)	DATE/INITIALS
2.6.			
Actio	on:		
2.7		SELECTED ITEM REVIEW	
2.7.		Walk through LWTS to review changes/operational status.	
Actio	on:	Need to set up walk through with LWTS Operators.	Coordinate with
****			
2.7.2	2	Walk through CSS to review changes/operational status.	****
Actio	on:	Need to set up walk through with CSS Operators. Coother ORRB reviews.	pordinate with
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# DOE WEST VALLEY PROJECT OFFICE OPERATIONAL READINESS REVIEW BOARD for RESUMPTION OF IRTS OPERATION - SLUDGE WAS'!

# Facilities & Hardware Checklist

2.0 IRTS	FACILITIES & HARDWARE	COMPLETED
2.7	SELECTED ITEM REVIEW (Continued)	DATE/INITIALS
2.7.3		
Action:		
2.7.4		
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.0 PRO	PROCEDURAL READINESS COMPLET DATE/INITIA	
3.1 IRT		ADTRI THE TTORN
3.1.1	Supernatant Treatment System/Caustic Addition System	
3.1.1.1	Are operating procedures current, approved, and issued to the field?	
Action:		
*****		
3.1.1.2	Have operating procedures been validated?	
Action:		
		414443554
3.1.1.3	Independent review/walkthrough been performed on selected procedures.	
Action:		
3.1.1.4	Are Operational Safety Requirements/Technical Requirements incorporated into operating procedures?	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Procedural Readiness Checklist

3.0 PROCEDURAL READINESS		COMPLETED
3.1 IRTS	(Continued)	DATE/INITIALS
3.1.1	Supernatant Treatment System/Caustic Addition System (Continued)	
3.1.1.5	Are OSR's updated to reflect Mod's?	
Action:		
~~~~~~	· (中国 · (+)))))))))))))))))))))))))))))))))))	***********
3.1.1.6	How have "lessons learned" from the previous 21 campaigns been factored into existing procedures?	
Action:		
3.1.1.7	Procedure for load/discharge of Ti-zeolite and normal zeolite.	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

# Procedural Readiness Checklist

3.0 PROC	EDURAL READINESS COMPLETED
3.1 IRTS	(Continued) DATE/INITIALS
3.1.1	Supernatant Treatment System/Caustic Addition System (Continued)
3.1.1.8	Are procedures in place to allow for maintenance?
Action:	
3.1.1.9	
Action:	
No. Louis	
3.1.1.10	
Action:	
NCCION:	

#### Procedural Readiness Checklist

3.0	PROCI	EDURAL READINESS	COMPLETED
3.1.	2	Liquid Waste Treatment System	DATE/INITIALS
3.1.	2.1	Are operating procedures current, approved, and issued to the field?	
Acti	on:		
3,1,	2.2	Have operating procedures been validated?	
Acti	on:		
3.1.	2.3	Independent review/walkthrough been performed on selected procedures.	
Acti	on:		
3.1.	2.4	Are Operational Safety Requirements/Technical Requirements incorporated into operating procedures?	
Acti	on:		

### PHASE II

Procedural Readiness Checklist

3.0 PROC	EDURAL READINESS	COMPLETED DATE/INITIALS
3.1 IRTS	(Continued)	50.53.4.50.7
3.1.2	Liquid Waste Treatment System (Continued)	
3.1.2.5	How have "lessons learned" from the previous 21 campaigns been factored into existing procedures?	
Action:		
3.1.2.6		
Action:		
ACCIOIL		
3.1.2.7		and were need once on the case of the case of the case.
		-
Action:		

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#### for RESUMPTION OF IRTS OPERATION - SLUDGE WASH

### Procedural Readiness Che klist

PPOC	EDURAL READINESS	COMPLETED
3.	Cement Solidif Cation System	DATE/INITIALS
3.1.3.1	Are operating procedures current, approved, and issued to the field?	
Action:		
3,1,3,2	Have operating procedures been validated?	
Action:		
3.1.3.3	Independent review/walkthrough has been performed on selected procedures.	
Action:		
3.1.3.4	Are Operational Safety Requirements/Tychnical Requirements incorporated into operating procedures?	
Action:		

#### Procedural Readiness Checklist

3.0	PROCE	EDURAL READINESS	COMPLETED
3.1	IRTS	(Continued)	DATE/INITIALS
3.1.3		Cement Solidification System (Continued)	
3,1,3	, 5	How have "lessons learned" from the previous 21 campaigns been factored into existing procedures?	
Actio	n:		
		veneralisten i veneralisten ven	
3.1.3	. 6	Do the procedures explain how to disposition out- of-spec drums?	
Actio	n;		
•			
3.1.3	3.7	Have procedures been modified to reflect the new cement recipe?	
Actio	n:		
3.1.3	3.8		
Actio	on:		
9			

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.0   ROC!	EDURAL READINESS	COMPLETED
3.1 IRTS	(Continued)	DATE/INITIALS
3.1.3	Cement Solidification System (Continued)	
3.1.3.9		
Action:		
ACCION:		
	Daving Col / (Description)	
<b>A</b>	Drum Celi/Transporter	
3.1.4.1	Are operating procedures current, approved, and issued to the field?	
Action:		
3.1.4.2	Have operating procedures been validated?	
Action:		
3.1.4.3	Independent review/walkthrough has been performed on selected procedures.	
Action:		
_========		

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.0 PROCE	EDURAL READINESS	COMPLETED
3.1 IRTS	(Continued)	DATE/INITIALS
3,1,4	Drum Cell/Transporter (Continued)	
3.1.4.4	Are Operational Safety Requirements/Technical Requirements incorporated into operating procedures?	
Action:		
		IDENTIFICAÇÃO
3.1.4.5	How have "lessons learned" from the previous 21 campaigns been factored into existing procedures?	
Action:		
*****		
3.1.4.6		
Action:		
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### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.0	PROCE	EDURAL READINESS	COMPLETED
3.1	IRTS	(Continued)	DATE/INITIALS
3.1.4		Drum Cell/Transporter (Continued)	
3.1.4	. 7		
Actio			
ACCIO	11.2		
3.2	Gene	ral Procedures	
3.2.1		Run Plan	
3.2.1	.1	Is the run plan current, approved, and issued?	
Actio	n.		
			*******
3.2.1	. 2	Independent review/walkthrough has been performed of the run plan.	
Actio	n:		
			THE TAX THE THE TAX THE TAX THE TAX THE TAX THE TAX THE TAX THE

## Procedural Readiness Checklist

3.0 PROC	CEDURAL READINESS	COMPLETED
3.2 Gene	eral Procedures (Continued)	DATE/INITIALS
3.2.1.3		
Action:		
3.2.1.4		
Action:		
3.2.2	Conduct of Operation	
3.2.2.1	Are the implementing procedures for DOE of 5480.19 current, approved, and issued?	rder
Action:		

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Read, ness Checklist

3.0 PROC	EDURAL READINESS	COMPLETED
3.2 Gene	ral Procedures (Continued)	DATE/INITIALS
3.2.2	Conduct of Operation (Continued)	
3.2.2.2	Independent review/walkthrough has been performed of selected Conduct of Operations procedures.	
Action:		
3.2.2.3	Are there procedures which define corrective actions required when unusual instrument readings are observed? are the monitoring instruments clearly defined (labeled, locations, etc.) and instructions prepared to clearly show how to read the instruments?	
Action:		
3.2.2.4	Is a procedure in place to ensure narrative logs of the operations records are being prepared by all key positions each shift in sufficient detail to provide an accurate history of operations in sequence to include activities, transfer of information among operators, and deficiencies observed?	
Action:		

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.C PROCEDURAL READINESS	COMPLETED
3.2 General Procedures (Continued)	DATE/INITIALS
3.2.2 Conduct of Operation (Continued)	
Is shift turnover covered by procedure to ensure that checklists are prepared, discussion/exchange of responsibilities between both supervisors and operators, shift crew briefings, turnover for reliefs, control panel walkdowns, log/document reviews? Is there a procedure that prescribes oncoming personnel to arrive early and outgoing personnel to leave late?	
Action:	
	**********
3.2.2.6	
Action:	
3.2.2.7	
Action:	
)	

#### Procedural Readiness Checklist

3.0 P	ROCEDURAL READINESS	COMPLETED
5.2.3	Maintenance Procedures	DATE/INITIALS
3.2.3.	Are the necessary maintenance procedures current, approved, and issued?	
Action		
3.2.3.	2 Independent review has been performed of selected Maintenance procedures.	
Action		
3.2.3.		
Action		
MCCIO		

### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Procedural Readiness Checklist

3.0 PROC	CEDURAL READINESS COMPLET	
3.2.3	Maintenance Procedures (Continued)  DATE/INITIA	ALD
3.2.3.4		
Action:		
73343111		
3.2.4	Analytical Procedures	
3.2.4.1	Are the required Analytical procedures current, approved, and issued?	
Action:		
3.2.4.2	Independent review has been performed of selected Analytical procedures.	
Action:		

#### Procedural Readiness Checklist

3.0 PROCEDURAL READINESS	COMPLETED
3.2 General Procedures (Continued)	DATE/INITIALS
3.2.4 Analytical Procedures (Continued)	
3.2.4.3	
Action:	
======================================	
Action:	
3.2.5 Instrument Calibration Procedures	
3.2.5.1 Are the required Instrument Calibration procedurrent, approved, and issued?	dures
Action:	

#### Procedural Readiness Checklist

3.0 PROC	EDURAL READINESS	COMPLETED
3.2 Gene	ral Procedures (Continued)	DATE/INITIALS
3.2.5	Instrument Calibration Procedures (Continued)	
3.2.5.2	Independent review has been performed of selected Instrument Calibration procedures.	
Action:		
3.2.5.3	Instrument calibrations required for IRTS operations have been complete.	
Action:		
3.2.5.4	Is a formal instrument calibration procedure in place?	
Action:		

#### Procedural Readiness Checklist

#### PHASE II

3.0 PROCEDURAL READINESS	COMPLETED DATE/INITIALS
3.2 General Procedures (Continued)	DATE/INITIALS
3.2.5 Instrument Calibration Procedures (Continued)	
3.2.5.5	
Action:	
3.2.5.6	
Action:	

#### Technology Checklist

4.0 TECH	NOLOGY ASSESSMENT	COMPLETED
4.1 Proc	ess	DATE/INITIALS
4.1.1	Radiolysis of water is expected to increase with the build-up of Pu in the columns. Are there provisions for $\rm H_2$ monitoring and gas purging in the columns?	
Action:		
4.1.2	Have the final Ti-zeolite test results been published?	
Action:		
4.1.3	How were the Ti-zeolite test results verified? Peer reviewed?	
Action:		
4.1.4	How was "QA" applied to the LAB and verification of results from Ti-zeolite, sludge, and process feed testing?	
Action:		

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

#### PHASE II

4.0	TECHNOLOGY ASSESSMENT	COMPLETED
4,1	Process (Continued)	DATE/INITIALS
4.1.	Has the elution potential of Ti-zeolite been tested over the range of wash water feeds, and process flushes expected during the sludge wash campaigns?	
Acti	on:	
4.1.	Have the effects of pH control been demonstrated over the full range of tank chemistry expected from all four washes?	
Acti	on:	
4.1.	Has the corrosion control program for 8D-2 been completed and approved? Are all technical analyses and reports complete verifying the adequacy of the program?	
Acti	on:	

#### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

4.0 TE	ECHNOLOGY ASSESSMENT	COMPLETED
4.1 Pi	rocess (Continued)	DATE/INITIALS
4.1.8		
Action		
4.1.9		
Action		
4.2 P	rocess Control	
4.2.1	Does the current analytical method for Podetermination take into account the possibility that some Pu may be present as a polymer (fine colloid)?	
Action		

### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

4.0 TECH	NOLOGY ASSESSMENT	JOMPLETED
4.2 Proce	ess Control (Continued)	DATE/INITIALS
4.2.2	Will a column be taken off line if Cs or Pu breakthrough is detected? Also, Are there provisions for discontinuing use of a column if mass of Pu removed by that column reaches a certain limit?	
Action:		
******		
4.2.3	Will Ti-zeolite be used for all sludge wash cycles (#'s 1, 2, 3, 4) or only SW-1?	
Action:		
~~~~		
4.2.4	Has the evaporator (LWTS) been tested or evaluated for performance using the "new chemistry" of the expected sludge wash feeds, i.e., washes 1-4?	
Action:		

#### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

4.0 TECHNOLOGY ASSESSMENT	COMPLETED
4.2 Process Control (Continued)	DATE/INITIALS
4.2.5	
Action:	
	***************************************
4.2.6	
Action:	
4.3 Cement Waste Form	
4.3.1 Does the cement recipe accept high pH? Does the test program prove it?	
Action:	
	***************

# OPERATIONAL READINESS REVIEW BOARD DOE WEST VALLEY PROJECT OFFICE

#### RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

4.0 TECHI	NOLOGY ASSESSMENT	COMPLETED
4.3 Cemei	nt Waste Form (Continued)	DATE/INITIALS
4.3.2	Are the results from the Waste Form development plan in accordance with the acceptance criteria?	
Action:		
	********************	
4.3.3	Explain the process for resolution of comments by NRC, others?	
Action:		
4.3.4	Will the test plans cover ranges of behavior?	
Action:		
4.3.5	Demonstrate compliance with the 10 CFR 61 requirement for "classifying" waste as required by PCP #1 and the arrent PCP revision for the sludge wash waste form.	
Action:		

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

#### Technology Checklist

4.0 TECHNOLOGY ASSESSMENT		COMPLETED DATE/INITIALS
4.3 Cem	4.3 Cement Waste Form (Continued)	
4.3.6	Is the cement recipe fully qualified for all Phase II Sludge Wash chamistry's (i.e., sludge wash 1, 2, 3, and 4)?	
Action:		
4.3.7		
Action:		
4.3.8		
Action:		
ACCION:		

RESUMPTION OF IRTS OPERATION - SLUDGE WASH

5.0 DOCU	MENTATION COMPLIANCE REVIEW - ES&H AND OA	COMPLETED
5.1 SAR/	TR/OSR	DATE/INITIALS
5.1.1	Approval status of SAR for SMS/STS.	
Action:		
5.1.2	Have the appropriate changes been made to the SAF 3/OSR's to reflect the changes made to the IRTS? STS? Are the SAR's/OSR's all approved by DOE?	
Action:		
5.1.3	Have all safety-related SAR requirements been comprehensively followed through the OSR and down into the operating procedures to ensure that the safety documentation is in concert with one another and sufficiently implements the safety requirements for the facility?	
Action:		
5.1.4	Are the SAR's for the CSS and Drum Cell Systems up- to-date and approved by DOE?	
Action:		

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

5.0	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED
5.1	SAR/TR/OSR (Continued)	DATE/INITIALS
5,1,5	Has the Drum Cell SAR been evaluated in relation to potential need to produce lower weight percentage cement drums? Is a revision necessary? If so, has it been approved by the Project Office?	
Actio		
5.1.6	Do the LWTS, CSS, and Drum Cell comply with applicable portions of OSR/GP-5?	
Actio	on:	
5.1.7	Is it necessary to revise TR-IRTS-2 to reflect a new or modified CSS cement recipe? If so, has it been done and approved by the Project Office?	
Actio		
5,1.8		
Actio		

5.0	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.1	SAR/TR/OSR (Continued)	
5,1.9	Are programs and procedures in place to successfully operate in compliance with TR-IRTS-11?	
Actio	on:	
-		
5.1.	Review Phase I WTFVS and PVS operating logbooks.  Did systems operate as required during Phase I with high heat and condensate levels? Do modifications need to be made to support washes 2, 3, and 4?	
Actio	on:	
5.1.		
Acti	on:	

## RESUMPTION OF IRTS OPERATION - SLUDGE WASH

5.0	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.1	SAR/TR/OSR (Continued)	POAR/ 18111000
5.1.	12	
Acti	on:	
5.2	Environmental/NEPA	
5.2.	Is there approved NEPA documentation for all IRTS subsystems?	
Acti	on:	
5.2.	Assuming a SPDES modification is not obtained prior to resumption, has WVNS established another process to handle the Titanium wash water that would otherwise be discharged to the Lagoon system? If so, do procedures exist to cover this backup process?	
Acti	ion:	

# RESUMPTION OF IRTS OPERATION - SLUDGE WASH

5.0 DOCU	MENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED
5.2 Envi	ronmental/NEPA (Continued)	DATE/INITIALS
5.2.3	Has compliance with OSR's GP-1 and GP-2 been demonstrated for the various subsystems?	
Action:		
********		
5.2.4	Review logs and analytical data to ensure transfers to interceptors from the evaporator overheads are conducted in accordance with SOP's 71-2 and 15-13.	
Action:		
5.2.5		
Action:		
5,2,6		******
Action:		
========		*************

### OPERATIONAL READINESS REVIEW BOARD fer RESUMPTION OF IRTS OPERATION - SLUDGE WASH

5.0	Docui	MENTATION COMPLIANCE REVIEW - ES&H AND GA	COMPLETED DATE/INITIALS
5.3	Qual	ity Assurance	6.1.1.4.1.7. +3.1.4.4.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
5,3,	1	Does a QA Flan for resumption of operations exist?	
Acti	on:		
5.3.	2	Does an inspection plan for resumption of	
		operations exist?	
Acti	on:		
5.3.	3	Have hold points been established for resumption of activities?	
Acti	on:		
	****		
5.3.	4	Have nonconformances (per NCR's, RCA's, etc.) been addressed and resolved?	
Acti	on:		

#### ESH & QA COMPLIANCE CHECKLIST

5.0 DOCL	JMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.3 Qual	lity Assurance (Continued)	PUTE/ INTITUTE
5.3.5		
Action:		
		***********
5.3.6		
Action:		
Accion:		
5.4 Regu	ulatory Compliance	
5.4.1	Have occurrence reports been evaluated for applicability and resolved?	
Action:		

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5.0	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.4	Regulatory Compliance (Continued)	POLET ENTER DO
5.4.2	Does Tank 8D-3 and the transfer line from STS to LWTS contain leak detection? If so, has it been tested? If not, why?	
Actic	n:	
5.4.3	Has an ALARA evaluation been performed per 5480.11 and procedure?	
Actic	n:	
=====		**************************************
5,4,4	Is the Emergency Preparedness (EP) Program in place and approved? Have the necessary revisions been made to the Plan?	
Actic	n:	
5.4.5	Has WVNS conducted an emergency exercise recently to test the response capabilities and effectiveness as they relace tot he IRTS resumption effort? Have lessons learned been incorporated into the program?	
Actio	n:	
***		

	OCCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.4.6	Are the EP equipment and personnel available and trained/ready?	
Action		
5.4.7	Has a formal determination been performed to ensure that operating permits (Clear Air Act), RCRA Part A interim status permit, and NESHAPS permit do not require modification? Do existing permits cause constraints to the IRTS operational condition currently being proposed for resumption?	
Action		
5.4.8 Action	Are there provisions to safely store all chemicals?	
5.4.9		
Action		

	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA  Regulatory Compliance (Continued)	COMPLETED DATE/INITIALS
5.4.1	0	
Actio	n:	
*****		
5.5	ORR	
5.5.1	Are the ORR trees and checklists reviewed and approved?	
Action	n:	
5.5.2	How were "lessons learned" incorporated into the upgrades/maintenance of existing systems? Is there a regular method for inputing "lessons learned".	
Action	n:	

5.0	DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.5	ORR (Continued)	KOTELTHITTORS
5.5.	3	
W - W-1		
Acti		
5.5.	4	
Acti	on:	
5.6	SELECTED ITEM REVIEW	
5.6.	TR-IRTS-12 Implementation, Supernatant Treatment System Feed Requirements.	
Acti	on:	

5.0 DOCUMENTATION COMPLIANCE REVIEW - ES&H AND QA	COMPLETED DATE/INITIALS
5.6 SELECTED ITEM REVIEW (Continued)	DAIE/INITIALD
5.6.2 OSR-GP-3 and OSR-GP-10.	
Action:	
5.6.3	
Action:	
5.6.4	
Action:	

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	SUP88999 RESUMETS OPE	RATIONS	4-SEP-92	3-SEP-82									311	
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	T:700148 ISSUE TEST 039	REPORT	5-FEB-92	25 FEB-92	3	4								
	TIZO0175 PERFORM PARAMET 8378	RIC TEST	5-FEP-92	21-FEB-92	37	71								
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