SEP 08 1994

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ENGINEERING DATA TRANSMITTAL

Page 1 of 6

1. EDT 157821

2. To: (Receiving Organization) PROCESS ENGINEERING - SNF	3. From: (Originating Organization) EQUIPMENT TESTING LABORATORY	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: K - BASIN	6. Cog. Engr.: T.E. GRIFFIN	7. Purchase Order No.: N/A
8. Originator Remarks: THIS IS A WORKPLAN FOR CANISTER SLITTER DEVELOPMENT TO BE APPROVED AND RELEASED.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: K - BASIN
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 7/10/94

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-SNF-WP-007	ALL	0	WORKPLAN, N-FUEL CANISTER SLITTER	NA	1		

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)		1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog.Eng.T.E. GRIFFIN	<i>T.E. Griffin</i>	8/31/94	16-13	B.E. HORSMANN			X3-76	3	
1		Cog. Mgr.G.L. NEER	<i>G.L. Neer</i>	9/9/94	16-13	Central Files (2)		12-04			
		QA				DSTI (2)		12-07			
		Safety									
		Env.									
1	1	J.B. CRYSTAL	<i>J.B. Crystal</i>	8/31/94	R3-86						
1	1	J.R. FREDERICKSON	<i>J.R. Frederickson</i>		R3-86						

18. Signature of EDT Originator <i>T.E. Griffin</i> Date: 7/2/94	19. Authorized Representative Date for Receiving Organization <i>G.L. Neer</i> 8/31/94	20. Cognizant Manager Date <i>G.L. Neer</i> 9/9/94	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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RELEASE AUTHORIZATION

Document Number: WHC-SD-SNF-WP-007, REV. 0

Document Title: WORKPLAN, N-FUEL CANISTER SLITTER

Release Date: 9/8/94

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This document was reviewed following the
procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

* * * * *

WHC Information Release Administration Specialist:

C. L. Poles N.L. SOLIS
(Signature)

9/8/94
(Date)

SUPPORTING DOCUMENT		1. Total Pages 6
2. Title WORKPLAN N-FUEL CANISTER SLITTER	3. Number WHC-SD-SNF-WP-007	4. Rev No. 0
5. Key Words K-BASIN CANISTER SLITTER	6. Author Name: T.E. GRIFFIN <div style="text-align: center;"> Signature </div> Organization/Charge Code 8D610/E/2107	
<div style="border: 2px solid black; padding: 10px; display: inline-block;"> APPROVED FOR PUBLIC RELEASE </div>		
7. Abstract <i>N.L. Solis 9/8/94</i> This document describes the methods of development for slitting canister walls.		
8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed. PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release of use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.	10. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; text-align: center;"> OFFICIAL RELEASE 21 BY WHC DATE SEP 08 1994 <i>St. 21</i> </div>	
9. Impact Level <i># NA</i>		

MASTER

WORKPLAN

N-FUEL CANISTER SLITTER

1.0 INTRODUCTION

Previous segregation and repackaging operations involving removal of N-fuel elements resulted in fuel elements being stuck and unable to be removed from their canisters. This workplan describes the methods of development for slitting the walls of the three different types of canisters. Slitting the canister walls will allow the canister to expand and permit any stuck fuel elements to be removed from the canister.

2.0 SCOPE

2.1 Objectives

The canister slitting tool will cut the canister wall, relieving pressure caused by fuel swelling and/or corrosion and allow the fuel elements to be removed from the canister.

2.2 Deliverables

- As-Built design/fabrication drawings.
- Report of testing conducted in the 305 building.
- Canister slitting tool and operating source.

3.0 DESCRIPTION

3.1 Physical Description

- The end result of this task is to provide a tool that will slit the canister walls so that fuel elements stuck in the canister can be removed.

3.2 Engineering Tasks

- The Engineering Testing Laboratory (ETL) will develop and test a prototype canister sliter.
- Evaluate existing slitter for usage or re-design.
- Develop fabrication and assembly drawings.
- Provide design calculations as required.
- Fabrication of the canister slitter.

- Transportation of the canister splitter to the K-Basin for additional testing if required.

3.3 Verification

- ICF KH Design Services will provide the design drawings and checking of the drawings.
- A test report documenting prototype test activities in the 305 building pool.
- Testing of the canister splitter will be witnessed by a representative of the K-Basin Engineering Project.

3.4 Installation Tasks

- Installation and testing of the canister splitter in the 305 building will be performed with ETL personnel.
- The canister splitter will be installed in the K-Basin by K-Basin Operations personnel.

4.0 DESIGN CRITERIA

4.1 Function

The slitting tool will mechanically cut through each canister barrel wall with two cuts 180 degrees apart. These cuts are intended to relieve the pressure between the fuel elements and the canister caused by fuel swelling and/or corrosion and allow the fuel elements to be easily removed from the canister.

4.2 Requirement

The slitting tool is to be capable of slitting the three different types of fuel storage canisters without contacting any of the fuel elements.

The tool will be powered by hydraulics, proportioned and balanced for ease of operation if manually assistance is required for operation. The hydraulic media shall be a water based hydraulic fluid or a mixture of demineralized water and glycol.

Based on prototype testing, it is presently considered advantageous to have the slitting tool be remotely operated rather than hand manipulated (float balanced) from the surface. Preliminary testing will take place in a pool located in the 305 Building. Additional testing may take place at the 100 KE Storage Basin.

4.3 Criteria

The canister slitter will satisfy the following design criteria.

- Designed equipment shall not be able to rise suddenly under normal operating conditions or cause contents of fuel canisters to raise toward the surface creating a hazard.
- The operation of the slitter shall not contribute to an increase in radiation exposure to the workers of greater than 50% over background rate, or an increase in contamination risk.
- The slitter shall be designed to slit the canisters at a minimum rate of 20 canisters per shift without damage to fuel elements.
- Operation of the slitter shall not violate the integrity of the basin or other equipment.
- It is recognized; however, that subsequent dumping of fuel canisters with oxidized fuel will inherently release particles to the basin water. Movement of equipment in the pool shall be slow enough to minimize turbulence of the water.
- The slitter design shall consider ease of decontamination for contact repair work.
- The canister slitter shall be designed to process a minimum of 1000 canisters in the basin.
- Projections on exterior components will be minimized. Components shall be designed to avoid filling with contaminated water. Debris traps will be avoided.
- Use of this equipment will not effect the function or integrity of any Safety Class component or system.
- Failure of this equipment will not compromise the safety of the operating personnel or process.

5.0 ORGANIZATION

Cognizant Organization:	ENGINEERING TESTING LABORATORY
Responsible Manager:	G.L. Neer
Responsible Engineer:	T.E. Griffin

6.0 SCHEDULE

This schedule is subject to revision if the scope work is changed.

<u>Activity</u>	<u>Duration</u>
Evaluate for Re-Design Requirements	3 weeks
Re-Design/Design Canister Splitter (Estimate 16 man weeks Design/Drafting)	8 weeks
Procure material/components	6 weeks
Fabricate or Modify Splitter	6 weeks
Install/Test 305 Building	3 weeks
Modifications and retesting of test item	3 weeks

TOTAL	29 weeks

7.0 COST ESTIMATE

This cost estimate is subject to revision if the scope of work is changed.

• Engineering/Mgmt:	200 hrs @ \$85/hr	=	17,000
• Meetings:	40 hrs @ \$85/hr	=	3,400
• Design:	8 shts @ 80 hrs/sht @ \$50/hr	=	32,000
• Fabrication/Material:		=	30,000
• Testing 305 building: Technician 80 hrs @ \$50/hr		=	4,000
• Miscellaneous materials		=	1,000

	Sub Total =		87,400
• Contingency @ 15% of \$87,400		=	13,110
			=====
	Total =		\$110,510

8.0 QUALITY ASSURANCE

- The slitting tool will be developed, designed, and fabricated with an approval designator of "Q". Use of this tool will not effect the function or integrity of any safety related component or system. Failure of this tool will not effect the release of radiation to the environment or inhibit the detection of such releases. Nor will a failure compromise the safety of the operating personnel.