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Sheet 4

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1	1	Cog. Eng. CC Pitkoff	<i>Carol C. Pitkoff</i>	2/2/95							
1	1	Cog. Mgr. JR Frederickson	<i>J.R. Frederickson</i>	2/2/95							
1	1	QA RE Lacey	<i>R. E. Lacey</i>	2/2/95	ST-51						
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MASTER

## RELEASE AUTHORIZATION

Document Number: WHC-SD-SNF-TRP-002, REV 0


Document Title: Gas/Liquid Sampler for Closed Canisters in KW Basin  
- Test Report

Release Date: 2/2/95

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

**APPROVED FOR PUBLIC RELEASE**

WHC Information Release Administration Specialist:

  
Kara M. Broz

February 2, 1995

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**SUPPORTING DOCUMENT**

1. Total Pages **573**

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Gas/Liquid Sampler for Closed Canisters in KW Basin - *Test Report*

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WHC-SD-SNF-TRP-002

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KW Basin  
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Closed Canisters

6. Author

Name: CC Pitkoff

*CC Pitkoff* 2/2/95  
Signature

Organization/Charge Code 2C110/LD11C

7. Abstract

Test report for the gas/liquid sampler designed and developed for sampling closed canisters in the KW Basin.

8. RELEASE STAMP

OFFICIAL RELEASE  
BY WHC  
DATE FEB 02 1995  
*2/2/95*

**GAS/LIQUID SAMPLER FOR  
CLOSED CANISTERS IN KW-BASIN  
TEST REPORT**

WHC-SD-SNF-TRP-002 Rev 0  
January 23, 1995

**MASTER**

Gas/Liquid Sampler For  
Closed Canisters In KW Basin  
Test Report

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## 1.0 INTRODUCTION

K-Basins Engineering Projects, Process Systems completed testing of the gas/liquid sampler in the 305 Facility. Spent Nuclear Fuel (SNF) Characterization provide the funding for the gas/liquid sampler. SNF Quality Assurance, Characterization, Process Systems and Operations witnessed testing of the full size sampler.

Testing followed the procedures in WHC-SD-SNF-TP-008 Rev. 1 and Rev 0 Gas/Liquid Sampling for Closed Canisters in KW-Basin-Test Plan. This test report presents both functional and acceptance testing results

## 2.0 TEST METHOD AND TEST EQUIPMENT

The sampler uses a 15 milliliter vacutainer to take a sample of either liquid or gas from a closed canister, Mark I or II lid. The sample is taken at the bottom of the sampler, with the vacutainer driving up and down an acme screw. The sampler fits over a needle valve on the canister lid. The valve is opened using a handle at the top of the sampler. The system uses a standard 23 gauge medical needle that is activated by an air cylinder. The needle punctures the vacutaine and the vacuum pulls the sample into the vial after the valve is opened. The rubber top is self sealing and holds the sample inside the vacutainer. See attached drawing, Attachment 2.

The full size sampler was fabricated and tested in November 1994. After the initial testing was completed modifications were made from comments received. The vacutainer holder was modified to add protection to the glass vacutainer. The cylinder was changed from a single stroke, double action to a spring return, double action cylinder. The sampler is approximately 18 feet tall and weighs approximately 65 pounds. The vacutainer transport system utilizes an acme screw and is pneumatically driven. The sampler has a manual valve opener with a handle that is removable and flush and the compressed air lines are detachable.

Samples from a filled canister were taken in a dry environment first before the sampler was placed in the cold test basin. The dye used was red to visually determine if a liquid sample had been retrieved from the canister. The gas sample, nitrogen purged thorough the gas space on the canister, was determine visually and with an oxygen analyzer. The gas samples collect approximately 1 ml of

liquid, this is from the purge of deionized water that remains in the needle and needle chamber.

The first test was done in a dry environment to determine if everything was functioning and determine the time needed to run the vacutainer up and down the acme screw. Additional equipment or tools that would be required to move the sampler in the basin and set it on the canister to be sampled were discussed and sketched out. The sampler was moved to the cold test basin and functional and acceptance testing were completed.

### 3.0 TEST RESULTS

The sampler performed to the criteria outlined in the test plan. Attachment 1 is the data sheets from testing. All test information taken at the time of testing is recorded in a bound notebook that is kept in the master file located in the system engineers office, A-138/MO285/200E.

Ten gas samples and ten liquid samples were collected during the testing. The sampler performed as required for all twenty samples. The sampler sealed to the canister valve, pulled a sample, and resealed the canister every test. Quality Control witnessed two gas samples and two liquid samples. K-Basin Operations, SNF Characterization, and SNF Process Systems witnessed the final collection of a gas and a liquid sample.

### 4.0 CONCLUSIONS AND RECOMMENDATIONS

The sampler operated well and met all the criteria in the test plan. Sampler mated up to the closed canister valves and formed a seal. Samples of both gas and liquid were taken and the system was flushed with out any problems. The sampler closed the valves and was easy to remove using the crane system. The design was determined to be technically good.

Comments received from the operations personnel were used to make changes to the design to make the sampler easier to operate. The original sampler, Sampler I, will be operated in the Weasel Pit at KW Basin. A table will hold the canister 42 inches off the basin floor. This allows operation of the sampler to be done approximately 12 inches below the guard rail. The battery powered screw driver was changed out to a pneumatic screw driver.

The next sampler, Sampler II will have these additional changes. The sampler will be built to approximately 21' 4"

tall and canister will rest on the basin floor. Operations will be at the top of the guard rail. The travel time for the vacutainer to get from the top to the bottom of the sampler should be shortened using a higher pitched thread. The acme screw will be changed out for a ball screw, this should provide a smoother ride up and down the screw for the vacutainer. All parts on Sampler II will be stainless steel.

#### 5.0 DISPOSITION OF TEST ITEM

The gas/liquid sampler has completed acceptance testing and will be transferred to the KW Basin for uses.

## 6.0 REFERENCES

### Drawings

H-1-80392 Rev 0 Sheets 1,2, and 3 Fuel Canister Sampler I  
H-1-80402 Rev 0 Assembly vacutainer and Sleeve  
H-1-80398 Rev 0 Fuel Canister Sampler Bail

**7.0 Attachment 1**

Attached are copies of the procedure/data sheets for both functional and acceptance testing.

operations in the KW Basin.

Test data will be used from the last set of testing to qualify the equipment for the KW Basin. Quality Assurance, Spent Nuclear Fuel Safety, Engineering Projects, K Basins Operations, and Characterization will witness the final testing for both gas and liquid.

#### 9.0 Personnel Requirements

Testing will be completed by the systems engineer and technicians in the 305 facility. Pending the determination of the documentation required to hot test the equipment in the KW Basin Operations personnel will be trained in the 305 facility on the equipment prior to movement out to the basin.

#### 10.0 Witnesses

Full system testing will be completed in the cold test facility and will require scheduling so as not to interfere with other cold test equipment testing. When the schedule has been set, a time will be determined to allow test observation. All parties who will be involved with the final product will be given the chance to observe.

The final testing for qualification to operate in the KW Basin, Quality Assurance, Spent Nuclear Fuel Safety, K Basins Operations, and Characterization will be present.

#### 11.0 Procedure

Before testing can start a canister must be filled with water within approximately 1.5 inches from the top. A Mark two canister lid will be sealed to the canister and nitrogen blown through the vapor space. The full system test equipment will be tested in the cold test basin with the canister barrels prepared above the water.

The following is the step by step procedure for running the sampling equipment.

1. Attach sampler to the crane/trolley.
2. Using the crane or trolley move sampler from the sample tool holder to over the canister and lower until the sampler fits over a valve and comes to a stop (center for liquid, side for gas) on the top of the closed canisters. Do not remove

from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed DL/AL  
Operator felt the sampler fit over the canister needle valve and come to a stop.

3. Attach flush line and compressed air lines.

\*\*\* At the start of each days testing, run the flush water through for two minutes.

4. Attach pneumatic drive drill to top of vacutainer transport.

5. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.

6. Lower the vacutainer down to the bottom of the sampler.

7. Attach handle to top of canister valve operator.

\*Hold\* DL/AL Operator can feel valve with handle in a clock-wise motion

8. Turn canister valve operator handle counter-clock wise one full turn.

9. Open compressed air valve, by turning the air handle 1/4 turn counter-clock wise, to the cylinder to initiate needle injection into the vacutainer.

10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn clockwise. This stops the flow of compressed air and releases the pressure of the air in the line.

11. Close canister valve operator, turn clockwise one full turn, and valve is seated.

12. Return vacutainer to top of basin using the pneumatic drive drill.

13. Rinse the outside of the vacutainer with deionized water and remove using tongs.

\*Hold\* Visual inspection DL/AL  
Verify-Gas sample less than 1 ml of liquid in vacutainer and when sample of gas passed through the oxygen analyzer reads

4

2

below 21% oxygen. Liquid sample color of dye placed in canister.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
15. Remove sampler from top of canister using the trolley/crane.

**\*Hold\*** Visual no colored water or air bubbles escaping from valve on closed canister. Y2 12 3

**NOTE:** If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line
17. Remove the compressed air lines
18. Remove handle from canister valve operator.
19. Remove pneumatic drill from vacutainer transport.
20. Attach sampler to storage rack attached to the basin safety rails.

#### QA Verification

Quality Assurance has witnessed this test and agrees that the sampler operates as required in this test procedure and the Test Plan WHC-SD-SNF-TP-008.

#### 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and disposed of.

#### 13.0 Data Sheets

The Test procedure with the hold points will be used as data sheets. All data sheets will be kept by the system engineer with a duplicate copy placed in the project files for SNF.

Test report will have all data sheet copies attached from both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

Signature Sheet for final testing of Gas/Liquid Sampler

The sample equipment has been tested and meets the objectives outlined in this test procedures.

*Michael Hill* 1/20/95  
Systems Engineer Date

*J.R. Fuderer* 1/20/95  
Systems Engineering Management Date

*D.J. Hill* 1/20/95  
SNF Characterization Date

*A. Humphreys* 1/20/95  
K Basins Operations Date  
\* USING 305 family trust

*N.A.*   
SNF Safety Date

*R.C. King* 1/20/95  
SNF Quality Assurance Date

and liquid.

### 9.0 Personnel Requirements

Testing will be completed by the systems engineer and technicians in the 305 facility. Pending the determination of the documentation required to hot test the equipment in the KW Basin Operations personnel will be trained in the 305 facility on the equipment prior to movement out to the basin.

### 10.0 Witnesses

Full size testing will be completed in the cold test facility and will require scheduling so as not to interfere with other cold test equipment testing. When the schedule has been set, a time will be determined to allow test observation. All parties who will be involved with the final product will be given the chance to observe.

The final testing for qualification to operate in the KW Basin, Quality Assurance, Spent Nuclear Fuel Safety, K Basins Operations, and Characterization will be present.

### 11.0 Procedure

Before testing can start a canister must be filled with water within approximately 1.5 inches from the top. A Mark two canister lid will be sealed to the canister and nitrogen blown through the vapor space. The full size test equipment will be tested in the cold test basin.

The following is the step by step procedure for running the sampling equipment.

1. Attach sampler to the crane/trolley.
2. Attach pneumatic drill to top of vacutainer transport.
3. Attach flush line and compressed air lines.
4. Using the crane or trolley move sampler from the sample tool holder to over the canister and lower until the sampler fits over a valve (center for liquid, side for gas) on the top of the closed canisters. Do not remove from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed JK/SK/SK

5. Attach handle to top of canister valve operator.

\*Hold\* Operator can feel valve with handle SSC/SC/SC

6. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.

7. Lower the vacutainer all the way down to the bottom of the sampler.

**For a Liquid sample**

8. Turn canister valve operator handle clock wise one full turn.

9. Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.

10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.

11. Close canister valve operator, turn counter-clockwise one full turn.

**For a gas sample**

8A Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.

9A. Turn canister valve operator handle clockwise one full turn.

10A. Wait 30 seconds and close canister valve operator by turning counter-clockwise one full turn.

11A. Close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.

12. Return vacutainer to top of basin.

\*Hold\* Visual inspection \_\_\_\_\_  
Note-gas sample less than 1 ml of liquid in vacutainer  
liquid sample color of dye placed in canister.

13. Rinse the outside of the vacutainer with deionized water and

4

7

remove using tongs.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
15. Remove sampler from top of canister on basin floor using the trolley/crane.

**\*Hold\*** Visual no colored water or air bubbles escaping from valve on closed canister. 5/15/05

**NOTE:** If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line, remove the compressed air lines, and remove handle from canister valve operator. Remove pneumatic drill from vacutainer transport.
17. Attach sampler to storage rack attached to the basin safety rails.

#### 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and deposited of.

#### 13.0 Data Sheets

The Test procedure with the hold points will be used as data sheets. All data sheets will be kept by the system engineer with a duplicate copy placed in the project files for SNF.

Test report will have all data sheet copies attached from both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

and liquid.

### 9.0 Personnel Requirements

Testing will be completed by the systems engineer and technicians in the 305 facility. Pending the determination of the documentation required to hot test the equipment in the KW Basin Operations personnel will be trained in the 305 facility on the equipment prior to movement out to the basin.

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Full size testing will be completed in the cold test facility and will require scheduling so as not to interfere with other cold test equipment testing. When the schedule has been set, a time will be determined to allow test observation. All parties who will be involved with the final product will be given the chance to observe.

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1. Attach sampler to the crane/trolley.
2. Attach pneumatic drill to top of vacutainer transport.
3. Attach flush line and compressed air lines.
4. Using the crane or trolley move sampler from the sample tool holder to over the canister and lower until the sampler fits over a valve (center for liquid, side for gas) on the top of the closed canisters. Do not remove from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed

SSS / CC / CC / R / R

5. Attach handle to top of canister valve operator.

\*Hold\* Operator can feel valve with handle 00/00/5/00/00/

6. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.

7. Lower the vacutainer all the way down to the bottom of the sampler.

~~For a Liquid sample~~

8. Turn canister valve operator handle <sup>clockwise</sup> ~~clock~~ wise one full turn.

9. Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.

10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.

11. Close canister valve operator, turn ~~counter~~ clockwise one full turn.

~~For a gas sample~~

~~8A. Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.~~

~~9A. Turn canister valve operator handle clockwise one full turn.~~

~~10A. Wait 30 seconds and close canister valve operator by turning counter-clockwise one full turn.~~

~~11A. Close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.~~

12. Return vacutainer to top of basin.

\*Hold\* Visual inspection 00/00/00/00/00/  
Note-gas sample less than 1 ml of liquid in vacutainer  
liquid sample color of dye placed in canister.

13. Rinse the outside of the vacutainer with deionized water and

A

10

Remove using tongs.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
15. Remove sampler from top of canister on basin floor using the trolley/crane.

**\*Hold\*** Visual no colored water or air bubbles escaping from valve on closed canister. 305 KCP / RAD / 305 / CUP

**NOTE:** If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line, remove the compressed air lines, and remove handle from canister valve operator. Remove pneumatic drill from vacutainer transport.
17. Attach sampler to storage rack attached to the basin safety rails.

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Full size testing will be completed in the cold test facility and will require scheduling so as not to interfere with other cold test equipment testing. When the schedule has been set, a time will be determined to allow test observation. All parties who will be involved with the final product will be given the chance to observe.

The final testing for qualification to operate in the KW Basin, Quality Assurance, Spent Nuclear Fuel Safety, K Basins Operations, and Characterization will be present.

### 11.0 Procedure

Before testing can start a canister must be filled with water within approximately 1.5 inches from the top. A Mark two canister lid will be sealed to the canister and nitrogen blown through the vapor space. The full size test equipment will be tested in the cold test basin.

The following is the step by step procedure for running the sampling equipment.

1. Attach sampler to the crane/trolley.
2. Attach pneumatic drill to top of vacutainer transport.
3. Attach flush line and compressed air lines. *- Set compressor to 90 PSI*
4. Using the crane or trolley move sampler from the sample tool holder to over the canister and lower until the sampler fits over a valve (center for liquid, side for gas) on the top of the closed canisters. Do not remove from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed *OTMell 1/13/95*

*Do this after secure to canister*

5. Attach handle to top of canister valve operator.

**\*Hold\*** Operator can feel valve with handle *2/22/11*

6. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.

7. Lower the vacutainer all the way down to the bottom of the sampler. *Button - go down.*

*more CRP*  
For a Liquid sample

8. Turn canister valve operator handle clock wise one full turn. *counter-*

9. Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.

10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.

11. Close canister valve operator, turn ~~counter~~-clockwise one full turn. *CRP*

For a gas sample

~~8A. Open compressed air, by turning the air valve 1/4 turn clockwise, to the cylinder to initiate needle injection into the vacutainer.~~

~~9A. Turn canister valve operator handle clockwise one full turn.~~

~~10A. Wait 30 seconds and close canister valve operator by turning counter-clockwise one full turn.~~

~~11A. Close cylinder by turning the air valve 1/4 turn counter-clockwise. This stops the flow of compressed air and evacuate the line.~~

12. Return vacutainer to top of basin.

**\*Hold\*** Visual inspection *Open / CRP / CRP*  
Note-gas sample less than 1/4 ml of liquid in vacutainer  
liquid sample color of dye placed in canister.

13. Rinse the outside of the vacutainer with deionized water and

*mark handle to locate 1 Full turn*

remove using tongs.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
15. Remove sampler from top of canister on basin floor using the trolley/crane.

*30 seconds*  
**\*Hold\*** Visual no colored water or air bubbles escaping from valve on closed canister. OP / [unclear] / CR

**NOTE:** If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line, remove the compressed air lines, and remove handle from canister valve operator. Remove pneumatic drill from vacutainer transport.
17. Attach sampler to storage rack attached to the basin safety rails..

## 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and deposited of.

## 13.0 Data Sheets

The Test procedure with the hold points will be used as data sheets. All data sheets will be kept by the system engineer with a duplicate copy placed in the project files for SNF.

Test report will have all data sheet copies attached from both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

\*Hold\* Seal has been formed Pat Anderson  
Operator felt the sampler fit over the canister needle valve. *come to a stop.*

3. Attach flush line and compressed air lines.  
*- FLUSH FOR 2 MINUTES*
4. Attach pneumatic drive drill to top of vacutainer transport.
6. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.
7. Lower the vacutainer down to the bottom of the sampler.
- ? 5. Attach handle to top of canister valve operator.

\*Hold\* Operator can feel valve with handle *in a clockwise motion.*  
Pat Anderson

8. Turn canister valve operator handle counter-clock wise one full turn.
9. Open compressed air, *valve* by turning the ~~air valve~~ *handle* 1/4 turn counter-clock wise, to the cylinder to initiate needle injection into the vacutainer.
10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn clockwise. This stops the flow of compressed air and releases the pressure of the air in the line.
11. Close canister valve operator, turn clockwise one full turn, and valve is seated.
12. Return vacutainer to top of basin using the pneumatic drive drill.
13. Rinse the outside of the vacutainer with deionized water and remove using tongs.

\*Hold\* Visual inspection Pat Anderson  
Verify-Gas sample less than 1 ml of liquid in vacutainer and when sample of gas passed through the oxygen analyzer reads below 21% oxygen. Liquid sample color of dye placed in canister.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.

✓

15. Remove sampler from top of canister using the trolley/crane.

\*Hold\* Visual no colored water or air bubbles escaping from valve on closed canister. *[Signature]*

NOTE: If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line

17. Remove the compressed air lines

18. Remove handle from canister valve operator.

19. Remove pneumatic drill from vacutainer transport.

20. Attach sampler to storage rack attached to the basin safety rails.

QA Verification *[Signature]* 1-18-95

Quality Assurance has witnessed this test and agrees that the sampler operates as required in this test procedure and the Test Plan WHC-SD-SNF-TP-???.

## 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and disposed of.

## 13.0 Data Sheets

The Test procedure with the hold points will be used as data sheets. All data sheets will be kept by the system engineer with a duplicate copy placed in the project files for SNF.

Test report will have all data sheet copies attached from

both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

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both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

and liquid.

### 9.0 Personnel Requirements

Testing will be completed by the systems engineer and technicians in the 305 facility. Pending the determination of the documentation required to hot test the equipment in the KW Basin Operations personnel will be trained in the 305 facility on the equipment prior to movement out to the basin.

### 10.0 Witnesses

Full size testing will be completed in the cold test facility and will require scheduling so as not to interfere with other cold test equipment testing. When the schedule has been set, a time will be determined to allow test observation. All parties who will be involved with the final product will be given the chance to observe.

The final testing for qualification to operate in the KW Basin, Quality Assurance, Spent Nuclear Fuel Safety, K Basins Operations, and Characterization will be present.

### 11.0 Procedure

Before testing can start a canister must be filled with water within approximately 1.5 inches from the top. A Mark two canister lid will be sealed to the canister and nitrogen blown through the vapor space. The full size test equipment will be tested in the cold test basin.

The following is the step by step procedure for running the sampling equipment.

1. Attach sampler to the crane/trolley.
2. Attach pneumatic drill to top of vacutainer transport.
3. Attach flush line and compressed air lines.
4. Using the crane or trolley move sampler from the sample tool holder to over the canister and lower until the sampler fits over a valve (center for liquid, side for gas) on the top of the closed canisters. Do not remove from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed AP/DP



remove using tongs.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
15. Remove sampler from top of canister on basin floor using the trolley/crane.

**\*Hold\*** Visual no colored water or air bubbles escaping from valve on closed canister. W2/EC2/CP

**NOTE:** If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line, remove the compressed air lines, and remove handle from canister valve operator. Remove pneumatic drill from vacutainer transport.
17. Attach sampler to storage rack attached to the basin safety rails.

## 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and deposited of.

## 13.0 Data Sheets

The Test procedure with the hold points will be used as data sheets. All data sheets will be kept by the system engineer with a duplicate copy placed in the project files for SNF.

Test report will have all data sheet copies attached from both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

from the crane or trolley, this is used to help maintain the sampler in a vertical position over the canister.

\*Hold\* Seal has been formed WV/10/10/10  
Operator felt the sampler fit over the canister needle valve and come to a stop.

3. Attach flush line and compressed air lines.

\*\*\* At the start of each days testing, run the flush water through for two minutes.

4. Attach pneumatic drive drill to top of vacutainer transport.

5. Insert the vacutainer into the tube holder on vacutainer transport being sure that the peg is set into the hole.

6. Lower the vacutainer down to the bottom of the sampler.

7. Attach handle to top of canister valve operator.

\*Hold\* Operator can feel valve with handle in a clock-wise motion  
WV/10/10/10

8. Turn canister valve operator handle counter-clock wise one full turn.

9. Open compressed air valve, by turning the air handle 1/4 turn counter-clock wise, to the cylinder to initiate needle injection into the vacutainer.

10. Wait 30 seconds and close cylinder by turning the air valve 1/4 turn clockwise. This stops the flow of compressed air and releases the pressure of the air in the line.

11. Close canister valve operator, turn clockwise one full turn, and valve is seated.

12. Return vacutainer to top of basin using the pneumatic drive drill.

13. Rinse the outside of the vacutainer with deionized water and remove using tongs.

\*Hold\* Visual inspection WV/10/10/10  
Verify-Gas sample less than 1 ml of liquid in vacutainer and when sample of gas passed through the oxygen analyzer reads

below 21% oxygen. Liquid sample color of dye placed in canister.

14. Pump deionized water through the flush line to flush the injection housing for 1 minute using the Masterflex pump.
  15. Remove sampler from top of canister using the trolley/crane.
- \*Hold\* Visual no colored ~~water or~~ air bubbles escaping from valve on closed canister. ~~1/1/11~~

NOTE: If canister valve leaks (air bubbles) replace sampler and attach handle to canister valve operator. Turn counter clockwise to tighten and remove sampler. Repeat until air bubble stop releasing from valve.

Verify sample was taken by visual if liquid sample taken or running the gas sample through the oxygen analyzer. Return to steps 4 through 15 for another sample.

16. When sampling series is complete, remove the flush line
17. Remove the compressed air lines
18. Remove handle from canister valve operator.
19. Remove pneumatic drill from vacutainer transport.
20. Attach sampler to storage rack attached to the basin safety rails.

#### QA Verification

Quality Assurance has witnessed this test and agrees that the sampler operates as required in this test procedure and the Test Plan WHC-SD-SNF-TP-008.

#### 12.0 Disposition of Test Item

Acceptance testing will determine the final disposition of the sampler. If the sampler is accepted out in the K Basin, that will be its final destination. If the sampler does not pass testing or a new one is requested for the KW Basin, the 17' 9" sampler will be used in the 305 facility for training. Once training is complete the equipment will be dismantled and disposed of.

#### 13.0 Data Sheets

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Test report will have all data sheet copies attached from both bench top testing, full size testing and qualify testing completed in the cold test facility at 305 Building.

