Request for an Expression of Interest
Flour Paducah Deactivation Project
Cryofluorane (R-114) Refrigerant

The requested work is in support of Fluor Federal Services, Inc., Paducah Deactivation Project (FPDP), acting under Task Order DE-DT0007774 with the U.S. Department of Energy (DOE).

FPDP, a contractor of DOE is seeking Expressions of Interest (EOIs) solely for information and planning of the path forward for a possible upcoming project.

In 1988, the United States ratified the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol). By ratifying the Montreal Protocol and its subsequent adjustments and amendments, the United States has committed to a collaborative, international effort to regulate and phase out ozone-depleting substances (ODSs). The U.S. Environmental Protective Agency (EPA) regulations issued under Sections 601-607 of the Clean Air Act (CAA) phase out the production and import of ODS, consistent with the schedules developed under the Montreal Protocol.

This international agreement led to an amendment of the CAA in 1990 to include Title VI, Stratospheric Ozone Protection. Title VI authorizes EPA to manage the phase-out of ODSs. Among the regulations established by EPA are requirements for the safe handling of ODSs and prohibitions on the known venting or release of ODSs into the atmosphere. Therefore, as ODSs are phased out, surplus ODSs must be stored, reused (after recycling or reclamation), or destroyed. In concert with this initiative and regulation the intent of this EOI is to identify sources with potential methods and/or technologies for the resale, reuse, recycle, or conversion of Cryofluorane (R-114), a Class 1, Group 1, substance as listed at CAA Section 602(a).

Those methods and/or technologies may include, but are not limited to, the resale, reuse, recycle, or conversion of the refrigerant. FPDP will provide applicable information on the condition of the refrigerant to the extent interested parties require such information in gaining a general understanding of the scope of work. This EOI is not an Invitation for Bid (IFB) or Request for Proposal (RFP) and does not constitute any commitment for future solicitation. All costs associated with providing information in response to this EOI shall be the sole responsibility of the interested party.

All information received in response to this EOI will be managed as procurement sensitive. Additionally, information marked PROPRIETARY will be handled accordingly. FPDP will share and discuss with DOE our evaluation of all EOIs. DOE may participate in any discussions with responding parties.

Background

Paducah Gaseous Diffusion Plant (PGDP) is located in Paducah, Kentucky and situated on approximately 3,420 acres, 3.5 miles south of the Ohio River. Owned by DOE, the plant was constructed in the 1950's for the purpose of enriching uranium. This operation ceased in 2013. Enrichment was accomplished by using gaseous diffusion technology, in which uranium hexafluoride (UF_6) passed through a parallel cascade that included many stages. This process of compressing the gas created substantial quantities of heat. In turn, through an intricate three-stage process, R-114 was used to remove the heat from the

process gas. As a result, approximately 8.3 million lbs. of R-114 remain at the PGDP site located in inoperable systems and railcars. The mission of FPDP and DOE is to identify a safe, low-cost method of handling the residual R-114.

Scope of Work

FPDP has a need for the resale, reuse, recycle, or conversion of approximately 8.3 million lbs. of R-114 refrigerant. Information provided through EOIs will assist FPDP in identifying the best path forward. The Clean Air Act 40 CFR 82.152 and 82.3 provides definitions that should be referenced when providing responses.

Responses should be prepared, in detail, specifically addressing one or more of the following:

1. Recycling of R-114 inventories located at PGDP; please provide details of demonstrated existing technologies or planned process for this method.

2. Resale or reuse of R-114 inventories located at PGDP; please provide details of existing demonstrated existing technologies or planned process for this method.

3. Conversion of R-114 inventories located at PGDP; please provide details of existing demonstrated existing technologies or planned process for this method.

4. Destruction of R-114 inventories located at PGDP; please provide details of existing demonstrated existing technologies or planned process for this method.

5. Other proposed methods; please provide details of demonstrated existing technologies or planned process for proposed method.

Summary of Minimal Requirements for Interested Parties

The following is a list of minimal requirements. The inclusion of this list is not exclusive, but represents the significant requirements known at this time.

- Any purchase, recycle, transfer, conversion and/or otherwise proposed methods/technologies of R-114 must be in compliance with all applicable state and federal laws and regulations. This would include general prohibition & restrictions imposed on R-114 as a Class 1, Group 1 substance; see 40 CFR 82 Subpart A.

- Interested parties shall properly treat and dispose of all byproduct, residual, and secondary waste in compliance with all applicable state and federal regulations.

- Interested parties shall provide all essential personnel, support services, facilities, materials, equipment, processes, licenses and permits necessary to transport, receive, store, recycle, convert, or perform any/all proposed approaches and maintain compliance with state and federal

regulations. This may also include waste profile development and shipping documentation support.

- Interested parties shall provide U.S. Department of Transportation (DOT) compliant tanker trucks, railcars, and any other containerization devices needed to transport the R-114.

Response Requirements and Instructions:
Interested parties are invited to submit an EOI for the scope of work. At minimum, the following should be submitted:

Capability Statement containing administrative information

1. Section I –Administrative Information
    a. Company's name, business street address, city, state, zip code, and website (if applicable)
    b. Business type (i.e., large, small, disadvantaged, 8(a) certified small disadvantaged, HUB Zone small business, woman-owned small business, veteran owned, or other type not noted) based on North American Industry Classification System (NAICS) code 541512, Computer Systems Design Services.
    c. Commercial And Government Entity (CAGE) Code
    d. Designated point of contact's name, title, mailing address, overnight address (if different from mailing address), phone number, fax number, and email
2. Section II (including any additional pertinent information) –Company Capabilities
    a. Describe briefly any existing equipment or facilities your company has to complete this scope of work. If equipment or facilities are nonexistent, describe what your company would need to acquire to complete this scope.
    b. Describe your company's capabilities and experience in generating technical data, calculations, engineering drawings, and manuals to support this project.
    c. Describe any past experience your company has on projects with similar complexity. Include contract numbers, a brief description of the work performed, period performance, agency/organization supported, and individual point of contact (Contracting Officer or Program Manager). Quantities, customer, and date of delivery and period of performance should be included as well.
    d. Describe any capabilities your company had, has planned, or would need to initiate.
    Please provide information related to:
        i. Quality Assurance Program (NQA-1, ISO 9000, QS-9000, EIA-599, or otherwise) and certifications
        ii. Test/Experimental Capabilities
        iii. Schedule to Complete
        iv. Cost to Complete
3. Section III – Specific Interest in R-114
    a. Describe the method(s) you would utilize to deal with the R-114 (i.e. purchase, recycle, conversion, or other proposed method.
    b. Attached are sample results for a portion of the R-114 inventory. FPDP will perform full sample analysis of all R-114 inventories at Paducah. This analysis will be performed in time

to support solicitation of contracts with possible vendors identified as a result of the EOI responses. Describe purity or other sample requirements needed to support your method.

c. What quantity would your company have interest in for the method described?
d. What contract type do you consider to be appropriate for this kind of procurement?
e. Identify any requirements that need to be completed prior to the proposed method of R-114. Include any research, design, construction, investment, regulatory or permitting needed, as well as items to be provided by DOE.
f. Would a demonstration phase or other phased approach be used?
g. What is your estimated time for completion of this scope?
h. What proposed technologies would you utilize and provide historical examples of these applications.
i. Could the proposed technologies address multiple fluorocarbon compounds?
j. How would you propose to minimize waste streams?
k. What is the potential for the technical solution to have a wider application in the area of CFC mitigation?

4. Section IV – Additional Information
   a. Would your company be interested in participation in this solicitation to award? Please provide explanation for your response.
   b. Provide any other relevant information.
   c. Would you be available for interviews following the review process of EOI submittals? DOE may observe and take part in these discussions.

All questions regarding this EOI shall be submitted by email to the designated FPDP Procurement Department Point of Contact. Verbal questions will NOT be accepted.

Responses must be submitted electronically to the E-mail address below in Microsoft Word for Office 2000-compatible format. Responses are due no later than **June 12, 2015, 9:00 A.M. CST.** PROPRIETARY information, if any, should be minimized and MUST BE CLEARLY MARKED.

Designated FPDP Point of Contact for this EOI:

Ron Casper
Contracts Administrator, Principal
Fluor Federal Services, Inc., Paducah Deactivation Project
ron.casper@ffspaducah.com
270.441.5969

08/08/06 13:58 Page: 3
33E060720B Portsmouth Analytical Laboratory X062080015
Official Report

Customer Smpl Id: 33E060720B
Project:X-20-DOE DLA001
Subproj Analysis:LIQUID
Customer:N J SMITH

Matrix: LIQUID
Protocol: NONE
Status: APPROVED
Location:

Sampled: 07/20/06 13:00:00
Received: 07/27/06 08:58:08
Needed: 08/03/06 23:59:00
Approved: 08/02/06 09:55:38

COC#:
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213019 Test:ALPHA-AM-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/28/06 15:52:53 S J JAMES Approver: C D GOOD 08/01/06 14:47

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Americium-241	0.000E+00	0.000E+00	pCi/g	U	7.550E-03	1.227E-02	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213022 Test:ALPHA-NP-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/31/06 11:14:46 S J JAMES Approver: C D GOOD 08/01/06 14:59

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Neptunium-237	-1.172E-03	1.748E-03	pCi/g	U	1.788E-03	4.696E-03	
Plutonium-238	1.170E-03	1.351E-03	pCi/g	U	1.364E-03	3.057E-03	
Plutonium-239/240	1.169E-06	1.910E-03	pCi/g	U	1.910E-03	4.197E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06214014 Test:ALPHA-TH-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:08/01/06 12:58:53 S J JAMES Approver: C D GOOD 08/02/06 09:54

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Thorium-228	1.437E-03	1.659E-03	pCi/g	U	1.671E-03	1.298E-03	
Thorium-230	2.877E-03	2.712E-03	pCi/g	U	2.741E-03	3.527E-03	
Thorium-232	0.000E+00	0.000E+00	pCi/g	U	7.700E-04	1.297E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213029 Test:ALPHA-U-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/31/06 17:16:34 S J JAMES Approver: C D GOOD 08/01/06 14:37

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium-233/234	-7.319E-04	2.543E-03	pCi/g	U	2.544E-03	5.511E-03	
Uranium-235	0.000E+00	0.000E+00	pCi/g	U	9.026E-04	1.228E-03	
Uranium-236	0.000E+00	0.000E+00	pCi/g	U	8.105E-04	1.102E-03	
Uranium-238	1.466E-03	1.466E-03	pCi/g	U	1.477E-03	9.932E-04	

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33W060719A

Portsmouth Analytical Laboratory
Revised Report REV 01

X062080014

Customer Smpl Id: 33W060719A
Project:X-20-DOE DLA001
Subproj Analyses:LIQUID
Customer:N J SMITH

Matrix: LIQUID
Protocol: NONE
Status: APPROVED
Location:

Sampled: 07/19/06 13:00:00
Received: 07/27/06 08:58:08
Needed: 08/03/06 23:59:00
Approved: 08/02/06 13:39:57

COC#:
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213019 Test:ALPHA-AM-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/28/06 15:52:43 S J JAMES Approver: C D GOOD 08/01/06 14:47

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Americium-241	9.310E-03	1.861E-02	pCi/g	U		1.864E-02	3.423E-02	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213022 Test:ALPHA-NP-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/31/06 11:14:09 S J JAMES Approver: C D GOOD 08/01/06 14:59

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Neptunium-237	1.432E-03	2.523E-03	pCi/g	U		2.534E-03	4.427E-03	
Plutonium-238	4.769E-04	2.126E-03	pCi/g	U		2.127E-03	4.414E-03	
Plutonium-239/240	9.515E-04	1.902E-03	pCi/g	U		1.908E-03	3.499E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06214014 Test:ALPHA-TH-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:08/01/06 12:58:43 S J JAMES Approver: C D GOOD 08/02/06 09:54

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Thorium-228	-4.716E-04	9.432E-04	pCi/g	U		9.454E-04	3.472E-03	
Thorium-230	2.836E-03	2.988E-03	pCi/g	U		3.013E-03	4.386E-03	
Thorium-232	4.721E-04	1.633E-03	pCi/g	U		1.635E-03	3.470E-03	

Analy Meth:PORTS-XP4-TS-RL7505 QC Batch:QC06208034 Test:RAD-PREP Rpt Basis:Not Corrected Date Approved
Prep Meth: Analyzed:07/27/06 13:00:00 R M BALL Approver: R M BALL 07/27/06 13:12

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06209031 Test:TC99-ACT-LS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/27/06 15:00:00 R M BALL Approver: C D GOOD 07/31/06 16:48

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Technetium-99	9.64E-03	6.48E-02	pCi/g	U		6.48E-02	1.09E-01	

EPA Qualifiers:
U - Indicates analyte/nuclide was analyzed for, but not detected.

An asterisk (*) beside a Cust Smpl Id, Test, Analyte Id, Aliquot or TIC CAS Id indicates a modification after re-open.

USEC PORTS Analytical Lab
P.O. Box 628 Piketon OH 45661 740-897-5702
Lab Director: Deborah K. Perez

***** END OF REPORT *****

Portsmouth Analytical Laboratory
Official Report

Analy Meth:PORTS-XP4-TS-RL7505	QC Batch:QC06208034 Test:RAD-PREP	Rpt Basis:Not Corrected	Date Approved
Prep Meth:	Analyzed:07/27/06 13:00:00 R M BALL	Approver: R M BALL	07/27/06 13:12

Analy Meth:PORTS-XP4-TS-RL7510	QC Batch:QC06209031 Test:TC99-ACT-LS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/27/06 15:00:00 R M BALL	Approver: C D GOOD	07/31/06 16:48

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	-3.71E-03	6.40E-02	pCi/g	U	6.40E-02	1.13E-01	

Analy Meth:PORTS-XP4-TS-RL7510	QC Batch:QC06213038 Test:TOTAL-U-AS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/31/06 00:00:00 S J JAMES	Approver: C D GOOD	08/01/06 14:39

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	4.362E-03		ug/g	U	4.397E-03	3.542E-03	

EPA Qualifiers:
U - Indicates analyte/nuclide was analyzed for, but not detected.

USEC PORTS Analytical Lab
P.O. Box 628 Piketon OH 45661 740-897-5702
Lab Director: Deborah K. Perez
***** END OF REPORT *****

Portsmouth Analytical Laboratory
Official Report

Customer Smpl Id: A2060725B
Project:X-20-DOE DLA001
Subproj Analyses:LIQUID
Customer:N J SMITH

Matrix: LIQUID
Protocol: NONE
Status: APPROVED
Location:

Sampled: 07/25/06 13:00:00
Received: 07/27/06 08:38:00
Needed: 08/03/06 23:59:00
Approved: 08/02/06 09:55:36

COC#:
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213019 Test:ALPHA-AM-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/28/06 15:53:05 S J JAMES Approver: C D GOOD 08/01/06 14:47

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Americium-241	4.807E-07	1.360E-03	pCi/g	U		1.360E-03	3.540E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213022 Test:ALPHA-NP-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/31/06 11:15:02 S J JAMES Approver: C D GOOD 08/01/06 15:00

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Neptunium-237	1.844E-03	2.913E-03	pCi/g	U		2.928E-03	4.957E-03	
Plutonium-238	4.603E-04	2.054E-03	pCi/g	U		2.055E-03	4.264E-03	
Plutonium-239/240	-3.212E-03	2.754E-03	pCi/g	U		2.804E-03	7.284E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06214019 Test:ALPHA-TH-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:08/01/06 12:58:58 S J JAMES Approver: C D GOOD 08/02/06 09:54

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Thorium-228	-4.056E-04	2.944E-03	pCi/g	U		2.944E-03	6.127E-03	
Thorium-230	2.454E-03	2.831E-03	pCi/g	U		2.850E-03	4.399E-03	
Thorium-232	1.224E-03	1.414E-03	pCi/g	U		1.423E-03	1.106E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213021 Test:ALPHA-U-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/27/06 18:56:34 S J JAMES Approver: C D GOOD 08/01/06 15:08

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Uranium-233/234	1.635E-03	2.002E-03	pCi/g	U		2.012E-03	3.007E-03	
Uranium-235	0.000E+00	0.000E+00	pCi/g	U		5.882E-04	1.366E-03	
Uranium-236	4.527E-04	9.054E-04	pCi/g	U		9.072E-04	1.227E-03	
Uranium-238	8.158E-04	1.154E-03	pCi/g	U		1.158E-03	1.105E-03	

QC Batch Comments: U-235 LCS > 125% recovery; other QA acceptable.

Portsmouth Analytical Laboratory
Official Report

Analy Meth:PORTS-XP4-TS-RL7505	QC Batch:QC06208034 Test:RAD-PREP	Rpt Basis:Not Corrected	Date Approved
Prep Meth:	Analyzed:07/27/06 13:00:00 R M BALL	Approver: R M BALL	07/27/06 13:12

Analy Meth:PORTS-XP4-TS-RL7610	QC Batch:QC06209031 Test:TC99-ACT-LS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/27/06 15:00:00 R M BALL	Approver: C D GOOD	07/31/06 16:48

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Technetium-99	2.49E-02	7.46E-02	pCi/g	U		7.46E-02	1.25E-01	

Analy Meth:PORTS-XP4-TS-RL7610	QC Batch:QC06213040 Test:TOTAL-U-AS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/29/06 00:00:00 S J JAMES	Approver: C D GOOD	08/01/06 15:12

Analyte Name	Result	+/-	Unit	Qual	Fn	TPE	MDA	Dec Lvl
Uranium	2.435E-03		ug/g	U		3.447E-03	3.941E-03	

EPA Qualifiers:
U - Indicates analyte/nuclide was analyzed for, but not detected.

USEC PORTS Analytical Lab
P.O. Box 628 Piketon OH 45661 740-897-5702
Lab Director: Deborah K. Perez
***** END OF REPORT *****

Portsmouth Analytical Laboratory
Official Report

Customer Smpl Id: A3060726A
Project:X-20-DOS DLA001
Subproj Analyses:LIQUID
Customer:N J SMITH

Matrix: LIQUID
Protocol: NONE
Status: APPROVED
Location:

Sampled: 07/26/06 16:00:00
Received: 07/27/06 00:58:00
Needed: 08/03/06 23:59:00
Approved: 08/02/06 09:55:36

COC#:
Sample Desc:
Customer Comments:
Lab Smpl Comments:

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213019 Test:ALPHA-AM-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/28/06 15:53:16 S J JAMES Approver: C D GOOD 08/01/06 14:47

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Americium-241	4.823E-04	9.647E-04	pCi/g	U	9.666E-04	1.307E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213022 Test:ALPHA-NP-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/31/06 11:15:18 S J JAMES Approver: C D GOOD 08/01/06 15:00

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Neptunium-237	-2.408E-03	2.541E-03	pCi/g	U	2.569E-03	6.375E-03	
Plutonium-238	1.604E-03	1.604E-03	pCi/g	U	1.623E-03	1.087E-03	
Plutonium-239/240	1.202E-06	1.963E-03	pCi/g	U	1.963E-03	4.314E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06214014 Test:ALPHA-TH-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:08/01/06 12:59:02 S J JAMES Approver: C D GOOD 08/02/06 09:54

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Thorium-228	-1.645E-03	1.645E-03	pCi/g	U	1.659E-03	4.939E-03	
Thorium-230	1.236E-03	1.842E-03	pCi/g	U	1.849E-03	3.031E-03	
Thorium-232	4.112E-04	8.223E-04	pCi/g	U	8.241E-04	1.114E-03	

Analy Meth:PORTS-XP4-TS-RL7510 QC Batch:QC06213021 Test:ALPHA-U-AS Rpt Basis:Not Corrected Date Approved
Prep Meth: PORTS-XP4-TS-RL7505 Analyzed:07/27/06 18:55:39 S J JAMES Approver: C D GOOD 08/01/06 15:08

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium-233/234	1.254E-03	2.768E-03	pCi/g	U	2.772E-03	8.011E-03	
Uranium-235	5.149E-04	1.030E-03	pCi/g	U	1.032E-03	1.395E-03	
Uranium-236	0.000E+00	0.000E+00	pCi/g	U	8.782E-04	1.253E-03	
Uranium-238	8.331E-04	1.178E-03	pCi/g	U	1.183E-03	1.129E-03	

QC Batch Comments: U-235 LCS > 125% recovery; other QA acceptable.

Analy Meth:PORTS-XP4-TS-RL7505	QC Batch:QC06208034 Test:RAD-PREP	Rpt Basis:Not Corrected	Date Approved
Prep Meth:	Analyzed:07/27/06 13:00:00 R M BALL	Approver: R M BALL	07/27/06 13:12

Analy Meth:PORTS-XP4-TS-RL7510	QC Batch:QC06209031 Test:TC99-ACT-LS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/27/06 15:00:00 R M BALL	Approver: C D GOOD	07/31/06 16:48

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Technetium-99	-6.03E-03	6.81E-02	pCi/g	U	6.81E-02	1.23E-01	

Analy Meth:PORTS-XP4-TS-RL7510	QC Batch:QC06213040 Test:TOTAL-U-AS	Rpt Basis:Not Corrected	Date Approved
Prep Meth: PORTS-XP4-TS-RL7505	Analyzed:07/29/06 00:00:00 S J JAMES	Approver: C D GOOD	08/01/06 15:12

Analyte Name	Result	+/-	Unit	Qual Fn	TPE	MDA	Dec Lvl
Uranium	2.378E-03		ug/g	U	3.520E-03	4.025E-03	

EPA Qualifiers:
U - Indicates analyte/nuclide was analyzed for, but not detected.

A-2448A (12/6/02)

CHAIN-OF-CUSTODY RECORD

United States Enrichment Corporation (PORTS)
P. O. Box 628, Piketon, OH 45661

-Use Black Ink Only-

(Sequence #) 19/20/25/26
Sample Date: 07 / 1 / 06
Analysis Required in default days
Laboratory Destination: [✓] X-710 [ ] Other _____
Total Number of Sample Containers accompanying this form: 4

Project No.: X-20-DOE
Sub-Project No.: DLA 001
Cost Center: 9675 FSDLA001

Customer (check one): EC ER IH Util WM HP Other Services / DLA
Process

Customer Sample Number	LIMS No.	Cont. No.	Cont. Type	Sample Time	Sample Type	HAZ	Preserve Code	Preserve Verify	Analysis Required	Method	Lab Code
33W060719A	X062080 0 14		Plastic	07-19-06 1300	G	FREON	4	NA	U & TRU isotopes/Tc		A
33E060720B	15			07-20-06 1300							
A2060725B	16			07-25-06 1300							
A3060726A	17			07-26-06 1600	G		4		U & TRU isotopes/Tc		

SAMPLE TRANSFER PRIOR TO ANALYSIS

Lab Code	Total Cont.	Sampled/Relinquished By (Include Sample Collector)	Date	Time	Received By
	4	John R. Hanner	7-27-06	0858	[illegible]
A	4	Karen [illegible]	7/27/06	0945	[illegible]

SAMPLES RETURNED FOR ARCHIVE/DISPOSAL

Lab Code	Total Cont.	Relinquished By	Date	Time	Received By

COMMENTS BY SAMPLING GROUP:

Other Team Member(s)

PRESERVATIVE CODES
1. Na preservatives
2. HNO_3 to pH < 2.0
3. H_2SO_4 to pH < 2.0
4. 4° C
5. HCl to pH < 2.0
6. Other:

METHOD
a. NPDES
b. SW-846
c. NIOSH
d. Other:

08/09/06 13:57 FAX 010
08/08/2006 14:49 FAX 7048975650 ES & H 010

A-5814 (6/1/2006)

CHAIN-OF-CUSTODY

Sample Acceptance Checklist

Parts A & B must be completed for samples that require Chain-of Custody protocol

Part A: Minimal Acceptance Criteria*

✓ Transfer documentation is present.

✓ All required data entries are completed and legible.

✓ Adequate documentation is present or samples have been scanned for radiological content..

✓ Sample containers are appropriately labeled.

Part B: Additional requirements for Chain-of-Custody protocol

✓ Samples are not leaking, nor do they have broken or damaged places.

✓ Customer cooler temperature verified to between 2°C and 6°C (Use a thermometer and record the cooler temperature).

✓ Sample label data are legible and agree with information on COC Record forms.

✓ pH preservation data is documented and in agreement with EPA or programmatic requirements.

✓ Samples received are within their holding time and retain sufficient holding time for laboratory analysis.

NA Tamper Indicating Devices, when required, are intact upon receipt in laboratory.

NA Volatile samples have zero headspace. "Pea-sized" bubbles do not necessarily invalidate the sample. If the bubble exceeds ¼ inch or 6mm in diameter, then contact the Project Manager or customer for approval to proceed with analysis.

If there is a question regarding irregularities or customer compliance with approved COC Sample Acceptance Criteria, hold the samples pending notification and resolution of the problem. Contact the Project Manager and/or customer regarding irregularities. Sample Manager or Laboratory Manager can aid in resolution if necessary.

Comments:
Sample packed in ice.

* NOTE: If samples are submitted to the laboratory with potential classification issues, require that the submitter resolve issues of minimum acceptance criteria prior to laboratory accepting the samples.

COC Sample Acceptance Checklist Completed: CTM initials/date 7-27-06

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09204017001

GLNX33053A-CAR1

Cust Smpl Id:	GLNX33053A-CAR1	Matrix:	Liquid	Sampled:	07/09/09 14:00
Project:	FREON-09	Status:	Released	Received:	07/23/09 12:20
Customer:	OPS	Location:	RAILCAR / GLNX33053	Needed:	08/20/09 23:59
		Container:		Approved:	08/13/09 09:50

COC # : NONE
Sample Desc: FREON FROM PORTSMOUTH
Lab Smpl Comments:

Analy Meth: OA7201 Run No: 7,103 Test: OA7201 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/13/09 09:49

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Unsymmetrical Isomers	10.1		%						08/12/09 08:30

Analy Meth: OA7207 Run No: 7,687 Test: OA7207 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/12/09 12:51

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Special Request	Comment								08/12/09 08:30

Comments:
Sample is identified as CFC-114. jih 8-12-09.

Analy Meth: 418.1 Run No: 7,102 Test: OA7209 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/12/09 09:28

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Total Petroleum Hydrocarbons	2.8		mg/L						08/12/09 08:30

Analy Meth: OA7210 Run No: 7,645 Test: OA7210 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/13/09 09:50

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Moisture	173		ppm						08/12/09 08:30

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09204017002

GLNX33053B-CAR1

Cust Smpl Id:	GLNX33053B-CAR1	Matrix:	Liquid	Sampled:	07/09/09 14:00
Project:	FREON-09	Status:	Released	Received:	07/23/09 12:20
Customer:	OPS	Location:	RAILCAR / GLNX33053	Needed:	08/20/09 23:59
		Container:		Approved:	08/13/09 09:57

COC # : NONE
Sample Desc: FREON FROM PORTSMOUTH
Lab Smpl Comments:

Analy Meth: IN7010 Run No: 7,743 Test: IN7010 Rpt. Basis: As Received
Prep Meth: Analyzed by: 31507_RWT Approved by: 22670_RGT Approved: 08/13/09 09:57

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Inertness	0.15		%						08/10/09 09:00

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09204017003

GLNX33056A-CAR2

Cust Smpl Id:	GLNX33056A-CAR2	Matrix:	Liquid	Sampled:	07/09/09 14:00
Project:	FREON-09	Status:	Released	Received:	07/23/09 12:20
Customer:	OPS	Location:	RAILCAR / GLNX33056	Needed:	08/13/09 23:59
		Container:		Approved:	08/13/09 09:50

COC # : NONE
Sample Desc: FREON FROM PORTSMOUTH
Lab Smpl Comments:

Analy Meth: OA7201 Run No: 7,103 Test: OA7201 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/13/09 09:49

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Unsymmetrical Isomers	10.0		%						08/12/09 08:30

Analy Meth: OA7207 Run No: 7,687 Test: OA7207 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/12/09 12:51

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Special Request	Comment								08/12/09 08:30

Comments:
Sample is identified as CFC-114. jih 8-12-09.

Analy Meth: 418.1 Run No: 7,102 Test: OA7209 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/12/09 09:28

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Total Petroleum Hydrocarbons	4.1		mg/L						08/12/09 08:30

Analy Meth: OA7210 Run No: 7,645 Test: OA7210 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 08/13/09 09:50

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Moisture	454		ppm						08/12/09 08:30

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09204017004

GLNX33056B-CAR2

Cust Smpl Id:	GLNX33056B-CAR2	Matrix:	Liquid	Sampled:	07/09/09 14:00
Project:	FREON-09	Status:	Released	Received:	07/23/09 12:20
Customer:	OPS	Location:	RAILCAR / GLNX33056	Needed:	08/20/09 23:59
		Container:		Approved:	08/13/09 09:57

COC # : NONE
Sample Desc: FREON FROM PORTSMOUTH
Lab Smpl Comments:

Analy Meth: IN7010 Run No: 7,743 Test: IN7010 Rpt. Basis: As Received
Prep Meth: Analyzed by: 31507_RWT Approved by: 22670_RGT Approved: 08/13/09 09:57

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Inertness	0.28		%						08/10/09 09:00

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09296016001

GLNX33053A-100909

Cust Smpl Id:	GLNX33053A-100909	Matrix:	Liquid	Sampled:	10/09/09 13:30
Project:	FREON-09	Status:	Released	Received:	10/19/09 09:00
Customer:	OPS	Location:	PORTSMOUTH/FREON CAR	Needed:	12/18/09 23:59
		Container:		Approved:	12/29/09 08:51

COC # : NONE
Sample Desc: FREON
Lab Smpl Comments:

Analy Meth: IN7010 Run No: 11,086 Test: IN7010 Rpt. Basis: As Received
Prep Meth: Analyzed by: 31507_RWT Approved by: 22670_RGT Approved: 12/16/09 15:52

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Inertness	0.20		%						11/23/09 09:00

Comments:
The inertness is performed in duplicate. One sample tube shattered while in the reactor. rgt 12/16/09

Analy Meth: OA7201 Run No: 9,659 Test: OA7201 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 12/29/09 06:29

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Unsymmetrical Isomers	10.0		%						11/13/09 09:30

Analy Meth: OA7207 Run No: 9,864 Test: OA7207 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 12/29/09 06:29

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Special Request	Comment								11/13/09 09:30

Comments:
Sample is identified as CFC-114. jih 11-13-09

Analy Meth: 418.1 Run No: 9,314 Test: OA7209 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 11/13/09 10:17

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Total Petroleum Hydrocarbons	2.0		mg/L						11/13/09 09:30

Analy Meth: OA7210 Run No: 9,660 Test: OA7210 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 11/13/09 10:18

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Moisture	144		ppm						11/13/09 09:30

Paducah Analytical Laboratory
Official Report

Printed: 07/02/2013 14:22

C09296016002

GLNX33056A-100909

Cust Smpl Id:	GLNX33056A-100909	Matrix:	Liquid	Sampled:	10/09/09 13:30
Project:	FREON-09	Status:	Released	Received:	10/19/09 09:00
Customer:	OPS	Location:	PORTSMOUTH/FREON CAR	Needed:	12/18/09 23:59
		Container:		Approved:	12/29/09 08:51

COC # : NONE
Sample Desc: FREON
Lab Smpl Comments:

Analy Meth: IN7010 Run No: 11,086 Test: IN7010 Rpt. Basis: As Received
Prep Meth: Analyzed by: 31507_RWT Approved by: 22670_RGT Approved: 12/16/09 15:52

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Inertness	0.03		%						11/23/09 09:00

Analy Meth: OA7201 Run No: 9,659 Test: OA7201 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 12/29/09 06:29

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Unsymmetrical Isomers	10.2		%						11/13/09 09:30

Analy Meth: OA7207 Run No: 9,864 Test: OA7207 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 12/29/09 06:29

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Special Request	Comment								11/13/09 09:30

Comments:
Sample is identified as CFC-114. jih 11-13-09

Analy Meth: 418.1 Run No: 9,314 Test: OA7209 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 11/13/09 10:17

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Total Petroleum Hydrocarbons	0.1		mg/L	<					11/13/09 09:30

Qualifiers:
< - Compound result is less than reporting limit.

Analy Meth: OA7210 Run No: 9,660 Test: OA7210 Rpt. Basis: As Received
Prep Meth: Analyzed by: 20394_JIH Approved by: 14038_TLB Approved: 11/13/09 10:18

Analyte Name	Result	+/-	Unit	Qual	Fn	LCR	Dilu	HT	Analyzed
Moisture	248		ppm						11/13/09 09:30

An asterisk (*) beside Method and/or Analyte Id indicates a modification of the report