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Department of Energy

Oak Ridge Operations  
Paducah Site Office  
P.O. Box 1410  
Paducah, KY 42001

January 15, 2002

Mr. Carl R. Froede Jr., P.G.  
United States Environmental Protection Agency  
Region IV  
DOE Remedial Section  
Federal Facilities Branch  
Waste Management Division  
61 Forsyth Street  
Atlanta, Georgia 30303

Mr. Michael V. Welch, P.E.  
Manager  
Hazardous Waste Branch  
Kentucky Department for Environmental Protection  
14 Reilly Road, Frankfort Office Park  
Frankfort, Kentucky 40601

Dear Mr. Froede and Mr. Welch:

**PROPOSED RESOLUTION OF INFORMAL DISPUTE INVOKED ON DECEMBER 13, 2001, FOR THE GROUNDWATER OPERABLE UNIT RECORD OF DECISION 2 (C-400) TREATABILITY STUDY FIELD-START DATE AND FEDERAL FACILITY AGREEMENT MODIFICATION FORM FOR APPENDIX C, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY**

The purpose of this letter is to present a proposed resolution of the Informal Dispute invoked on December 13, 2001, pursuant to Section XXV(A) of the Paducah Gaseous Diffusion Plant (PGDP) Federal Facilities Agreement (FFA), with respect to the Groundwater Operable Unit (GWOU) Record of Decision (ROD) 2 Treatability Study (TS) field-start date of April 1, 2001.

Nature of Dispute

On November 2, 2001, the Department of Energy (DOE) requested an extension to Appendix C of the FFA for the TS field-start date for the GWOU ROD 2 from November 2, 2001, to April 1, 2002. The additional time was requested to complete the auditable safety analysis and to finalize the design drawings and technical specifications package for implementing the Six-Phase Heating (SPH) TS at PGDP. On December 6, 2001, DOE received a notice from the Kentucky Department for Environmental Protection (KDEP) denying the requested extension. KDEP responded that DOE had not generated convincing evidence that good cause exists for the extension requested. On December 10, 2001, DOE received notice from the Environmental

I-04602-0055



Protection Agency (EPA), Region IV, denying the requested extension. EPA indicated the justification DOE provided, to support the extension request, was inadequate.

The additional time requested is needed to meet the technical challenges and safety and health requirements presented by the complexity of construction and operation of the SPH technology. SPH is not an off-the-shelf, mature, and proven technology for remediation of Trichloroethylene (TCE) at the depth of the Regional Gravel Aquifer (RGA). The technology was initially developed and tested at the DOE Savannah River and Hanford sites in 1993. Since then, SPH has been tested at several sites across the United States; it has not been tested at the depth and under the conditions encountered at PGDP.

In accordance with DOE Order 5480.21 and 10 Code of the Federal Regulations (CFR) 830, Subpart B, an unreviewed safety question determination (USQD) process and a safety documentation process were applied to the 30 percent design of the SPH facility. Preliminary hazard screening results identified the potential for release of TCE at levels exceeding the reportable quantities set by 40 CFR 302. As a result, an auditable safety analysis was required to be initiated in parallel with the remaining system design process. Design drawings and technical specifications are being finalized to include additional comments from technical reviews and reviews with the United States Enrichment Corporation Facility Safety Management.

#### Proposed Resolution

DOE's proposal to resolve this dispute is to establish a field-start of April 1, 2002, for the SPH TS. This date would not impact the existing schedule for the planning documents and the remedial action tasks associated with the C-400 groundwater action. A summary of the C-400 action schedule is provided below:

<u>Task</u>	<u>Date</u>
SPH TS Construction Start	April 1, 2002
SPH TS Operation Start	January 7, 2003
SPH TS Operation Finish	July 7, 2003
D1 TS Completion Report	November 18, 2003
D1 Proposed Plan for ROD 2	July 2, 2004
D1 ROD 2	December 10, 2004

#### DOE's Position with Respect to the Dispute

DOE maintains that good cause exists for an extension of the TS field-start for the following reasons: additional effort is required to meet the technical challenges posed by the location of the test and the subsurface conditions unique to PGDP; more time is needed to resolve internal comments and to define and plan for conditions in the field; more time is required to address

facility safety management concerns; and a concern for winter working conditions that present safety hazards and cause work to be more difficult. All of the concerns noted above, and the challenges set forth below, are relevant to the safety of the workers performing the work as well as to the health and safety of the public. Given the importance of worker safety, and the need to ensure protectiveness, the extension proposed is reasonable.

#### Information Relied Upon in Support of DOE's Position

SPH is a promising new technique for the remediation of chlorinated solvents and separate phase dense non-aqueous phase liquid, and, therefore, has the potential to be quite effective at PGDP. However, care must be exercised in the application of any new technology, especially in the C-400 area, which includes a very large infrastructure.

PGDP has several unique aspects that challenge the SPH technology. These challenges include:

- The subsurface environment consists of the extremely high permeability RGA that is overlaid by the relatively less permeable Upper Continental Recharge System. This stratigraphic discontinuity within the saturation zone complicates the recovery of the gaseous TCE vapor and steam formed during the boiling remediation of the RGA.
- A maximum depth of 98 feet below grade is proposed for SPH, which is approximately 60 percent greater than what was required for previous SPH applications. This greater depth requires more complicated electrode design and more robust venting methods to capture the steam and TCE vapors within the relatively narrow column that is being remediated.
- The groundwater flow velocity within the RGA is up to 1.5 feet per day. SPH has previously been used in similar groundwater flow velocities; however, these previous applications have involved groundwater flow within a saturated thickness of less than ten feet. The high flow interval of the RGA is about 35 feet thick, and, therefore, the water flux is considerably greater than what was observed at previous SPH sites.
- Site data suggests that the mass of TCE in the subsurface at PGDP is much greater than that which was observed at other SPH remediation sites. The higher mass and attendant health risk makes the above-mentioned challenges more critical. A failure to capture and appropriately treat the TCE vapor could significantly impact the health of facility workers or cause TCE to migrate into the surrounding regions.
- The infrastructure at the test site is highly congested with worker activity and buried utilities. The south end of the C-400 Building is a UF<sub>6</sub> cylinder-handling area, which is serviced by rail, cranes, and heavy equipment. The buried utilities include storm and sanitary sewers and water, electrical, and telecommunication lines.

Due to the technical challenges noted above, it has been necessary to independently review every aspect of the design to ensure appropriate control and safety measures will be employed. This review process has significantly extended the design phase of the project. However, the independent review has been invaluable and has led to many important improvements in the capability to capture and safely treat the TCE vapor that will be mobilized from the subsurface. DOE is ready to proceed into the implementation phase of the TS with confidence in a sound design.

Therefore, based upon the information as described above, DOE is providing this proposal to resolve the informal dispute invoked on December 13, 2001, regarding the GWOU ROD 2 TS field-start beginning on April 1, 2001, as noted on the enclosed Appendix C pursuant to the FFA, Section XXXIX. If you concur with this proposal, please sign the enclosed FFA modification form to document the extension, and return the form to DOE for inclusion in the Administrative Record File.

If you have any questions or require additional information, please call Gary Bodenstein at (270) 441-6831.

Sincerely,



W. Don Seaborg, Site Manager  
Paducah Site Office

Enclosure

cc w/o enclosure:

N. Carnes/R. Blumenfeld, CC-10

DMC/Kevil

M. L. Gage, BJC/Kevil

T. Hatton, KDEP/Frankfort

C. A. Hudson, CJE/Kevil

J. W. Morgan, BJC/Kevil

G. T. Mullins, KDEP/Frankfort

R. W. Seifert, NRE/PGDP

T. J. Wheeler, BJC/Kevil

**MODIFICATION TO THE PADUCAH FEDERAL FACILITY AGREEMENT  
according to the terms of Section XXXIX.**

Modification requested by: <b>W. Don Seaborg</b>			Date: <b>12/28/01</b>
Requester's Organization: <b>Department of Energy</b>			
Section to be modified: <b>Appendix C</b>			
Reason for modification: <b>Reflect Schedule Adjustment</b>			
Modification requested:			
<b>Project</b>	<b>Deliverable</b>	<b>Current FFA Date<sup>1</sup></b>	<b>Proposed Date</b>
<b>GWOU ROD 2 (C-400) Treatability Study (TS)</b>	<b>TS Field-Start</b>	<b>11/05/01</b>	<b>04/01/02</b>
<p><b>This modification is necessary as a result of the following:</b></p> <ul style="list-style-type: none"> <li>• <b>The time required for review and resolution of additional comments on planning documents. Document reviews have included the need to respond to additional comments from DOE, the U.S. Enrichment Corporation, and the Institute for International Cooperative Environmental Research. Because of the complexity of the technology and the location of the test, review and comment resolution periods for the 60 percent design and the 90 percent design were longer than expected.</b></li> <li>• <b>Facility safety management review. Facility safety management of the Nuclear Safety Group has several hazard concerns associated with this demonstration. Specific concerns include: exposure to, and release and capture of fugitive emissions from the vapor recovery system; electrical and thermal hazards to nearby workers and the plant utility and communications equipment; system monitoring procedures; and monitoring and sampling procedures considering the presence of steam and vapors.</b></li> <li>• <b>Safety concerns with construction during winter conditions. Generally, worker hazard increases and construction performance decreases are experienced in regard to construction of similar projects during the winter.</b></li> <li>• <b>DOE has not received EPA comments and/or approval on the 90 percent design package.</b></li> </ul> <p><sup>1</sup>The current FFA dates are based upon a FFA modification submitted on June 7, 2001.</p>			

**Determination by any one of the three Project Managers that a modification is major will require that the modification be submitted for public participation to the extent required by DOE's Community Relations Plan under Section XXXIII.**

	Major modification?		
	YES	NO	
DOE, Paducah Site Manager's Approval:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Date:
KDEP, Div of Waste Mgmt Director's Approval:	<input type="checkbox"/>	<input type="checkbox"/>	Date:
EPA, Region 4, Remedial Project Manager's Approval:	<input type="checkbox"/>	<input type="checkbox"/>	Date:

Note: Return to DOE after signature for the Administrative Record and to initiate distribution to FFA "Controlled" copies.

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JAMES E. BICKFORD  
SECRETARY



PAUL E. PATTON  
GOVERNOR

COMMONWEALTH OF KENTUCKY  
**NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET**  
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

FRANKFORT OFFICE PARK  
14 REILLY RD  
FRANKFORT KY 40601

January 31, 2002

cc: Document Center  
Glenn Van Sickle  
Tom Wheeler  
Craig Jones  
John Morgan

Mr. Don Seaborg, Site Manager  
US Department of Energy  
Paducah Site Office  
PO Box 1410  
Paducah, Kentucky 42001

Mr. Gordon L. Dover, Paducah Manager of Projects  
Bechtel Jacobs Company LLC  
761 Veterans Avenue  
Kevil, Kentucky 42053

RE: PROPOSED RESOLUTION OF INFORMAL DISPUTE INVOKED ON DECEMBER 13, 2001, FOR THE GROUNDWATER OPERABLE UNIT RECORD OF DECISION 2 (C-400) TREATABILITY STUDY FIELD-START DATE AND FEDERAL FACILITY AGREEMENT MODIFICATION FORM FOR APPENDIX C, PADUCAH GASEOUS DIFFUSION PLANT, PADUCAH, KENTUCKY  
McCracken County, Kentucky  
KY8-890-008-982

I-04611-0160

Gentlemen:

The Division of Waste Management (Division) has reviewed your above listed January 15, 2002 request to terminate the informal dispute and modify the Federal Facility Agreement (FFA) to reflect a new April 1, 2002 milestone date for the GWOU ROD 2 (C-400) Six-Phase Field-Start. This modification would extend the original field-start date by five months.

During the December 14, 2001 Senior Manager's Meeting held in Lexington, Kentucky, all parties agreed to disagree as to the legitimacy of DOE's good cause justification for an extension. Specifically, the Division maintains that DOE has had ample time to address all issues -- including safety related issues -- that must be addressed prior to field-start. However, given that full funding is available for this study, the managers agreed that it would be counter productive to continue the C-400 Treatability Study dispute. Therefore, it was agreed that the extension request would be granted and the dispute terminated. Consequently, the Division



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Mr. Don Seaborg,  
Mr. Gordon Dover  
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January 31, 2002

hereby grants the requested extension for the C-400 Treatability Study Field-Start. The signed FFA Modification Form is attached.

In its January 15, 2002 letter DOE lists deliverable dates for the D1 Proposed Plan for ROD 2 and the D1 ROD 2. These dates are referred to as reflecting the existing schedule for the C-400 groundwater action. In fact, official milestone dates have yet to be assigned to these two C-400 planning documents. The Division's approval of this extension request should in no way be viewed as acceptance of the listed dates. Official deliverable dates for these documents must be negotiated by all parties and then be incorporated into an approved Site Management Plan. The Division believes that DOE should pursue a more aggressive ROD 2 schedule than what is alluded to in its extension request.

If you have any questions or require additional information, please contact Todd Mullins at (502) 564-6716.

Sincerely,



Robert H. Daniell, Director  
Division of Waste Management

Attachment

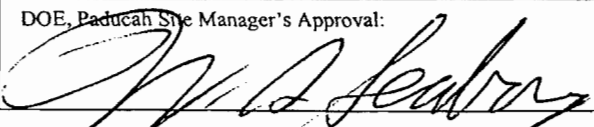
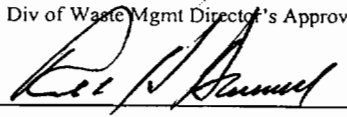
RHD/tm

cc: Carl R. Froede, Jr., USEPA Region 4  
John Morgan, Bechtel Jacobs  
Robert Sleeman, ORO/ DOE  
Gary Bodenstein, DOE-Paducah  
Margie Williams, DWM-Paducah  
Gaye Brewer, AIP-Paducah  
Todd Mullins, FFA-Frankfort  
Tony Hatton, FFA-Frankfort  
DWM File# 750  
DOE Reading File

**MODIFICATION TO THE PADUCAH FEDERAL FACILITY AGREEMENT  
according to the terms of Section XXXIX.**

<b>Modification requested by:</b> <b>W. Don Seaborg</b>	<b>Date:</b> <b>12/28/01</b>		
<b>Requester's Organization:</b> <b>Department of Energy</b>			
<b>Section to be modified:</b> <b>Appendix C</b>			
<b>Reason for modification:</b> <b>Reflect Schedule Adjustment</b>			
<b>Modification requested:</b>			
<b>Project</b>	<b>Deliverable</b>	<b>Current FFA Date<sup>1</sup></b>	<b>Proposed Date</b>
GWOU ROD 2 (C-400) Treatability Study (TS)	TS Field-Start	11/05/01	04/01/02
<b>This modification is necessary as a result of the following:</b>			
<ul style="list-style-type: none"> <li>• <b>The time required for review and resolution of additional comments on planning documents. Document reviews have included the need to respond to additional comments from DOE, the U.S. Enrichment Corporation, and the Institute for International Cooperative Environmental Research. Because of the complexity of the technology and the location of the test, review and comment resolution periods for the 60 percent design and the 90 percent design were longer than expected.</b></li> <li>• <b>Facility safety management review. Facility safety management of the Nuclear Safety Group has several hazard concerns associated with this demonstration. Specific concerns include: exposure to, and release and capture of fugitive emissions from the vapor recovery system; electrical and thermal hazards to nearby workers and the plant utility and communications equipment; system monitoring procedures; and monitoring and sampling procedures considering the presence of steam and vapors.</b></li> <li>• <b>Safety concerns with construction during winter conditions. Generally, worker hazard increases and construction performance decreases are experienced in regard to construction of similar projects during the winter.</b></li> <li>• <b>DOE has not received EPA comments and/or approval on the 90 percent design package.</b></li> </ul>			
<sup>1</sup> The current FFA dates are based upon a FFA modification submitted on June 7, 2001.			

**Determination by any one of the three Project Managers that a modification is major will require that the modification be submitted for public participation to the extent required by DOE's Community Relations Plan under Section XXXIII.**

	<b>Major modification?</b>		
	YES	NO	
DOE, Paducah Site Manager's Approval: 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Date: 1/25/02
KDEP, Div of Waste Mgmt Director's Approval: 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Date: 2-1-02
EPA, Region 4, Remedial Project Manager's Approval:	<input type="checkbox"/>	<input type="checkbox"/>	Date:

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4  
ATLANTA FEDERAL CENTER  
51 FORSYTH STREET  
ATLANTA, GEORGIA 30302-8960

February 19, 2002

cc: Document Center  
Glenn VanDyke  
John Morgan  
Tom Wheeler  
Craig Jones

4-WD/FFB

Mr. W. Don Seaborg, Site Manager  
United States Department of Energy  
Paducah Site Office  
P.O. Box 1410  
Paducah, Kentucky 42001

Mr. Gordon L. Dover, Paducah Manager of Projects  
Bechtel Jacobs Company LLC  
761 Veterans Avenue  
Kevil, Kentucky 42053

SUBJ: Proposed Resolution of the Informal Dispute Invoked on December 13, 2001, for the Groundwater Operable Unit Record of Decision 2 (C-400) Treatability Study Field Start Date and Federal Facility Agreement Modification Form for Appendix C, Paducah Gaseous Diffusion Plant, Paducah, KY

Gentlemen:

The Environmental Protection Agency (EPA) has reviewed the above referenced request to terminate the informal dispute and modify the Federal Facility Agreement to reflect a new April 1, 2002, milestone date for the Groundwater Operable Unit Record of Decision 2 (C-400) Six-Phase field start. This approved modification will extend the original field start by five months. The signed modification form is attached.

If you have any questions then please contact me at (404) 562-8550.

Sincerely,

*Carl R. Froede Jr.*

Carl R. Froede Jr., P.G.  
Federal Facilities Branch  
Waste Management Division  
U.S. EPA Region 4

cc: T. Taylor, KDEP/Frankfort  
A. Hatton, KDEP/Frankfort  
J. Volpe, CHS/Frankfort  
G. Bodenstein, DOE-PGDP

I-04611-0159



**MODIFICATION TO THE PADUCAH FEDERAL FACILITY AGREEMENT  
according to the terms of Section XXXIX.**

Modification requested by: <b>W. Don Seaborg</b>			Date: <b>12/28/01</b>
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<b>GWOU ROD 2 (C-400) Treatability Study (TS)</b>	<b>TS Field-Start</b>	<b>11/05/01</b>	<b>04/01/02</b>
<p>This modification is necessary as a result of the following:</p> <ul style="list-style-type: none"> <li>• The time required for review and resolution of additional comments on planning documents. Document reviews have included the need to respond to additional comments from DOE, the U.S. Enrichment Corporation, and the Institute for International Cooperative Environmental Research. Because of the complexity of the technology and the location of the test, review and comment resolution periods for the 60 percent design and the 90 percent design were longer than expected.</li> <li>• Facility safety management review. Facility safety management of the Nuclear Safety Group has several hazard concerns associated with this demonstration. Specific concerns include: exposure to, and release and capture of fugitive emissions from the vapor recovery system; electrical and thermal hazards to nearby workers and the plant utility and communications equipment; system monitoring procedures; and monitoring and sampling procedures considering the presence of steam and vapors.</li> <li>• Safety concerns with construction during winter conditions. Generally, worker hazard increases and construction performance decreases are experienced in regard to construction of similar projects during the winter.</li> <li>• DOE has not received EPA comments and/or approval on the 90 percent design package.</li> </ul> <p><sup>1</sup> The current FFA dates are based upon a FFA modification submitted on June 7, 2001.</p>			

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DOE, Paducah Site Manager's Approval:	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Date: <b>1/25/02</b>
KDEP, Div of Waste Mgmt Director's Approval:	<input type="checkbox"/>	<input type="checkbox"/>		Date:
EPA, Region 4, Remedial Project Manager's Approval:	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Date: <b>2/11/02</b>

Note: Return to DOE after signature for the Administrative Record and to initiate distribution to FFA "Controlled" copies.