

# START

Attachment 1. 0023463

Change Number M-10-92-02E	Federal Facility Agreement and Consent Order Change Control Form <small>Do not use blue ink. Type or print using black ink.</small>	Date 09/02/92
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Originator **J. M. Clark** Phone **376-2246**

Class of Change  
 I - Signatories       II - Project Manager       III - Unit Manager

Change Title **Rotary Mode Sampling Development, Milestone M-10-13  
Technical and Scope Impacts to Development Schedule**

Description/Justification of Change:  
 Milestone M-10-13, Restore rotary mode sampling capability at the Hanford Site, and an associated target milestone cannot be met as written due to increased technical complexities within the scope of work and technical design issues. The milestone is experiencing a 12 month delay. The definitive schedule for completion cannot at this time be explicitly defined, but it is anticipated that a realistic extension of the milestone to September 1993 will allow successful completion of this milestone.

<u>Milestone</u>	<u>Was</u>	<u>Is</u>
M-10-13, Restore rotary mode sampling capability at the Hanford Site	Sept. 1992	Sept. 1993
M-10-13-T2, Complete R&D and installation of both the hard salt cake sampler and the improved hydrostatic balance system.	June 1992	Dec. 1992

Impact of Change  
 The approval of this change request will change the due date of the interim milestone by twelve (12) months, and change the due date of the target milestone by six (6) months. Impacts to other milestones and/or other Tri-Party Agreement work resulting from this change are not anticipated. Delaying this milestone twelve (12) months will not, ~~in and of itself~~, cause an impact to interim milestones M-10-07 through M-10-12, or major milestone M-10-00.

Affected Documents  
 Hanford Federal Facility Agreement and Consent Order Action Plan, Appendix D (Table D-1 and Figure D-1 Work Schedule).

Approvals  Approved       Disapproved

<i>K. Michael ... SHW</i> DOE	9/08/92 Date
<i>Douglas ... ? Day</i> EPA	9/23/92 Date
<i>...</i> Ecology	9/23/92 Date



9/2/92

TECHNICAL COMPLEXITIES ENCOUNTERED DURING DEVELOPMENT  
OF THE HARD SALTCAKE SAMPLING SYSTEM

Items which adversely affected the Hard Salt Cake Sampler Development schedule are summarized as follows:

A. **Modular Exhauster**

In order to core sample a tank in the rotary mode, the tank dome vapor space pressure must be maintained at a slight vacuum to ensure emission control on the tank top. As the Hard Salt Cake Sampler will use a nitrogen purge to cool and clear the drill bit, a portable exhauster is required to remove the 300 CFM of nitrogen purge gas generated by the drill and also maintain the require tank dome space vacuum. Initial design efforts did not anticipate the high flow rates and hence did not address the exhauster requirement. Incorporation of this exhauster into the program extended the schedule.

B. **Nitrogen Purge Gas System**

The nitrogen purge gas system was developed to eliminate the use of the Normal Paraffin Hydrocarbon hydrostatic balance system and is required for drill bit cooling and removal of debris from the drill face. The initial purge gas system was planned to be regulated bottled nitrogen gas. As system development progressed, nitrogen supply requirements increased requiring procurement of a larger and more capable supply system. This system required an ASME pressure vessel and resulted in additional procurement and vendor fabrication time.

C. **Pressure Vessel Requirements**

In the development of a safe core drilling technique, safety reviews of the apparatus have required that pressure vessel specifications be placed on the Grapple Box and Shielded Receiver components because of their interaction with the nitrogen purge system. The application of ASME criteria and stamp have impacted cost and schedule by requiring an outside vendor to manufacture the equipment.

D. **Sampler Development**

The initial planning was based on a design and build approach, similar to that of constructing a building. The approach allowed implementation of the components as soon as possible, and spendout plans were established based upon this approach. However, this approach proved inadequate as R&D activities and resources were required to further refine the sampler and to respond to third party (Technical Advisory Panel) requests for additional drill bit monitoring capabilities. In responding to the additional needs and directives, additional tasks and time were required.

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E. **Envelope Testing**

The envelope testing phase of the project was designed for operating the drill in two simulants for evaluation of thermal concerns. To address these concerns, the number of simulants was increased from two to five. The time required to (1) develop and make the simulants, and (2) perform the added tests, evaluations, and write-ups expanded, causing the schedule to be extended.

F. **Proof of Concept Tests**

To verify concept viability, WHC provided additional tests to demonstrate proof of core drill concepts and design basis. These tests impacted the original testing schedule and allocated costs.

G. **Training**

The initial schedule incorporated the training of operators with the final formal acceptance tests of the equipment. Based upon discussions with operations management and past experience with the first core sampling truck (push mode sampler), training time has been revised as a specific activity in the schedule. This activity will be performed after the formal acceptance testing program and is required to ensure long term safe operation of the equipment. The revision of the status of this activity generated additional time requirements and funding needs in order to support.

H. **Instrumentation**

To operate the Hard Salt Cake Sampler safely requires programmable logic control systems to ensure gas flows, downward force, rotation, and exhauster systems operate within established guidelines. Operator monitoring and reaction to occurrences could be too slow to ensure a continued safe working environment. To secure a safe operating environment for the Hard Salt Cake Sampler equipment and personnel, additional instrumentation is required to monitor all operating parameters efficiently and have capability of stopping operations in the event of a key equipment failure.

I. **Air Permitting**

Due to the volume of gases to be exhausted ( $\pm 600$  cfm), there is a need to file for air pollution permits for toxic gases and radioactive particulate. The time estimated to secure these permits has directly impacted project critical path and moving the schedule out.

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Affected Documents Hanford Federal Facility Agreement and Consent Order Action Plan, Appendix D (Table D-1 and Figure D-1 Work Schedule).		
Approvals <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved  K. Michael Thompson for SHW      9/08/92 DOE      Date  Douglas R. Shumaker for P. Day      9/23/92 EPA      Date  C. [Signature]      9/23/92 Ecology      Date		

9/2/92

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