

**DISTRIBUTION
PROJECT MANAGERS' MEETING,
200 AREA GROUNDWATER SOURCE OPERABLE UNITS
July 21, 2011**

DOE/RL

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B1-46

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Nina Menard

H0-57

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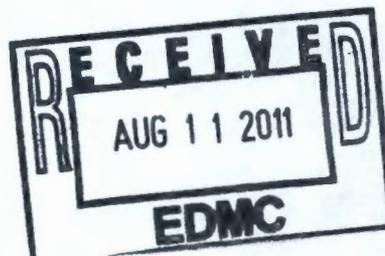
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Administrative Record (2)

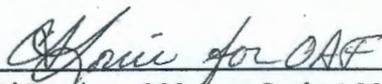
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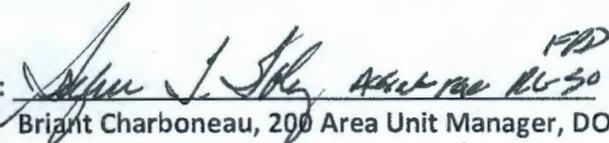
Correspondence Control

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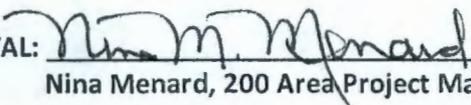


Meeting Minutes Transmittal/Approval
Project Managers' Meeting
200 Area Groundwater and Source Operable Units
July 21, 2011

APPROVAL:  DATE: 7/21/2011
Al Farabee, 200 Area Project Manager, DOE/RL

APPROVAL:  ¹⁷⁰⁰ DATE: 7/21/2011
Briant Charboneau, 200 Area Unit Manager, DOE/RL

APPROVAL:  DATE: 7/21/2011
Craig Cameron, 200 Area Project Manager, EPA

APPROVAL:  DATE: 7/21/2011
Nina Menard, 200 Area Project Manager, Ecology

HFFACO Action Plan Section 4.1 requires signature of agreements and commitments made during the Project Manager Meeting. Approval of these minutes documents approval of agreements and commitments documented in Attachment 4 to these minutes. Approval does not apply to any other attachments, which are included in these minutes for informational purposes.

Minutes of the 200 Area Project Managers' Meeting of July 21, 2011 are attached. Minutes are comprised of the following:

- | | |
|---------------------|---|
| Attachment 1 | Attendance Record |
| Attachment 2 | Agreements and Issues List |
| Attachment 3 | Action Item List |
| Attachment 4 | Operable Units and Facilities Status |
| Attachment 5 | Air Gapping and Tapping and Drain Lines |
| Attachment 6 | Central Plateau D4 Project Status Interface Meeting Minutes (Draft) from July 12, 2011 |
| Attachment 7 | <i>SGW-49168, Revision 0, 200 West Area Pump and Treat System Startup Plan</i> |

**200 Area Project Managers' Meeting
Agreements and Issues List
July 21, 2011**

Agreement: None

Issue: None

Delegations for July 21, 2011 PMM meeting:

DOE/RL (RL30)	Bryan Foley for Briant Charboneau
DOE/RL (RL40)	Cathy Louie for Al Farabee

200 Area Project Managers' Meeting
July 21, 2011

CHPRC-1102649
Attachment 3

OPEN ACTION ITEM TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Status
	No Open Action Items						

200 AREA PROJECT MANAGERS MEETING
PROJECT STATUS UPDATES

July 21, 2011
AGENDA

CENTRAL PLATEAU INNER AREA

200-WA-1
200-EA-1 CMS & FS / CAD & PP
200-PW-1/3/6
SVE
200-CW-5

Inner Area: Central Plateau Burial Grounds

200-SW-2

Inner Area: Central Plateau Canyons & Facilities

U Plant Canyon
B Plant Canyon/Waste Sites

Inner Area: Central Plateau Deep Vadose Zone

200-DV-1 RI/FS
200-DV-1 Uranium
200-DV-1 Tc-99 Desiccation Test

BOTH INNER & OUTER AREAS

200-IS-1 CMS & FS / CAD & PP

RCRA Units

Hexone TSD Closure
Other TSD Closures

CENTRAL PLATEAU OUTER AREA

200-OA-1, 200-CW-1, and 200-CW-3 FS/PP
200-SW-1

Field Work

Rail Car Disposition
200-MG-1
200-CW-3
200-BC Control Area
West Lake
Multi-Increment Sampling

Risk Assessment

Central Plateau Ecological Risk

CENTRAL PLATEAU GROUNDWATER

200-ZP-1 Interim Action
200 West P&T
200-UP-1 RI/FS
S/SX Interim Action
200-BP-5 and 200-PO-1 FS
200-BP-5 TTP
Groundwater Plumes – Final Remedy
Well Decommissioning

FUTURE SCOPE (out-year TPA milestones)

PUREX Canyon/Waste Sites
REDOX Canyon/Waste Sites
224B Concentration Facility
224T Transuranic Storage and Assay Facility
EE/CA Report(s)

200 AREA PROJECT MANAGERS MEETING
PROJECT STATUS UPDATES

July 21, 2011

CENTRAL PLATEAU INNER AREA

200-WA-1 and BC-1 EPA Lead (RL- Arlene Tortoso, CHPRC – Phil Burke)

M-015-91A, Submit a RI/FS work plan for the 200-WA-1 OU (200 West Inner Area) to EPA, 12/31/2011

M-015-91B, Submit FS Report(s) and PP(s) for the 200-BC-1/200-WA-1 OU (200 West Inner Area) to EPA, 6/30/2013

- Work on the 200-WA-1 OU Work Plan continues, the decisional draft was issued to DOE on July 8, 2011 for review. Comments are due by August 8, 2011.
- A meeting with the agencies was held to discuss the sites that have additional data needs.
- The next steps will be to meet with the regulatory agencies and continue discussions on the data needs. A meeting to discuss the sites with adequate data is scheduled for August.
- A meeting with the agencies was held to discuss the sites that have additional data needs.
- The next steps will be to meet with the regulatory agencies and continue discussions on the data needs. A meeting to discuss the sites with adequate data is scheduled for August.

Schedule Status: On Schedule

Regulatory Agency Comments:

200-EA-1 Ecology Lead (RL- Doug Hildebrand, CHPRC – Phil Burke)

M-015-92A, Submit a RFI/CMS & RI/FS work plan for the 200-EA-1 OU (200 East Inner Area) to Ecology, 12/31/2012

- Activities associated with 241-CX-72 (Semi Works) Characterization and the preliminary assessment of waste sites to be included in the 200-EA-1 RI/FS WP have been resequenced to be consistent with the funding profile; this resequencing will not impact milestone compliance at this time.

Schedule Status: Schedule will be revised, if needed, upon recommencement of project activities.

Regulatory Agency Comments:

200-PW-1/3/6 EPA Lead (RL- Arlene Tortoso, CHPRC – Phil Burke)

- The Final Rev 0 of the Feasibility Study and the Proposed Plan, Rev. 0, was transmitted to EPA on July 14, 2011.
- The Final Rev. 0 of the Proposed Plan has been issued to the public repositories. The public comment period started July 5, 2011 and will run through August 5, 2011.
- There are 4 public meeting planned and scheduled for Richland, July 19, 2011, Seattle, July 21, 2011, Hood River, July 26, 2011, and Portland, July 27, 2011.
- A Fact Sheet has been released.

200-PW-1 Soil Vapor Extraction System (SVE): (RL- Arlene Tortoso, CHPRC – Mark Byrnes)

- The soil vapor extraction unit is currently operating at full capacity at both extraction units (216-Z-9 and 216-Z-1A). Extraction rates from the site are commensurate with rates achieved during FY 2010. Additional wells have been connected and are undergoing extraction at the 216-Z-9 site in preparation for treatability testing scheduled to begin in Mid-August of this year.

Schedule Status: The project schedule is set and we will assist EPA in the delivery of the ROD by September 30, 2011.

Regulatory Agency Comments:**200-CW-5 EPA Lead (RL- Greg Sinton, CHPRC – Phil Burke)**

- The final CW-5 FS (Revision 0) was approved by DOE and EPA and distributed June 30, 2011, to support public comment on the combined CW/PW proposed plan.
- The Proposed Plan (Rev. 0) has been transmitted. The public comment period started July 5, 2011 and will conclude August 5, 2011.
- Four public meetings are being held in the last two weeks of July.
- A Fact Sheet has been released.

Schedule Status: The project schedule is set and we will assist EPA in the delivery of the ROD by September 30, 2011.

Regulatory Agency Comments:

Inner Area: Central Plateau Burial Grounds

200-SW-2 Ecology Lead (RL – Doug Hildebrand, CHPRC – Phil Burke)

M-015-93A, Submit Revised RFI/CMS & RI/FS work plan for the 200-SW-2 OU to Ecology, 12/31/2011

M-015-93B, Submit RFI/CMS & RI/FS Report & Proposed CA Decision/PP for 200-SW-2 to Ecology, 12/31/2016

- Activities continued related to prepare the revised Work Plan; the Decisional Draft document will be provided to RL for review and comment in July.

Schedule Status: On Schedule

Regulatory Agency Comments:

Inner Area: Central Plateau Canyons and Facilities

U Plant Canyon EPA Lead (RL – Wade Woolery, CHPRC – Dottie Norman)

M-016-200A, Complete U Plant Canyon (221-U) demolition in accordance with the RD/RAWP, 9/30/2017

M-016-200B, Complete U Plant Canyon (221-U) barrier construction in accordance with the RD/RAWP, 9/30/2021

- The Management Assessment for grouting the remainder of 221-U Canyon was completed on May 31, 2011. Grouting activities have commenced in cells. Other grout and demolition preparation activities are ongoing in the 221-U Canyon Facility.

221-U Canyon Grout Overview						
Location	Planned Quantity	Unit	Placed Quantity	Unit		
Drain Header	110	CY	28	CY	25%	
Process Sewer	93	CY	0	CY	0%	
Buoyant Vessels	670	CY	0	CY	0%	
Process Cells	6084	CY	4711	CY	77%	
Hot Pipe Trench	1029	CY	0	CY	0%	
Electrical Gallery	4497	CY	382	CY	8%	
Piping Gallery	4314	CY	264	CY	6%	
Ventilation Tunnel	2940	CY	0	CY	0%	
Vent Ducts to Stack	581	CY	0	CY	0%	
Total	20318	CY	5385	CY	26.5%	

Last Updated July 12, 2011

Regulatory Documents EPA Lead (RL- Wade Woolery, CHPRC – Dottie Norman)

- The path forward on the removal of the D10 Tank from Cell 30 did not result in any changes to the 90% Remedial Design Report for the Disposition of Tank D-10, Revision 0. The document was approved by on July 5, 2011.
 - On July 12, 2011, RL, EPA, Ecology, and CHPRC met for a D4 Status Meeting. The primary focus of the discussion was the disposition of the piping in the 221-U Canyon. The white paper prepared by CHPRC and the meeting minutes are to be attached to this update report.
 - The HRB for removal and transport of the D10 Tank was held on July 11, 2011. The D10 Tank is scheduled to be removed from Cell 30 by July 29, 2011.

Schedule Status: On schedule

Regulatory Agency Comments:**B Plant Canyon/Waste Sites Ecology Lead (RL – Naomi Bland, CHPRC – Mike Hickey)****M-85-10A, Submit RI/FS work plan for the 200-CB-10U (B Plant Canyon/associated past practice waste sites) to Ecology, 12/31/2011**

- Met with Ecology to review the outcome of the B-Plant DQO Process
- Reviewed draft Part B permit conditions and provided comments to Ecology

Schedule Status: On schedule

Regulatory Agency Comments:**Inner Area: Central Plateau Deep Vadose Zone****200-DV-1 Ecology Lead (RL – John Morse, CHPRC – Marty Doornbos)****M-015-110A, Submit RFI/CMS & RI/FS work plan for the 200-DV-1 OU to Ecology. The work plan shall include technology screening that identifies technologies applicable for characterization, treatment, and monitoring of Deep Vadose Zone contaminants, 9/30/2012****M-015-110B, Submit CMS & FS and PP/PCAD for the 200-DV-1 OU to Ecology, 9/30/2015**

- The DQO scoping process for the waste sites is progressing on schedule. Preliminary DQOs have been provided for the waste sites in the B- and T-Areas and Ecology's comments received.
- The screening of deep vadose zone technologies for characterization, treatment, and remediation is progressing on schedule. A Public Information Exchange was held on June 7, 2011.
- Preparation for pumping the perched water from the B Area continues, with the actual pumping scheduled to begin late August.

Schedule Status: Submittal of the RFI/CMS & RI/FS Work Plan is on schedule.

Regulatory Agency Comments:

**200-DV-1 Ecology Lead (RL – John Morse, CHPRC – Glen Chronister)
M-015-110C, Submit uranium treatment technology field test plan as an
element of the RFI and RI for the 200-DV-1 OU to Ecology, 12/31/2010**

Uranium Sequestration Pilot Test:

- The FTP was submitted to Ecology in December of 2009. Funding prioritization has re-scoped the test to conduct only a shallow (Hanford Formation) test. The project team will resubmit the FTP and SAP following determination of the FY12 funding status that will allow updates for inclusion of schedule and cost requirements within these documents.

Schedule Status: Budget impacts on the uranium sequestration test schedule have resulted in the deferral of the deep (cold creek formation) test.

Regulatory Agency Comments:

**200-BC-1 EPA Lead (RL – John Morse, CHPRC – Glen Chronister)
M-015-110D, Submit technetium-99 pilot scale treatability study test
report(s) as an element of the RI for the 200-BC-1/200-WA-1 OUs to
EPA 6/30/2012**

Desiccation Test

- The Desiccation Pilot Test was initiated on November 8, 2010 and was shut down, as planned, on June 30, 2011. The project team will be evaluating the data and initiate writing of the test report that will be used to complete the objectives in milestone M-015-110D.

Schedule Status: On schedule

Regulatory Agency Comments: Information regarding the technical basis for terminating the desiccation field test was sent to EPA and Ecology, and was concurred with the next phase of the test.

BOTH INNER & OUTER AREAS**200-IS-1 Ecology Lead (RL- Doug Hildebrand, CHPRC – Phil Burke)****M-015-90, Submit Revised RFI/CMS & RI/FS work plan for 200-IS-1 to Ecology, 12/31/2011**

- TPA Change M-15-11 was approved on June 14, 2011. This change moved the Work Plan (Draft A to Ecology) date from June 30, 2011 to December 31, 2011. The approved change also outlined a commitment to hold workshops by August 31, 2011 to address:
 - 1. Allocation of pipelines and associated equipment to OUs,
 - 2. Application of alternative closure requirements,
 - 3. Investigation approaches
 - 4. Waste classification.

200-EA-1 & 200-IS-1 Ecology Lead (RL- Doug Hildebrand, CHPRC – Phil Burke)**M-015-92B, Submit CMS & FS Report(s) & Proposed CA Decision(s)/PP(s) for the 200-EA-1 and 200- IS-1 OUs (Central Plateau 200 East Inner Area) to Ecology, 6/30/2014**

Schedule Status: On Schedule

Regulatory Agency Comments:

RCRA Units**Hexone TSD Closure Ecology Lead (RL- Kevin Leary, CHPRC – Phil Burke)****M-037-01, Submit Revised Closure Plan to support TSD closure of the Hexone Storage and Treatment Facility (276-S-141/142) TSD unit, 12/30/2010**

- The Hexone Storage and Treatment Facility Closure Plan and SAP were transmitted to Ecology for review on July 16, 2010. Comments were received from Ecology on October 15, 2010. Comment resolution has been granted via e-mail by Ecology to March 11, 2011. Based on a follow-up meeting with Ecology the LDR variance is being withdrawn and the document rewritten to consider the tanks and ancillary equipment as debris (per Ecology's e-mail of 1/26/2011). Comment responses were submitted to Ecology on February 18, 2011. The Rev 1 finalization is pending Ecology responses to RL's response to comments.
- A meeting was held with Ecology on May 17, 2011 to discuss the SEPA checklist.

Schedule Status: Milestone was met ahead of schedule. Rev 1 schedule is pending Ecology response to RL's response to comments. Document finalization schedule will be revised upon receipt of Ecology's response.

Regulatory Agency Comments: The RCRA permit is close to going out for public comment. Compliance schedules for submittal of revised closure plans will be in the

permit. Due date for the submittal is the same as the due date in the M-037 milestones. This applies to the closure plans in the M-037 milestone series.

Other TSD Closures

M-037-02, submit Revised Closure Plans to support TSD closure for five (5) TSD Units: 207-A South Retention Basin, 216-A-29 Ditch, 216-A-36B Crib, 216-A-37-1 Crib, and 216-B-63 Trench, 06/30/2014

M-037-10, Complete Unit-Specific Closure Requirements According To The Closure Plan(s) For seven (7) TSD Units: 207-A South Retention Basin, 216-A-29 Ditch, 216-A36B Crib, 216-A-37-1 Crib, 216-B-63 Trench, Hexone Storage and Treatment Facility (276-S-141/142), and 241-CX Tank System (241-CX-70/71/72), 9/30/2020

M-037-11, Complete unit-specific closure requirements for two (2) TSD Units; 216-B-3 Main and Pond system and 216-S-10 Pond and Ditch, 9/30/2016

CENTRAL PLATEAU OUTER AREA

200-CW-1, 200-CW-3, 200-OA-1 EPA Lead (RL – Margo Voogd, CHPRC – Mike Hickey)

M-015-38B, Submit a revised FS Report and revised PP(s) for 200-CW-1, 200-CW-3, and 200-OA-1 OUs for Waste Sites in the Outer Area of the Central Plateau to EPA, 4/30/2012

- The work plan and SAP, previously delayed, are now expected to be submitted to EPA in early August.

200-CW-1, 200-CW-3, 200-OA-1 EPA Lead (RL – Margo Voogd, CHPRC – Mike Hickey)

M-037-03, Submit Revised Closure Plans to support TSD closure for two (2) TSD Units: 216-B-3 Main Pond system, and 216-S-10 Pond and Ditch, 4/30/2012

- Work on these closure plans is scheduled for FY12.

Schedule Status: On schedule

Regulatory Agency Comments:

200-SW-1 Ecology Lead (RL: Kevin Leary, CHPRC – Mike Hickey)

- Modified EA transmitted on April 28, 2011.
- Discussions with the Tribes were conducted on April 28, 2011.

- The EA is being revised to include modified language for borrow source material.
- The revised draft EA was delivered to DOE and Ecology on Friday, July 15, 2011.
- Public release of the revised Draft EA has a target date of August 8, 2011.

Schedule Status: As above.

Regulatory Agency Comments:

Field Work

Railcars Disposition EPA Lead (RL: Frank Roddy, CHPRC – Dottie Norman)

- By the time of the Thursday meeting, the last car shall have been removed from the 212R siding and sent to B Reactor (the tall cask car). DOE is reviewing an internal draft of the Response Action Report for the railcar disposition.

Schedule Status: On schedule

Regulatory Agency Comments:

200-MG-1 EPA/Ecology Lead (RL: Frank Roddy, CHPRC – Bob Cathel)

- The SAP Rev 1 was approved by EPA and Ecology on January 10, 2011.
- Field work continues on waste sites in the Outer Area (including 216-S-19, , 216-S-26, and 200-W-147-PL-A).
- The following sites have been completed: 200-E-110, 600-36, 600-37, 600-38, 600-51, 600-65, 600-222, 600-262, 600-275, UPR-600-21, 600-226,600-282, 600-40, 600-220, 200-W-33.

Schedule Status: On schedule

Regulatory Agency Comments:

200-CW-3 EPA Lead (RL: Frank Roddy, CHPRC – Bob Cathel)

- The RSVPs (DOE/RL-2010-108 and DOE/RL-2010-111) for the 216-N-4 and 216-N-6 waste sites were approved by EPA on March 2, 2011.
- The following sites have been completed: 216-N-1, 4, 216-N-4, 216-N-6, 600-286-PL, and 600-287-PL. WIDS Reclassification Forms for 216-N-1, 216-N-4 and 216-N-6, were signed on June 3, 2011.
- An internal draft of the RAR is being reviewed.

Schedule Status: On schedule

Regulatory Agency Comments:

200-BC Control Area (BCCA) EPA Lead (RL – Doug Chapin, CHPRC – Randy Havenor)

- BCCA North Zone A (~ 140 acres), as of week of July 18, 2011:
 - Remediation of field excavation of the 140 acres, and the stockpile excavation, have been completed. A cumulative total of ~483,000 tons has been disposed of at ERDF (from Zone A and stockpile excavation).
 - CERCLA post-soil removal verification survey measurements were continued and have been completed for ~90% of the area. All hot spots identified to date have been remediated. This survey work is on schedule to be completed by the end of July 2011.
 - Final down post surveys to release the land area from radiological controls were completed.
- FY 2010 – FY 2011 BCCA Interim Status Report:
 - The report, although not a regulatory or contract requirement, will document for the 200-OA-1 OU AR, the FY 2010 and 2011 work completed for the BCCA North (Zones A and B) cleanup work reflect that reprioritization of funding to other projects did not allow the entire CERCLA cleanup in BCCA North to be completed.
 - The report is on schedule to be finalized in August 2011, which would document and include discussion that the Zone A stockpile excavation work (to ERDF) had been completed in July 2011.

Schedule Status: On schedule

Regulatory Agency Comments:

Multi-Increment Sampling Ecology Lead (RL – Frank Roddy, CHPRC – Bo Wier)

- The first site of MIS verification sampling is complete. All samples have been delivered to Ecology. Discussion of a second site (heterogeneous) is continuing.

Regulatory Agency Comments:

Risk Assessment

Central Plateau Ecological Risk Assessment EPA/Ecology Lead (RL – Jim Hansen, CHPRC – John Lowe)

- Data analysis of soil bioassays for the site-wide PRG development (with a focus on supporting the schedule for River Corridor RI/FSSs) is ongoing.
- Central Plateau Ecological Risk Assessment Data Package Report (DOE/RL-2007-50, Rev 1) has been issued.
- Tier 1 ecological risk based soil levels report provided (CHPRC-00784, Rev. 0).
- Comments from DOE being incorporated into Tier 2 ecological risk-based soil levels report (CHPRC-01311).

Schedule Status:

Regulatory Agency Comments:

CENTRAL PLATEAU GROUNDWATER**200-ZP-1 Interim Action EPA Lead (RL – Arlene Tortoso, CHPRC – Mark Byrnes)**

- System is online pumping water at 385 gallons per minute (gpm).
- The two T Tank Farm Tc-99 wells are pumping water to ETF at ~42 gpm. They were down for a day or so the last week of June to support an ERDF leachate transfer.
- The 2010 Annual Performance Summary Report for the 200-ZP-1 and 200-UP-1 Operable Units has been issued and is in DOE concurrence for transmittal to the regulatory agencies.
- Updated groundwater modeling runs have been completed using recently obtained depth-discrete groundwater data from FY10 and FY11 well drilling.
- Fifteen extraction and five injection wells have been installed at this time. Injection well C8064 is at 93 feet and injection well C8065 is at total depth. Injection well C8066 is at 415 feet.

Schedule Status: On schedule.

Regulatory Agency Comments:**200 West Area GW Treatment Facility EPA Lead (RL – Arlene Tortoso, CHPRC – Mark Byrnes)**

M-016-124, Submit 200-ZP-1 Remedial Design Report, 8/31/2010

M-016-122, Begin Phase 1 Operation of 200W Pump and Treat System, 12/31/2011

- The 200-West Area Pump and Treat Startup Plan was provided to EPA on July 14, 2011.
- Construction Acceptance Tests; Extraction Building #1 complete. Continued at Extraction Building #2 and Injection Building #1.
- Radiological Building: Continued work for all disciplines: instrumentation and controls, mechanical, structural and electrical; installation of the transformer with Electrical Utility power to service disconnect on schedule for July 25, 2011.
- Bio Process Building: In process work continues for all disciplines: instrumentation and controls, electrical, mechanical, civil/structural.
- BIO PAD: Focus on the completion of the FBR and MBR areas, continued steel installation on the utility racks, hand rails and toe boards, grating, anchor bolts and grouting base plates. Continued installation of vapor off gas duct work and blower equipment. Continued installation of racks and panels, conduit, torquing main feeders, sleeves and cabling for lightening protection.

Schedule Status: On schedule.

Regulatory Agency Comments:

200-UP-1 EPA Lead (RL – Naomi Bland, CHPRC – Curt Wittreich)

M-015-17A, Submit a 200-UP-1 RI and FS Report and PP to EPA, 9/30/2010

- Discussions on the ROD approach continued.

Schedule Status: M-015-17A completed September 27, 2010

Regulatory Agency Comments:

S/SX Tank Farm Interim Action EPA/Ecology Lead (RL – John Morse, CHPRC – Curt Wittreich)

M-016-120, GW Treatment System <50 gpm for Tc-99 Plume at S/SX Tank Farm, 12/31/2011

- Construction of the WMA S-SX extraction system continued. The construction subcontractor is expected to be complete with FY11 activities by the end of August. Drilling was initiated at extraction well C8097 near the S-13 crib. The installation of water level transducers in 8 existing wells for the purpose of monitoring S-SX P&T performance was completed and baseline monitoring was initiated.

Schedule Status: Completion of the extraction system by 12/31/2011 is currently on schedule.

Regulatory Agency Comments:

200-BP-5, PO-1 Ecology Lead (RL – John Morse, CHPRC – Curt Wittreich)

M-015-21A, Submit a 200-BP-5 and 200-PO-1 OU FS Report and PP(s) to Ecology, 12/31/2012

- Review of the Decisional Draft 200-BP-5 RI Report was completed.
- Resolution of Ecology comments (RCR) on the Draft A 200-PO-1 RI Report continued. Comment resolutions meetings were held on June 2, 14, and 29, 2011 with Ecology to address major concerns with comments dispositions. An additional meeting on fate and transport modeling concerns is being planned.

Schedule Status: 200-BP-5 and 200-PO-1 FS Report and PP are on schedule.

Regulator Comments

200-BP-5 Ecology Lead (RL – John Morse, CHPRC – Curt Wittreich)**M-015-82A, Submit Treatability Test Plan as Amendment of 200-BP-5 WP, 12/31/2010****M-015-82B, Initiate 200-BP-5 Aquifer Tests Within 6 months of TTP Approval, approval of TPP + 6 months**

- Baseline water leveling monitoring continued. Construction of the first pipeline road crossing is expected to start in August.

Schedule Status: M-015-82A completed. M-015-82B was met with the start of test construction, as defined in the test plan. The installation of the water leveling monitoring system in existing wells was completed in April and baseline water level monitoring is underway.

Regulatory Agency Comments:**Well Decommissioning EPA/Ecology Lead (RL – Frank Roddy)**

	June		Cumulative	
	Planned	Completed	Planned	Completed
Decommissioning Total	12	24	243	269

Schedule Status: Final well, of 280, has been decommissioned the week of July 18, 2011.

Regulatory Agency Comments:**FUTURE SCOPE (out-year TPA milestones)****PUREX Canyon/Waste Sites Ecology Lead (RL – Frank Roddy, CHPRC – Mike Hickey)****M-85-20A, Submit RI/FS Work Plan for 200-CP-1 OU (PUREX Canyon/associated past practice waste sites) to Ecology, 9/30/2015****REDOX Canyon/waste sites EPA Lead (RL – Naomi Bland, CHPRC – Mike Hickey)****M-85-30A, Submit RI/FS Work Plan for 200-CR-1 OU (REDOX Canyon/associate past practice waste sites) to EPA, 12/31/2017****224B Concentration Facility Ecology Lead (RL- Kevin Leary, CHPRC – Curt Walker)****M-085-50, Submit revised removal action work plan for the 224B Concentration Facility in accordance with the Action Memorandum for the Non-Time Critical Removal Action for the 224-B Plutonium Concentration Facility (DOE/RL-2004-36). A change package with a completion milestone will accompany the submittal of the work plan. 12/31/2015**

224T Transuranic Storage and Assay Facility EPA Lead (RL- Kevin Leary, CHPRC – Curt Walker)

M-085-51, Submit removal action work plan for the 224T Transuranic Storage and Assay Facility in accordance with the Action Memorandum for the Non-Time-Critical Removal Action for the 224-T Plutonium Concentration Facility (DOE/RL-2004-68). A change package with a completion milestone will accompany the submittal of the work plan. 12/31/2025

EE/CA Report(s) EPA & Ecology Lead (RL – Doug Chapin, CHPRC, Dottie Norman)

M-85-60, Complete EE/CA report(s) for all Tier 2 facilities listed in Appendix J, 3/31/2018

- 200 West Area Tier 2 Facilities EE/CA: Planning continues with schedule details to follow.

GW Plumes EPA/Ecology Lead (RL – John Morse)

M-016-119-T01, Remedy in Place to Contain GW Plumes in 200 NPL Area, 12/31/2020

- Draft Annual Report provided to EPA and Ecology.

Schedule Status: TBD

Regulatory Agency Comments:

Air Gapping and Tapping and Draining Lines

Issue:

In preparation for grouting the galleries the project has been tapping at low spots to drain pipe lines of liquid potentially retained in pipe lines because historical documentation could not be located that would demonstrate liquid had been removed. . Approximately 500 lines of pipe exist that could contain liquid. Additional historical information in the form of log books has been located and reviewed that do indicate that these pipe lines have been drained. Further, most of the pipe lines have been opened for a long period of time resulting in some evaporation of liquid. So far, the project has tapped and drained about 200 lines. The project's experience with these 200 lines confirmed that process lines and smaller lines than 4 inches in diameter were drained because they have contained a cup of liquid or less. Lines that are 4 inches diameter and larger, mostly utility lines, have contained liquid in larger quantities.

Therefore, the project plans to continue to tap and drain the remaining lines that are 4 inches in diameter and larger but no longer tap and drain lines that are less than 4 inches in diameter. The small quantities of liquid that may remain and void space that could exist if these small lines are not filled with grout will still meet the performance requirements of the ROD and RAWP as described below. The planned approach would reduce the number lines being tapped and drained from hundreds to 18 more resulting in reduced expose of personnel to hazards and freeing resources to perform other tasks.

Applicable requirements from the Remedial Design/Remedial Action Work Plan (RD/RAWP DOE/RL-2006-21):

The only requirement for removing liquid that could apply to the galleries:

First bullet on pg 2-2: Removal of liquids from the facility or treatment to remove liquids; This provision is identified as a component of the selected remedy in the ROD (DOE/RL-2001-29)

Other possible requirements:

5th bullet on pg 2-2: Grouting, to the maximum practical extent, of internal vessel spaces, as well as cell, gallery, pipe trench, drain header, and other spaces within the facility; This provision is also identified as a component in the selected remedy. Although piping is not explicitly identified for grouting, the ROD calls for grouting of "other spaces within the facility."

Last bullet on pg 2-3: Cementitious grout will be pumped into the galleries, pipe trench, ventilation tunnel, cell drain header, process cells, and vessels containing residual materials to the maximum practical extent, to minimize the potential for void spaces and to reduce the mobility, solubility, and/or toxicity of the grouted waste. This task is identified as part of the construction component of the selected remedy. Piping is not explicitly identified for grouting, but piping is located within areas that are identified.

Water Pollution Control/Water Resource Act requirement in Table 2-2 on pg 2-13: The substantive requirements of this regulation will be met through protection of groundwater for hazardous substances that will be encapsulated within the canyon or removed entirely from the onsite area. There is no nearby surface water in the vicinity of the 221-U Facility.

Contamination will be contained or removed and, therefore, will not migrate. The remedy has been determined to be protective of human health and the environment for all exposure pathways.

First bullet on pg 3-3: Grout, to the maximum practical extent, internal vessel spaces, as well as cell, gallery, pipe trench, drain header, and other spaces within the facility as well as demolition rubble, as necessary. This statement essentially repeats the text from the 5th bullet on page 2-2.

The requirement for grouting the galleries can be found in section 6.6.1.3:

The three 221 -U Building galleries contain piping, electrical runs, and instrumentation. Some equipment in these galleries contains low levels of radiological and chemical contamination, as well as asbestos. The 221 -U Facility ROD states that contaminated equipment and piping in the galleries will be partially removed as necessary to facilitate remedial action demolition activities. The ROD contains an illustration indicating that legacy equipment will be removed from the canyon operating gallery, and that the operating gallery will be partially demolished, leaving only a heavily-reinforced, thick concrete stub wall, which divided the operating gallery from the canyon deck, above the canyon deck level. Following issuance of the ROD, the assumption that the operating gallery would be partially demolished was further evaluated in the *221 -U Facility Demolition Study (D&D-2997 1)*. The demolition study concluded that the equipment in the three canyon galleries should be grouted in place and the operating gallery left intact to lower worker exposure to hazardous working conditions that would exist if gallery piping and equipment were manually removed, to lower dust emissions that would be associated with partial demolition of the operating gallery, and to lower significantly the cost of demolition. Any contaminants that might be left within the galleries would be effectively encapsulated within the grouted monolith of the remediated canyon and buried beneath the engineered barrier. As documented in the demolition study, leaving the operating gallery intact and grouting the gallery equipment in place will not significantly raise the final facility elevation or that of the engineered barrier.

Electrical and pipe galleries will be filled with cementitious grout to encapsulate equipment inside and to provide support for the engineered barrier placed above. The galleries likely will be filled from lowest elevation (electrical gallery) to highest elevation (operating gallery). Grout will be pumped at a rate to maintain loading on the gallery walls to a structurally safe level and to disperse the heat of hydration over an acceptable time period. The flowable grout fill will be pumped under low pressure to fill voids.

Wayne Toebe (e-mail, 12/7/09) performed an evaluation of the ROD to identify applicable requirements for handling waste. He identified the following requirements relative to liquids: **LIQUIDS MAY BE ADEQUATELY REMOVED VIA THE GROUTING PROCESS ITSELF**: The 221-U ROD states that waste currently in the 221-U includes liquid and sludge that exhibit characteristics that cause the waste to designate as dangerous waste and *under all containment alternatives, in lieu of treatment pursuant to land disposal restriction provisions...alternative treatment will be provided to mitigate risk associated with disposal of this waste within the canyon.* (see 221-U ROD, page 41 and page 60; see also 221-U RD/RAWP WMP page 4-2).

- **THE ROD IS CLEAR REGARDING LIQUID REMOVAL AND CHEMICAL STABILIZATION THROUGH GROUTING**: See the text in the ROD on page 66, section 2.13.4, which says, "*grout encapsulation of the waste should effectively solidify liquids in the facility and chemically stabilize the dangerous characteristics of the waste.*"

Discussion:

The requirements identified above can be summarized as: 1) fill voids to the maximum practical extent, 2) encapsulate hazardous substances to protect the ground water, and 3) grout encapsulation should effectively solidify liquids. In addition, 4) remove liquids if (a) they are incompatible with grout; (b) they could affect the design requirement to provide sufficient compressive strength; and/or (c) they might pose a safety or health hazard to workers during the remediation project.

Project experience has confirmed log book historical information that indicates the piping in the galleries has been drained and that little liquid (a cup) exists in the lines that are less than 4 inches in diameter. The small quantity of residual liquids in small pipes are commonly incorporated into grout, however if not then a small localized area of liquid could exist. Nevertheless, the action will effectively

encapsulate and immobilize these potential small localized areas of liquid within the pipes, thus protecting the ground water. This is consistent with the requirement in section 6.6.1.3 which states, "Any contaminants that might be left within the galleries would be effectively encapsulated within the grouted monolith of the remediated canyon and buried beneath the engineered barrier".

The lines greater than 4 inches will continue to be tapped and drained and opened so that liquid can be removed and grout can flow into the pipe lines. If grout were not to completely fill some of the less than 4 inch pipe lines then void space would exist inside the grout encapsulant, this small potential void space is acceptable at other Hanford landfills such as ERDF which allow up to 6 inch diameter pipe (000X-DC-W0001, Supplemental Waste Acceptance Criteria for the Environmental Restoration Disposal Facility).

Implementation:

The above requirements can be met by performing the following:

- 1) All of the utility systems (water, steam, air, etc) will be gapped or tapped at some point to confirm it is not full or pressurized.
- 2) All of the chemical lines will be gapped or tapped at some point in the system to confirm it is not full or pressurized.
- 3) Tap and drain at the low points any chemical and utility lines that have a diameter of four inches or greater. Residuals in lines less than four inches in diameter has been so small that it would not compromise the compressive strength of the massive concrete block being poured and, it would not pose a safety or health issue to workers since it is contained with a pipe that will essentially be remotely encased in concrete.
- 4) Air gap any lines with a four inch diameter or greater so as much grout as possible can flow in to fill voids to the maximum practical extent.

Except for the chemical sewer which originates in the galleries, the discussion above does not address any pipes or lines that go to cribs, ponds, ditches, waste tanks, etc. Lines or pipes that go to waste sites need to be evaluated on a case-by-case basis.

Central Plateau D4 Project Status Interface Meeting Minutes July 12, 2011

Location: Federal Building, CR-142

Attendees:

RL AMCP 200 Area Remediation Project: Al Farabee, Wade Woolery

EPA: Craig Cameron

Ecology: Rick Bond

CHRPC: Jeff Westcott, Greg LeBaron, Dave Chojnacki

Meeting Purpose: Provide current status of D4 projects, with the primary focus on the status of the 221-U Canyon piping system

Minutes:

- Dave Chojnacki discussed the plan for the disposition of the grouting of the piping system in 221-U Canyon.
 - Most lines were deactivated circa 1964. Some lines, such as the fire system lines, remained active until deactivation activities in the 1990s.
 - A 6" raw water line contained approximately 1,000 gallons of water. The water was analyzed and confirmed to be non-hazardous and non-radioactive.
 - Steam lines have been investigated by opening the drip and mud legs. No liquids were discovered. No number of steam lines was provided.
 - Everybody agreed the plan to discontinue tapping and draining lines less than 4 inches in diameter is consistent with ROD and RAWP requirements. The 4 inch in diameter, and greater, pipe lines will continue to be drained of liquid and gapped to facilitate grout flow into the pipes. This conclusion is based on historical information and the project experience tapping and draining about 200 of the 500 pipe lines where a cup or less of liquid in lines less than 4 inches in diameter was found.
- Al Farabee requested more quantitative information on the approximate number and sizes of lines in the canyon and their status. Dave Chojnacki stated that approximately 200 non-hazardous lines were tapped and drained. The floor drain lines were gapped. The primary purpose for cutting and plugging the floor drains was to isolate the facility. No additional details on numbers or sizes of lines were provided.
- Wade Woolery requested information on the status of lines connected to 276-U (south end of the canyon) and 241-WR (Thorium Vault). PRC stated that all lines connecting to 276-U were deactivated and blanked. PRC also stated that there were 24 lines, each approximately 3" in diameter, connected to 241-WR, approximately 300 feet away. No definitive status of the lines to 241-WR was provided. Craig Cameron stated that prior to remediation of 241-WR,

Central Plateau D4 Project Status Interface Meeting Minutes July 12, 2011

characterization of the tanks would be required, even if grout had entered the vault. PRC stated that the grout, labeled Type B, would not travel into the vault. No information was provided concerning the grout forcing any contaminated solids or liquids through the lines toward the vault.

- Al Farabee asked if PRC had evaluated the risk of grout entering 241-WR. PRC has not performed that task, but would provide a status, and disposition path forward, of all lines and pipes leaving the 221-U Canyon.
 - **Actionee:** PRC
 - **Due Date:** None provided, however, reasonable time for RL review prior to grouting impacted lines.
 - **Status:** Pending.
- Everybody agreed that the disposition of 221-U Canyon piping should be captured in lessons learned for use in future canyon D&D actions. Al Farabee specifically cited providing Naomi Bland this information for use in the RI/FS for B Plant.
- Dave Chojnacki stated that grouting of the cells is approximately 75% complete. The current plan by PRC to fill the cells with grout will be to allow the grout to flow between the space separating cover blocks and the cell openings. Al Farabee and Craig Cameron stated that previous discussions revealed that the canyon deck would be covered with soil, which would provide a cushion for imploding the canyon ceiling and operating gallery walls. EPA further stated that soil, or other approved cushioning agent, will have to be added at a later date. More details of this information will be required for approval of the 30%/60%/90% Demolition Design document.
 - Al Farabee requested from PRC the latest histogram showing current and scheduled grout status.
 - **Actionee:** Dave Chojnacki
 - **Due Date:** COB Friday, July 15, 2011
 - **Status:** Pending.
- Craig Cameron agreed that the information on the tapping and draining of the lines would not require a revision to the 90% Grout Design document, but should be cited in the monthly PMM notes.
- Dave Chojnacki provided a status on the D10 Tank. He stated that the trailer and the shipping container were brought into the railroad tunnel; however, obstructions in the tunnel prevented the trailer being moved to the designed location. The obstructions, which include 2" diameter piping, with asbestos, will be removed. The D10 Tank is scheduled to be loaded into the shipping container on July 19, 2011.

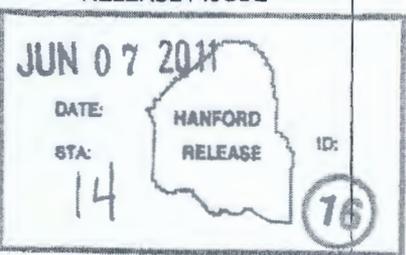
Central Plateau D4 Project Status Interface Meeting Minutes July 12, 2011

- Wade Woolery provided Rick Bond with the current status of 209-E. Tanks TK-101 and TK-102 were loaded out this week and HO-160 was loaded out last week. Rick Bond has requested a walk down of 209-E, including the Mix Room and CAR.
 - **Actionee:** Wade Woolery
 - **Due Date:** Week of July 18, if conditions at 209-E and Rick Bond's schedule are in alignment.
 - **Status:** Pending.

- Jeff Westcott provided the status on the D&D of the railcars. Three of 16 railcars remain to be dispositioned. The two locomotives and a 3- well car have been transported to the B Reactor Museum. The tall well car is scheduled to be transported to B Reactor Museum. The remaining three rail cars are planned for shipment to ERDF by the end of next week.

- Jeff Westcott and Al Farabee provided the status on the demolition of the 284-E and 284-W Power House Facilities. 284-E has been demolished and the waste has been removed. The open air demolition of 284-W has been scheduled starting in early August 2011. This date is contingent upon addressing the employee concerns in a reasonable time frame.

Date Received for Clearance Process (MM/DD/YYYY) <u>06/07/2011</u>		INFORMATION CLEARANCE FORM	
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200 West Area Pump and Treat System Startup Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788



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200 West Area Pump and Treat System Startup Plan

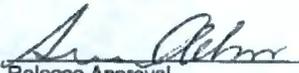
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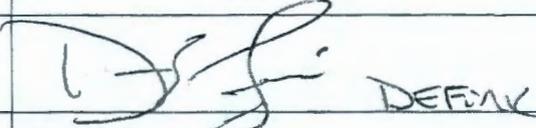
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Change Log

- Rev 1 Updated Appendix C
- Rev 2 Updated Appendix B
- Rev 2 Updated Appendix F
 - Change to 19 Functional Areas
 - Changed Engineering Leads
- Rev 2 Updated Schedule (appendix)
- Rev 2 Minor Verbiage Change
- Rev 2 Updated Appendix D
- Rev 2 Added Appendix I

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ACROYNMS

200W P&T	200-ZP-1 West Pump and Treat
AA	Approval Authority
ATP	Acceptance Test Procedure
CAT	Construction Acceptance Testing
CHPRC	CH2M HILL Plateau Remediation Company
COC	Contaminant of Concern
DA	Design Authority
DCN	Design Change Notice
DOE	U.S. Department of Energy
EMS	Environmental Management System
EPC	Engineering, Projects, and Construction
ESH	Environmental Safety and Health
FBR	Fluidized Bed Reactor
FDC	Functional Design Criteria
gpm	gallons per minute
GC	General Contractor
HDCS	Hanford Document Control System
IATP	Integrated Acceptance Test Procedure
ISMS	Integrated Safety Management System
ITB	Injection Transfer Building
IX	Ion Exchange
JCS	Job Control System
LLE	long-lead equipment
MBR	Membrane Bio Reactor
M&TE	measuring and testing equipment
OCRWM	Office of Civilian Radioactive Waste Management
O&M	Operations and Maintenance
OTP	Operational Test Procedure
PM	Project Management
POD	Plan of the Day
POW	Plan of the Week
QA	Quality Assurance
QAIP	Quality Assurance Inspection Plans
R2A2	Roles, Responsibilities, Authorities, and Accountabilities
RD/RA	Remedial Design/Remedial Action
RCR	Review Comment Record
S&GRP	Soil and Groundwater Remediation Project
SCADA	Supervisory Control and Data Acquisition
SDC	Service During Construction (CH2M HILL Corporate)
SME	Subject Matter Expert

SMP	Safety Management Program
SOS	Startup Operability and Sustainability
SSCs	structures, systems, and components
TA	Test Authority
TC	Test Coordinator
TDR	Test Deficiency Report
TPA	Tri-Party Agreement
VOC	volatile organic chemicals
VPGAC	vapor-phase granular-activated carbon
WP	Work Plan

GLOSSARY

boarding	A process used to train personnel on responding to questions posed during formal interviews
bounded	A process of defining the specific boarders the document covers
ramp	A process of providing an increase of flow until a specific number is reached.

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1.0 INTRODUCTION

The 200 West Treatment Facility (200W P&T) Project includes design, construction, and testing of the groundwater 200W P&T Facility. The construction includes a treatment facility capable of treating water at a minimum of 2,000 gallons per minute (gpm) as required by the Remedial Design/Remedial Action (RD/RA) Work Plan (WP) described in SGW-40043, *200 West Area Pump and Treat System Functional Design Criteria*, Appendix A. When testing the design of the system using the Acceptance Test Procedure (ATP), we will be running approximately 1,000 gpm. Permanent groundwater extraction and injection wells will be integrated into the system.

Injection wells will be constructed both up-gradient of the contaminant plumes to supply the aquifer, and down-gradient of the plumes to control contaminant migration. The 200W P&T Biological Process element of the design will be capable of treating the specific contaminants of concern (COC) (carbon tetrachloride, trichloroethylene, total chromium, hexavalent chromium and nitrate) specified in the RD/RA WP, with the exception of Technetium 99, uranium, and tritium. The radiological element of the design includes the treatment of Technetium 99- and uranium-contaminated water through a resin treatment, while the treatment of tritium will be by natural attenuation. An Integrated ATP (IATP) will be conducted using potable water to demonstrate system operation; however, no COC will be treated. Treatment of the COCs will begin with the Operational Test Procedure (OTP). Additionally, wells from the vicinity of S-SX Tank Farm will be included in the treatment process. Pumping rates from these extraction wells are expected to reach approximately 50 gpm.

SGW-40043, *200 West Pump and Treat System Functional Design Criteria* (see Appendix A) is the technical basis for the functional design of the facility. A Facility Hazard Categorization was performed, as defined in PRC-PRO-NS-8366, *Facility Hazard Categorization*, which determined that the 200W P&T is General Service (less than Hazard Category 3) and has no nuclear safety systems. Therefore, DOE-STD-1189, *Integration of Safety into the Design Process*, is not applicable. This Startup Plan is an implementing document that follows the direction set forth in HNF-40140, *200 West Area Pump and Treat System Project Execution Plan*.

The 200W P&T Facility startup will progress through three basic stages that culminates with final testing, resulting in Limited Approval for Operations of the plant. The basic stages are preparation for startup, equipment component testing, and a final system IATP. When the stages are complete, including a graded Readiness Evaluation, the plant will be turned over to Soil and Groundwater Remediation Project (S&GRP) to perform the OTP.

2.0 OBJECTIVE

This Startup Plan is an over-arching document that provides a general description of the 200W P&T startup process. Detailed procedures, tests, and plans will be developed to meet the requirements of CH2M HILL Plateau Remediation Company (CHPRC) established processes and to ensure the facility functions as designed.

This Startup Plan encompasses the following:

- Supports HNF-40140, *200 West Area Pump and Treat System Project Execution Plan*
- Supports safety of workers, the public, and the environment by adhering to the Integrated Safety Management Systems and Environmental Management Systems (ISMS/EMS)
- Identifies applicable requirements

- Identifies the startup organization: Roles, Responsibilities, Authorities, and Accountabilities (R2A2)
- Identifies startup testing limitations
- Provides guidance for the testing of equipment and systems of the 200W P&T Facility
- Provides a general overview of the startup schedule

3.0 SCOPE

Startup preparation includes planning, staffing, and mobilizing an integrated team to develop and execute the following types of deliverables:

- 200W P&T process requirements matrix for equipment
- Process equipment and facility maintenance procedures
- Process equipment testing checklists, test procedures, test plans (e.g., construction acceptance testing [CAT], ATPs)
- Measuring and testing equipment (M&TE)
- Winterization plan
- Operations procedures
- Training and qualification program
- OTP

Startup preparation identifies the overall requirements to be achieved for S&GRP Operations to take control of 200W P&T and the desired make-up of the Startup Team. The goal is to have the correct mix of personnel that combines the expertise of both short-term contract personnel and long-term fulltime-equivalent personnel. Additionally, the Startup Team will be enhanced with experienced personnel from the CHPRC S&GRP organization who possess the necessary knowledge, skills, and abilities at the appropriate time in the project lifecycle to complement the team. This integrated team approach will allow for a successful completion of the project.

Engineering, Projects, and Construction (EPC), in conjunction with S&GRP, have identified two leadership positions on the Startup Team for personnel who will transition with the plant. These positions, Test Coordinator (TC) and Test Authority (TA), are to transition to 200W P&T Operations Management and Engineering Management at the end of the IATP. Additionally, other permanent personnel with key knowledge, skills, and abilities will be supplied by S&GRP. S&GRP will provide senior, experienced, fulltime operators who will become integrated as members of the Startup Team. Early integration of the operators is a key element in the development of a successful training program and the finalization of maintenance and operations procedures. This leg of the project is the most comprehensive and contains the majority of the development time and labor.

The 200W Pump & Treat System Test Plan was approved to implement the testing approach as required by PRC-PRO-EN-286, *Testing of Equipment and Systems*. The Test Plan is designed to ascertain if the equipment and/or system is acceptable for use by S&GRP P&T Operations. As required by Appendix C; *PEP R2A2*, all of the CATs and ATPs will be reviewed and approved by appropriate groups, e.g., Project Engineering.

The acceptance criteria that determine the satisfactory completion of each test will be specified in the individual system and component data sheets or packages. These will include specific test, test boundaries, complexity of testing, and documentation.

The responsibilities and qualifications for personnel in the Startup organization, e.g., Startup Manager, TA, TC, startup specialists, and engineers are identified in Section 8.0, Startup Organization and Functional Responsibilities.

4.0 TEST METHODS

Detailed test procedures will be in accordance with PRC-PRO-EN-286, *Testing of Equipment and Systems*. Project management will present to the EPC Project Review Board the test types to be utilized during the acceptance testing of applicable structures, systems, and components (SSC). This will be accomplished through the formal Project Review Board process as directed in PRC-CHRT-PM-40249, *Project Review Board Charter*.

Appendix G, *Test Methodology*, describes the test types identified below that will be conducted for the 200W P&T Facility:

- CATs (see Appendix F for detail)
- ATP (see Appendix F for detail)
- OTP
- Process data

5.0 PRE-OPERATIONS READINESS EVALUATION

The startup process will document the commissioning and demonstration of plant capabilities via a "Pre-Operations Readiness Evaluation." This process will apply a graded approach leveraging DOE O 425.1D, *Verification of Readiness to Startup or Restart Nuclear Facilities*, as a basis.

The Pre-Op Readiness Evaluation will be assessed at a Contractor "Readiness Evaluation" level. This evaluation will be led and performed by personnel within and/or outside of the CH2M HILL / CHPRC organizations. The Readiness Evaluation Leaders will have established credentials in the U.S. Department of Energy (DOE) Readiness Assessment and Operational Readiness Review arena. At the completion of the Readiness Evaluation, a punchlist of necessary items requiring corrective actions will be scheduled for resolution. Other items that are not critical to the start of the OTP, as determined by the Startup Team and S&GRP Operations Management, will be carried forward on the punchlist. With the completion of the Readiness Evaluation and the development of the issues punchlist, the project is ready to begin OTP.

The Startup Approval Authority (SAA) for the Operational Testing with raw groundwater will be approved by CHPRC Senior Management, Vice President of S&GRP. The Approval Authority (AA) for unrestricted operations after the successful OTP will be the Vice President designee.

6.0 EQUIPMENT AND FACILITIES

Appendix F, *Equipment and Facilities*, identifies the areas bounded by this document. For illustrative purposes, it has been broken out into the following example format:

Table 1 – EXAMPLE Appendix F Format

Functional Area SSC	CAT/ATP	Project Lead	Project Engineer	Startup Specialists and Engineers	Design Authority
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7.0 CRITERIA/CONSTRAINTS

If water is required during performance of ATPs, then only potable water will be used.

The ATPs will be managed in approximately 19 major functional areas as identified in Appendix F; they will be refined as appropriate in the test documents. It is intended there will be one IATP.

NOTE: Specific names identify specific testing of SSCs and may be refined as the project matures.

1. Extraction Wells
2. Extraction Transfer Bldg 1 Raw Water
3. Extraction Transfer Bldg 2 Raw Water
4. Extraction Transfer Bldg 3 (S-SX) Raw Water
5. Ion Exchange (IX) Fluid Processing
6. Fluidized Bed Reactor (FBR) System
7. Membrane Bio Reactor (MBR) System
8. Air Stripping (treated water)
9. Injection Transfer Bldg 1 Finished Water
10. Injection Transfer Bldg 2 Finished Water
11. Injection Wells
12. BIO Bldg - Process Support Components
13. RAD Bldg - Process Support Components
14. Process Volatile Organic Chemical (VOC) Control (vapor-phase granular-activated carbon [VPGAC])
15. IX Solids Handling (resin loading, unloading, and disposal)
16. Bio-Solids Handling (centrifuge, rotary drum thickener)
17. Lime Stabilization
18. Bio-solids Odor Control (ammonia scrubber)
19. Supervisory Control and Data Acquisition (SCADA)

If it is necessary to inject potable water into injection wells during the performance of an individual functional area ATP, documented permission will be received from the 200W P&T Environmental Compliance Officer. Treated water will require compliance with regulatory requirements, e.g., Environmental Protection Agency, for full operation. This includes trained personnel, approved procedures, calibration of all required equipment, and recording of water treatment processing data.

Prerequisites will be defined in the ATP/OTP documents.

8.0 STARTUP ORGANIZATION AND FUNCTIONAL RESPONSIBILITIES

The EPC Project Team has control of the facility through construction and startup, which include the functions for facility operations, e.g., lockout/tagout, event reporting, and access control. Upon completion of the IATP and development of a punchlist to resolve all major issues, the facility will be ready for turnover to S&GRP. A procedure for the turnover of 200W P&T is under development.

Following the IATP, Readiness Evaluation, and OTP, the Startup Team will compile the final reports as identified in Appendix C, the *PEP R2A2*.

8.1 Responsibilities of Key Organizational Positions

8.1.1 Startup Manager

The Startup Manager will manage testing and startup activities and will report directly to the Project Manager. The Startup Manager will be responsible for integrating with Project Management (PM) regarding building/facility operations during the startup and IATP. These activities include work planning, authorization, facility access, testing, and preparations for a Readiness Evaluation. This includes integrating with the existing PM infrastructure, e.g., Plan of the Day (POD), Plan of the Week (POW), and Shift Turnover. Leadership roles are described below. Startup Team roles and responsibilities are covered in Appendix B, *Startup Team R2A2*.

8.1.2 Test Authority

The TA will report directly to the Startup Manager and will be a member of the Startup Team. The TA will be qualified as an engineer as required by PRC-PRO-EN-286, *Testing of Equipment and Systems* and be appointed by S&GRP with concurrence of the EPC Project Team. The TA has overall responsibility for coordinating the performance of the testing through ATP with the Startup Manager. Upon successful completion of testing, the TA will prepare, certify, and present test reports in accordance with Appendix C, *R2A2*. Additionally, the TA will be the Startup Teams' liaison for reviewing the results with other departments as identified in this plan. Under supervision of PM, the EPC General Contractor (GC) will perform the CATs with integration support by the Startup Manager, Startup Team, and TA.

Following the IATP and successful completion of the Readiness Evaluation, the TA will transition to an engineering leadership position for the 200W P&T. Additional duties of the TA will include supporting the development of the training and qualification program for the facility and gaining a provisional management qualification on 200W P&T by the project team. Within the scope of this Startup Plan and prior to allowing an individual to perform work, the TA will have the responsibility to determine if the individual is competent, commensurate with responsibilities, to perform the assigned tasks.

The TA will be the Subject Matter Expert (SME) for the 200W P&T operations. As such, the SME, with the assistance of the Startup Team, will perform hands-on training and "boarding" of S&GRP operators prior to the start of the Operational Test Phase.

8.1.3 Test Coordinator

The TC will report directly to the Startup Manager and will be a member of the Startup Team. The TC is responsible for coordinating with the project, the EPC Construction Manager, and the

GC on the individual testing activities in the field through the ATP. The TC provides technical support to CH2M HILL Corporate Service During Construction (SDC), the CHPRC Design Authority (DA), and the Startup Manager by performing the following:

- Support the TA and project engineers in scoping the boundaries of SSCs.
- Support facility walkdowns and provide a punchlist of items to the Startup Manger.
- Support the verification of calibrated equipment, inspection, initial operation, and functional testing.
- Support the performance of vendor checkout of LLE.
- Support testing performed for 200W P&T Project.
- Lead the pre-operational activities for the Readiness Evaluation.

The TC will transition to Operations Manager under S&GRP for the 200W P&T after successful completion of the Readiness Evaluation and the IATP. Additional duties of the TC will include supporting the development of the training and qualification program for the facility and gaining a provisional management qualification on 200W P&T by the project team. The TC will also conduct SME performance operation verification for staff (operators, field-work supervisors) transitioning to S&GRP P&T Operations prior to the start of the Operational Test Phase.

8.1.4 Startup Specialists and Engineers

The majority of the startup testing and infrastructure development will be performed by contract startup specialists and engineers. These professionals are chartered with facilitating and coordinating with multiple entities (e.g., SDC, project engineers, and S&GRP DA) to develop maintenance and operations procedures/documents required for initial operations. Other duties performed by startup specialist and engineers include the following:

- Interface with SDC to ensure testing protocols are adequate to test SSCs.
- Prepare the ATPs for all subsystems and the IATP.
- Interface with EPC PM, the GCs, and subsystem vendors to coordinate subsystem CAT and ATP testing during the initial phase of testing for each engineer's area of expertise and assigned SSCs.
- Support integration of S&GRP personnel to develop maintenance and operation procedures.
- Support the integrated Startup Team to develop training/qualification cards and training curriculum.
- Support the implementation of safety and quality management programs, e.g., conduct of operations, RadCon, sampling program, POD, POW, etc.
- Support the development of 200W P&T procedures (e.g., operations).
- Support the development and implementation of the OTP for S&GRP.
- Support performance of the Pre-Operations Readiness Evaluation.
- Support the development of Operations and Maintenance (O&M) Manual.
- Support transition of the facility from EPC to S&GRP operations.

9.0 EXPECTED RESULTS

Equipment and systems are expected to meet CHPRC Functional Design Criteria (FDC) and specifications, and to operate as designed. Specific acceptance criteria for individual tests will be described in the individual test/procedure.

10.0 TEST SPECIFICATION/TEST PROCEDURE

Specific acceptance criteria will be identified in each test document. No separate test specification document is required.

11.0 SAFETY

It is an expectation that all members of the Startup Team will adhere to their training in ISMS/EMS to protect themselves, coworkers, and the environment. All work will be performed using approved procedures and will be controlled through the Construction POD. Many of the tests will be performed while electrical equipment is energized. All testing will be performed in accordance with PRC-RD-SH-11827, *CHPRC Electrical Safety Program Requirements*. During the ATP, the EPC PM organization will oversee the GC and be the lockout/tagout authority. During the Operational Test Phase, lockout/tagout authority will be the responsibility of the S&GRP Team.

12.0 QUALITY ASSURANCE

All equipment in the 200W P&T system is enhanced commercial Quality Level 3 as defined in PRC-PRO-QA-259, *Graded Approach*. All test results will be reviewed and approved by the organizations as identified in Appendix C, *PEP R2A2*.

13.0 SCHEDULE

The original project summary schedule for this Startup Plan was organized into functional areas allowing for flexibility during initiating operations in the 200W P&T plant. This has transformed into an integrated performance schedule that embodies two primary goals. The two performance sub-schedules are:

- 1) Acceptance (CAT and ATP) and Readiness Evaluation
- 2) Tri-Party Agreement (TPA) Milestones

The daily management of the project is identified in the Field Execution Schedule.

14.0 REPORTS

Completion of all reports, e.g., CAT final report, will be documented as identified in Appendix C, *PEP R2A2*. The correspondence shall state that the equipment or system testing is complete and in compliance with the construction specification, and that the results are satisfactory. Test reports required by PRC-PRO-EN-286, *Testing of Equipment and Systems* will document CATs, ATPs, and OTP completion.

15.0 COMMUNICATION PLAN

As personnel are brought into the Startup Team, they will become involved in preparing for future work to be done on the project. This includes training, planning, hazard and environmental impact identification, implementation of controls, job walkdown, procedure

development, and pre- and post-job reviews. This approach on the frontend will enhance procedure development by having the direct involvement of workers with knowledge and experience in equipment operation, which supports the ISMS/EMS philosophy.

As with all CHPRC Projects, workers have the responsibility and authority to stop work if they believe an activity in which they are involved poses a risk to themselves, coworkers, or the environment.

Within the organization, it is essential that the Startup Team keep communications a priority. This is extremely important to the Startup Team occupying office space in different areas on site. To keep the Startup Team integrated, there are weekly meetings, e.g., interface meetings with SDC, project engineer meetings, and team interface meetings along with other discussions as directed by management.

16.0 TRAINING

In January of 2011, a training specialist was hired, reporting to the TC, to support the project's training requirements. The training program will apply a graded approach to the requirements of DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*. The training specialist will be responsible for setting up an integrated training program for the 200W P&T Project. The training program will consist of a training curriculum and qualification cards. The training specialist will use appropriate training aids available (e.g., computer-based training simulator).

17.0 WORK CONTROL

In the latter quarter of 2010, a work planner was hired to support transition to the Site Work Control Program. The individual will report directly to the TC and will transition to S&GRP, which will assume control of the project during the Operational Test. The work planner will support the existing POD and POW to continue with safe operations and will be responsible for loading and facilitating preventive maintenance procedures into Hanford's Job Control System (JCS). The work planner will develop work packages to support the ATPs and IATP. Additionally, the work planner will be available to support development of work packages, as needed for the CAT procedures. The planner's duties include populating the JCS component index.

18.0 FORMS (AS APPLICABLE)

None

19.0 RECORD IDENTIFICATION (AS APPLICABLE)

All records are managed in accordance with PRC-PRO-IRM-10588, *Records Management Processes*. Office of Civilian Radioactive Waste Management (OCRWM) records are also managed in accordance with PRC-PRO-QA-19579, *OCRWM Records Management*.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility	OCRWM Retention Schedule (If OCRWM Related)

20.0 SOURCES

20.1 Requirements

- 29 CFR 1910.120(e), *OSHA, Hazardous Waste Operations and Emergency Response; Training*
- 40 CFR 264.16, *Standards For Owners And Operators Of Hazardous Waste Treatment, Storage, And Disposal Facilities; Personnel Training*
- 40 CFR 265.16, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities; Personnel Training*
- CHPRC-00073, *CHPRC Radiological Control Manual*
- DOE O 425.1D, *Verification of Readiness to Startup or Restart Nuclear Facilities*
- DOE O 5480.20A, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*
- HNF-11724, *CHPRC Safety Management Programs*
- HNF-40140, *200 West Area Pump and Treat System Project Execution Plan*
- SGW-40043, *200 West Area Pump and Treat System Functional Design Criteria*

20.2 References

- Lessons Learned
- PRC-CHRT-PM-40249, *Project Review Board Charter*
- PRC-PRO-EN-286, *Testing of Equipment and Systems*
- PRC-PRO-IRM-10588, *Records Management Processes*
- PRC-PRO-MN-490, *Calibration Management Program*
- PRC-PRO-NS-8366, *Facility Hazard Categorization*
- PRC-PRO-QA-259, *Graded Approach*
- PRC-PRO-QA-19579, *OCRWM Records Management*
- PRC-RD-SH-11827, *CHPRC Electrical Safety Program Requirements*

21.0 APPENDIXES

- Appendix A - 200 West Area Pump & Treat System - Functional Design Criteria
- Appendix B - Startup Team Roles, Responsibilities, Authorities, and Accountabilities (R2A2)
- Appendix C - Project Execution Plan Roles, Responsibilities, Authorities, and Accountabilities (R2A2)
- Appendix D - PRC Performance-Based Schedule
- Appendix E - SMP Implementation Strategy
- Appendix F - Equipment and Facilities
- Appendix G - Test Methodology
- Appendix H - Construction Acceptance Testing and Acceptance Test Procedure Flow Charts

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Appendix A – 200 West Area Pump and Treat System Functional Design Criteria

APPENDIX A

*200 West Area Pump and Treat System
Functional Design Criteria*

Appendix A – 200 West Area Pump and Treat System Functional Design Criteria

NOTE:

The size of SGW-40043, *200 West Area Pump and Treat System Functional Design Criteria*, precludes its inclusion as an appendix to this document.

The FDC title page has been included as Appendix A; the FDC may be viewed through IDMS.

Appendix A – 200 West Area Pump and Treat System Functional Design Criteria

SGW-40043

200 West Area Pump and Treat System Functional Design Criteria

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-08RL14788



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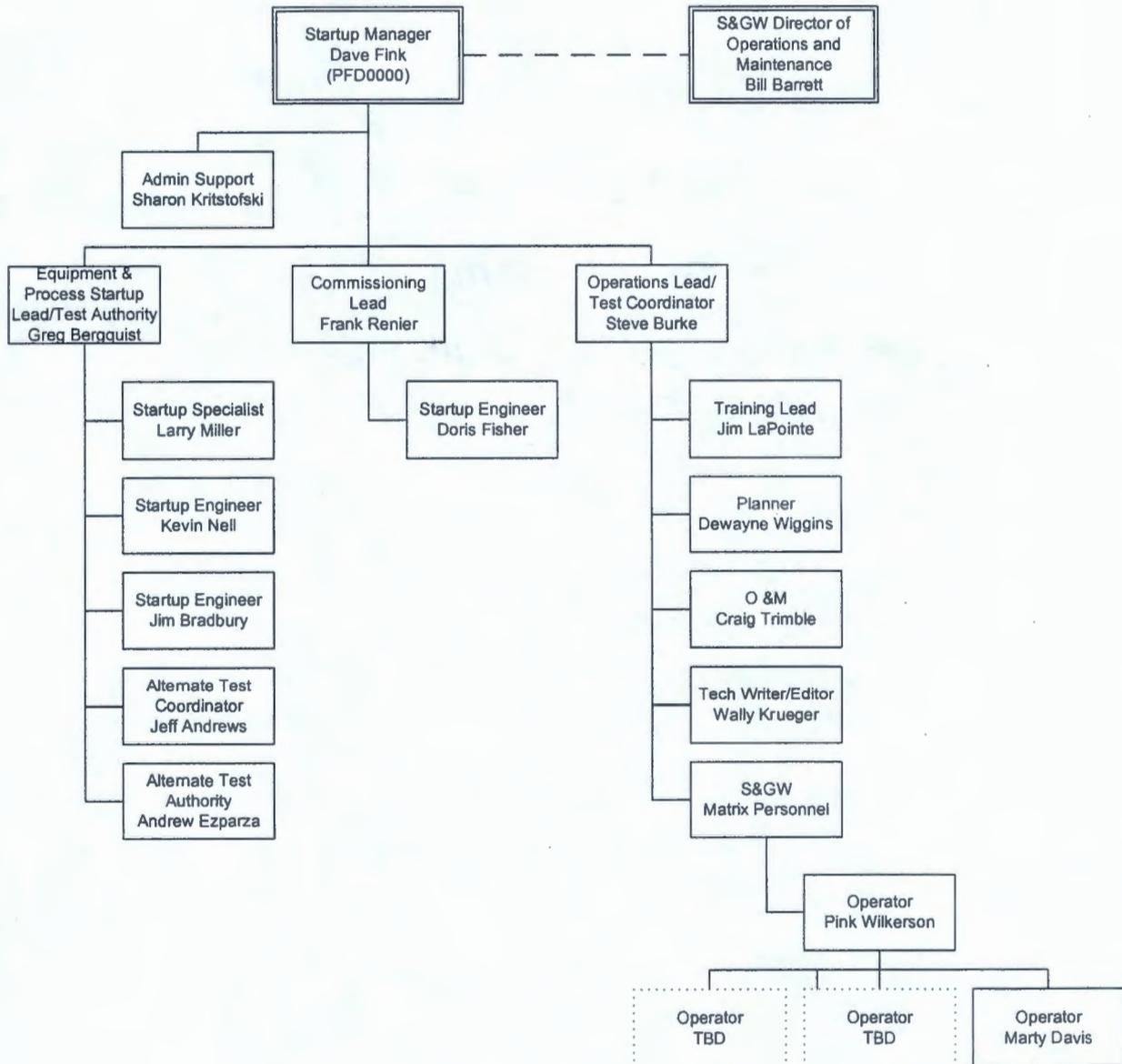
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APPENDIX B

Startup Team

Roles, Responsibilities, Authorities, and Accountabilities (R2A2)

Appendix B – Startup Team R2A2



Appendix B – Startup Team R2A2

1.0 SCOPE FOR STARTUP TEAM

The work scope for the 200W P&T Startup Team includes the following:

- Develop new startup and testing governing documents.
- Develop maintenance and operations procedures/documents required for operations.
- Populate JCS with maintenance procedure data.
- Develop a plan to control M&TE.
- Interface with SDC to ensure testing protocols are adequate to test SSCs.
- Interface with S&GRP SDC on review of CATs and ATPs.
- Interface with EPC Project and PM, GC, and subsystem vendors to facilitate subsystem ATP.
- Hire new personnel and utilize matrixed S&GRP personnel to populate an integrated Startup Team organization.
- Utilize the integrated Startup Team to develop training/qualification cards and training curriculum.
- Apply the Systematic Approach to Training, which provides analysis, development, delivery and evaluation of training on plant O&M procedures and support documentation for both core and support team personnel.
- Prepare CAT and ATP for all individual systems.
- Prepare IATP for all subsystems required to treat water and handle treated products.
- Prepare CAT and ATP test reports.
- Implement required elements of safety and quality management programs (e.g., Conduct of Operations, RadCon, sampling program).
- Develop OTP to prove operation procedures are functional. Additionally, elements of this Startup Plan will cover trending of SSCs during extended run.
- Prepare OTP test report.
- Facilitate and ensure a successful Readiness Evaluation prior to turnover to S&GRP O&M organization.
- Develop O&M Manual.
- Develop Winterization Plan.

2.0 R2A2 FOR STARTUP TEAM POSITIONS

2.1 Startup Manager

- Fully support ISMS/EMS.
- Develop and execute a safe and compliant startup of plant and individual process SSCs.
- Hire and integrate matrixed personnel into the Startup Team.

Appendix B – Startup Team R2A2

- Lead team to develop and implement elements of Safety Management Programs (SMP).
- Lead team to develop required procedures for maintenance and operations.
- Ensure an adequate training and qualification program is developed and implemented.
- Manage issues that arise during startup and test that impact Engineering and Construction changes, ATP and CAT issues, and Readiness Evaluation issues.
- Interface with EPC Project and PM, using the existing Conduct of Operations protocols to control plant activities during formal startup and testing of SSCs, e.g., planning, scheduling and work authorization including POD and POW.
- Ensure core team is adequately trained to receive “Provisional Qualification” on Plant configuration and process operations.
- Ensure equipment, personnel, and programs are adequately evaluated, documented, and ready for turnover to S&GRP for the Operational Test Phase of startup.
- Ensure all pertinent documentation is placed in the project files.

2.2 Administrative Support

- Support the Startup Operability and Sustainability (SOS) Team goal by assisting team members in their duties. Provide technical support under Startup Engineer’s direction.
- Coordinate and schedule project meetings.
- Maintain SOS files in electronic form and in hard copy. Interface with project support to transfer electronic SOS files to project files. Transfer hard copy SOS files to project files.
- Procure supplies and maintain records of project property.
- Ensure that each team member receives the required training and keeps a record of completed training.
- Integrate new staff and answer questions.
- Track action items and communicate status with SOS Team.

2.3 Commissioning Lead

- Fully support ISMS/EMS.
- Develop a compliant approach to startup strategy of low-hazard/low-risk facilities and operations, and develop appropriate procedures.
- Develop and manage a “Proof Document” system to document the following:
 - Compliance of project requirements
 - SSCs perform as designed
 - SSCs meet FDC requirements
- Interface with Project PM to ensure that Startup and Construction Quality Assurance (QA) documents have been dispositioned and major issues have been identified and addressed prior to turn over to OTP.

Appendix B – Startup Team R2A2

- Mentor staff.
- Develop issues matrix from assessments.

2.4 Equipment & Process Startup Lead / Test Authority

- Report directly to the Startup Manager.
- Maintain qualifications as an engineer in accordance with PRC-PRO-EN-286, *Testing of Equipment and Systems*.
- The TA is appointed by S&GRP and concurred with by the EPC Project Team.
- Maintain overall responsibility for coordinating the performance of the testing through ATP with the Startup Manager.
- Perform as the Startup Teams' liaison in reviewing the results with other departments as identified in this Startup Plan.
- Transition to an engineering leadership position for the 200W P&T when the Operations are transferred to S&GRP.
- Prepare, certify, and present test reports on successful completion of testing in accordance with Appendix C, R2A2.
- Determine individuals' competency, commensurate with responsibilities, to perform the assigned tasks prior to allowing individuals to perform work.
- Perform as the SME for the 200W P&T operations.
- Perform hands-on training and "boarding" of S&GRP operators, with the assistance of the Startup Team, prior to the start of the OTP.

2.5 Operations Lead / Test Coordinator

- Develop a plan to control M&TE.
- Work with S&GRP Operations to develop sampling processes that comply with Site requirements for 200W P&T.
- Coordinate with the project, the EPC PM, the GC, and the individual testing activities in the field through ATP.
- Support the TA and project engineers in scoping the boundaries of SSCs.
- Support facility walkdowns and provide a punchlist of items to the Startup Manager.
- Support the verification of calibrated equipment, inspection, initial operation, and functional testing.
- Support the performance of vendor checkout of LLE.
- Support testing performed for 200W P&T Project.
- Lead the pre-operational activities for the Readiness Evaluation.
- Transition to a leadership position for the 200W P&T on successful completion of the Readiness Evaluation and the IATP.
- Support the development of the training and qualification program for the facility.

Appendix B – Startup Team R2A2

- Conduct SME performance operation verification for staff (operators, field-work supervisors) transitioning to S&GRP P&T Operations prior to the start of the Operational Test Phase.

2.6 Startup Engineers / Startup Specialist

- Fully support ISMS/EMS.
- Facilitate and coordinate with SDC, and develop maintenance and operations procedures/documents required for initial operations.
- Interface with SDC to ensure testing protocols are adequate to test SSCs.
- Interface with the project and PM, GC, Commissioning Lead, and subsystem vendors to coordinate construction acceptance for each engineer's area of expertise.
- Interface with project and PM, GC, Commissioning Lead, and subsystem vendors to prepare ATPs during the initial phase of acceptance testing for each engineer's area of expertise and assigned SSCs.
- Prepare an IATP of subsystems required to treat water and handle treated products, e.g., solids and injection of treated water.
- Support the integration of matrixed S&GRP personnel into the integrated Startup Team to identify the required maintenance and operation procedures.
- Support the integrated Startup Team in the development of training/qualification cards and training curriculum.
- Support the implementation of safety and quality management programs (e.g., Conduct Of Operations, RadCon, sampling program).
- Integrate with S&GRP to support the development of supply-well Field Management Plan (plan and procedure to manage and deliver feed stock for processing) within each engineer's area of expertise and assigned SSCs.
- Support the development of Plant Operations and Maintenance procedures.
- Support the development and implementation of OTP for S&GRP. This is to prove the operability of operations procedures. Additional elements of this plan are to cover trending of SSCs during extended run.
- Support and ensure the conduct of a successful Readiness Evaluation prior to turnover.
- Support the development of the O&M Manual.

2.7 Matrixed Personnel Operators

- Fully support ISMS/EMS.
- Work with Startup Engineers to support the development of the ATP for subsystems required to treat water and handle treated products (e.g., solids and injection of treated water).
- Work with Startup Engineers to support subsystem ATPs during the initial phase of acceptance testing for each engineer's area of expertise and assigned SSCs.
- Work with Startup Engineers to confirm maintenance and operation procedures (validation and verification of procedures).

Appendix B – Startup Team R2A2

- Work with the Startup Engineers and the training specialist to support the development of required training curriculum.
- Support the implementation of safety and quality management programs (e.g., conduct of operations, RadCon, sampling program).
- Work with Startup Engineers to support the development of supply-well Field Management Plan (plan and procedure to manage and deliver feed stock for processing).
- Support the development of operations and maintenance procedures.
- Support the development and implementation of OTP for S&GRP . This is to validate the operations procedures. Additional elements of this plan are to cover trending of SSC during the extended run.
- Support and ensure the conduct of a successful Readiness Evaluation prior to turnover.
- Support the development of the O&M Manual.
- Prepare for Provisional Qualification on elements identified in the training qualification matrix.

2.8 Training Lead

- Utilize the integrated Startup Team of matrixed S&GRP personnel and Startup Leadership to develop the training /qualification card.
- Develop integrated training curriculum to include the following elements:
 - Simulator
 - Classroom
 - Plant observation and walkdowns
 - Other tools to assist in the development of trainees
- Apply the Systematic Approach to Training toward analysis, development, delivery, and evaluation of training on plant O&M procedures and support documentation for both core and support team personnel

2.9 Planner

- Work with Startup Engineers and Operation's support in the development of maintenance procedures and operations/support documents.
- Provide input to maintenance procedures and data.
- Populate the JCS.
- Work with the Support Team to facilitate work control.
- Develop work packages as needed.

2.10 O&M Writer

- Develop manual for the operation and maintenance of the 200W P&T system.
- Provide input to design engineering and construction regarding corrective and preventive maintenance performed when the system becomes operational.

Appendix B – Startup Team R2A2

- Perform reviews of vendor-supplied documentation, provide input on training package development, and begin development of the preventive maintenance database and other maintenance and work management requirements.
- Support the development of procedures as required.

2.11 Technical Writers

- A combination of plant personnel augmented by hiring writers for the following:
 - Produce maintenance procedures.
 - Support development of procedures as required.

APPENDIX C

Project Execution Plan
Roles, Responsibilities, Authorities, and
Accountabilities (R2A2)

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Appendix C – Project Execution Plan R2A2

Activity	CH2M HILL Design Team	S&GRP Engineering DAs	S&GRP Engineering Lead/Deputy Lead	Project Engineer (Site Engineer Qualified)	Quality Assurance	Occupation Safety & Health	Environmental Protection	Start-up Manager	Operations/Facility DA (Hodgson)	S&GRP Operations Management
Initial LLE and Construction Drawings/Specs (Procurement)	Prepare, review, approve internally and informally release to CHPRC	Review, comment per RCR. (Note: Early procurement approved by CHPRC S&GRP Chief Engineer)	Review, comment per RCR.	Review, comment per RCR.	Review, comment per RCR.	Review, comment per RCR.	Review, comment per RCR.	None	Review, comment per RCR.	Review, comment per RCR.
LLE Procurement and Construction Submittals	Review for compliance to drawings and specifications per the submittal register distribution list	Review as assigned by Engineering Lead to validate compliance with PRC engineering procedures (as needed)	Assign reviewers/approvers in submittal register distribution list. Approve final disposition of technical submittals	Review for compliance to drawings and specifications per the submittal register distribution list	Review/approve per submittal register distribution list	Review/approve per submittal register distribution list	Review per submittal register distribution list	Copied for information only	Review as assigned by Engineering Lead to validate compliance with PRC operational procedures (as needed)	None
Initial Design Media	Prepare, review, approve internally and issue to CHPRC	Review, comment per RCR. Approve for issuance to construction via DCN process (drawings/specs) and HDCS (calculations)	Review, comment per RCR. Approve for issuance to construction via DCN process	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition	Review, comment per RCR agreement per RCR disposition
RCIs	Review and disposition as requested by the Engineering Lead	Review as requested by Engineering Lead	Review and distribute as appropriate. Approve for Engineering.	Review and assess as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead

Appendix C – Project Execution Plan R2A2

Activity	CH2M HILL Design Team	S&GRP Engineering DAs	S&GRP Engineering Lead/Deputy Lead	Project Engineer (Site Engineer Qualified)	Quality Assurance	Occupation Safety & Health	Environmental Protection	Start-up Manager	Operations/Facility DA (Hodgson)	S&GRP Operations Management
Redline changes (See GRP-MI-0024)	Review and assess as requested by the Site Engineering support	Approve as needed	None, review through incorporating DCN	Approval	None, review through incorporating DCN	None, review through incorporating DCN	None, review through incorporating DCN	None	None	None
DCNs	Generate and review as requested by the Engineering Lead	Review as requested by Engineering Lead	Assign generation. Distribute for review and approval.	Generate as requested by the Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Review as requested by Engineering Lead	None	Review as requested by Engineering Lead	Review as requested by Engineering Lead
Factory Acceptance Tests (prepared by vendors)	Review	Review as requested by Engineering Lead	Distribute for review, and approve	Review as requested by Engineering Lead	Review as requested by Engineering Lead	None	None	Review	None	None
Nonconformance Reports	Support as requested	Support as requested	Assign generation (with PM). Distribute for review and approval	Review as requested by Engineering Lead	Review and coordinate final approval	Review as requested by Engineering Lead	None			
Engineering Inspection	Support as requested	Support as requested	Approve initial checklist and transmit final to PM	Support/perform as requested	Support as requested	Support as requested	Support as requested	None	Support as requested	None
Construction Acceptance Tests	Review	Support as requested	Distribute for review	Approve	Review	Review as requested by Engineering Lead	Review as requested by Engineering Lead	Prepare and approve	None	None
Construction Acceptance Report	Review	Support as requested	Distribute for review	Approve	Review	Review	Review	Prepare and review	None	Review

Appendix C – Project Execution Plan R2A2

Activity	CH2M HILL Design Team	S&GRP Engineering DAs	S&GRP Engineering Lead/Deputy Lead	Project Engineer (Site Engineer Qualified)	Quality Assurance	Occupation Safety & Health	Environmental Protection	Start-up Manager	Operations/Facility DA (Hodgson)	S&GRP Operations Management
Acceptance Test Procedure	Review	Support as requested	Distribute for review	Review	Review	Review	Review	Prepare and approve	Review	Approve
Acceptance Test Report	Support as requested	Support as requested	Distribute for review	Review	Review	Review	Review	Prepare and approve	Review	Approve
Operational Test Procedure	Support as requested	Review	Distribute for review	Support as requested	Review	Review	Review	Prepare and approve	Review	Approve
Operational Test Report	Support as requested	Review	Review	Review	Review	Review	Review	Prepare and approve	Review	Approve (receive facility)

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APPENDIX D

PRC Performance-Based Schedule

Appendix D – PRC Performance-Based Schedule

The original project summary schedule for this Startup Plan was organized into functional areas allowing for flexibility during initiating operations in the 200W P&T plant. This section is an integrated performance schedule that embodies two primary goals.

The two performance sub-schedules are:

- 1) Acceptance Testing (CAT and ATP) and Readiness Evaluation
- 2) TPA Milestones

200W P&T Acceptance Testing

The Project has anticipated performance objectives by setting up CAT and ATP milestones, and placing those milestones into the schedule. As of this revision, the specific schedule has been attached and will be adjusted as the timeline for completion is agreed to by the DOE and CHPRC. The CATs are prerequisite to ATPs.

As stated in this document, the objective of the ATP is to demonstrate system compliance with the FDC and that the final constructed/installed systems/subsystems can operate successfully as designed. In essence, the individual ATP demonstrates the acceptance criteria for the individual functional area it represents while the IATP is the acceptance criteria for the whole treatment process. The ATP will be conducted in two parts:

- A. The individual ATPs will be designed to provide evidence that the system satisfies performance requirements in 19 functional areas, which have been incorporated into our integrated schedule:
 - 1) Extraction Wells
 - 2) Extraction Transfer Bldg 1
 - 3) Extraction Transfer Bldg 2
 - 4) Extraction Transfer Bldg 3 (S-SX)
 - 5) IX Fluid Processing
 - 6) FBR System
 - 7) MBR System
 - 8) Air Stripping
 - 9) Injection Transfer Bldg 1
 - 10) Injection Transfer Bldg 2
 - 11) Injection Wells
 - 12) BIO Bldg - Process Support Components
 - 13) RAD Bldg - Process Support Components
 - 14) Process VOC Control (VPGAC)
 - 15) IX Solids Handling (Resin Loading, Unloading, and Disposal)
 - 16) Bio-Solids Handling (Centrifuge, Rotary Drum Thickener)

Appendix D – PRC Performance-Based Schedule

- 17) Lime Stabilization
- 18) Bio-solids Odor Control (Ammonia Scrubber)
- 19) SCADA

B. The treatment system IATP will be performed on completion of the individual ATPs.

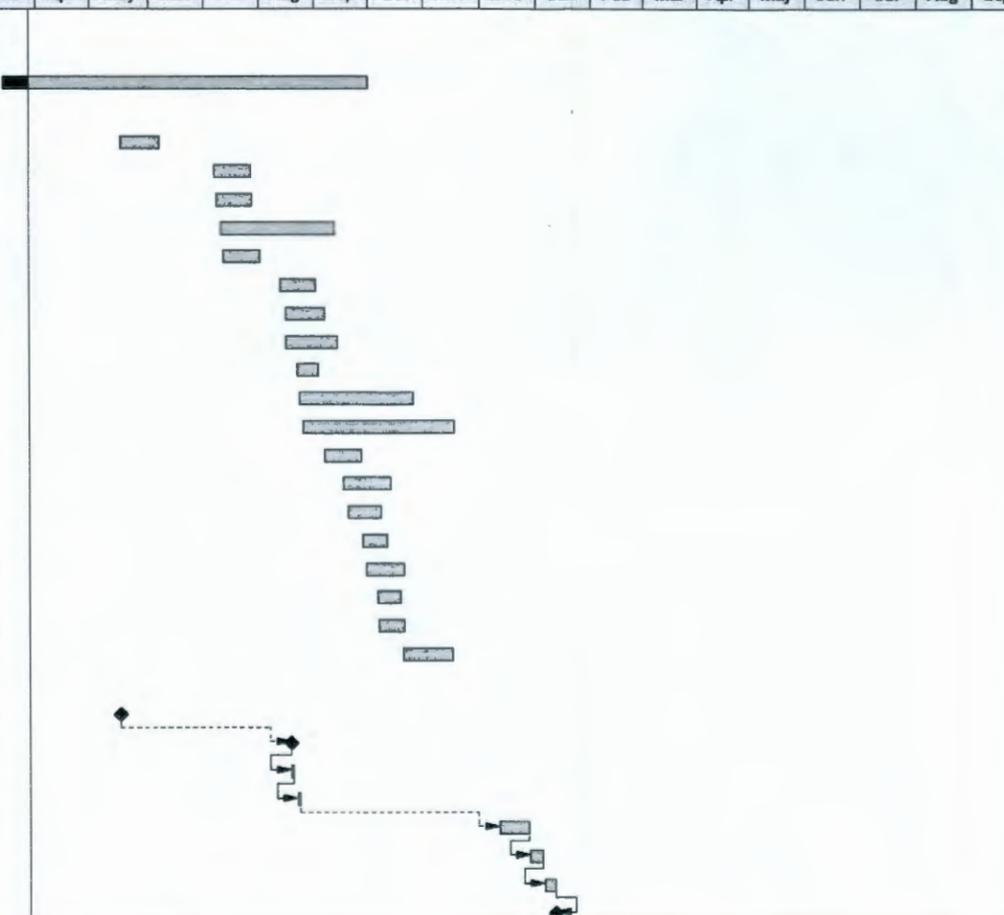
Performing an ATP on each functional area, and then performing the IATP, allows the Startup Team to test each functional area separately; the IATP will be then used to test the entire treatment system. By testing the functional areas first, we will be able to identify issues, e.g., a failed control panel, and start the corrective process before starting the IATP. The Startup Team may decide it is prudent to perform more than one ATP at the same time, i.e., doing all of the transfer buildings, as a way to economize the Team's efforts.

In essence, the Startup Team plans to have the majority of issues corrected in the functional areas when we start the IATP. By doing this, the only issues that should arise with the IATP are ones that require the system to be integrated, e.g., software issues. If there are issues that have not been corrected by the time the IATP begins, they will be the start of our punchlist of issues to be corrected before the OTP begins.

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Appendix D – PRC Performance-Based Schedule

3 Loops to Integrated ATP		200W Groundwater Pump and Treat - CATs, ATPs and Readiness					2011												2012					07-Apr-11 09:21									
Activity ID	Activity Name	Start	Finish	OD	RD	Total Float	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep								
Total		14-Mar-11 A	11-Jan-12	210	200	168																											
Construction Acceptance Tests (CAT)		14-Mar-11 A	30-Sep-11	1	132	235																											
CATSUMM	Construction Acceptance Tests (CATs)	14-Mar-11 A	30-Sep-11	1	132	235																											
Acceptance Test Plan (ATP)		17-May-11	17-Nov-11	130	130	201																											
ATP020	Extraction Transfer Bldg 1 ATP	17-May-11*	07-Jun-11	15	15	316																											
ATP022	Extraction Transfer Bldg 2 ATP	07-Jul-11*	27-Jul-11	15	15	281																											
ATP070	Injection Transfer Bldg 1 ATP	08-Jul-11*	28-Jul-11	15	15	280																											
ATP040	Fluidized Bed Reactor (FBR) System ATP	11-Jul-11*	12-Sep-11	45	45	249																											
ATP024	Extraction Transfer Bldg 3 ATP	12-Jul-11*	01-Aug-11	15	15	278																											
ATP072	Injection Transfer Bldg 2 ATP	12-Aug-11*	01-Sep-11	15	15	255																											
ATP110	IX Solids Handling (Resin Loading, Unloading, & Disposal) ATP	16-Aug-11*	06-Sep-11	15	15	253																											
ATP120	Bio-Solids Handling (Centrifuge, Rotary Drum Thickener) ATP	16-Aug-11*	13-Sep-11	20	20	248																											
ATP080	Injection Wells ATP	22-Aug-11*	02-Sep-11	10	10	254																											
ATP050	Membrane Bio Reactor (MBR) System ATP	24-Aug-11*	26-Oct-11	45	45	217																											
ATP150	System Control & Data Acquisition (SCADA) ATP	25-Aug-11*	17-Nov-11	60	60	201																											
ATP060	Air Stripper ATP	07-Sep-11*	27-Sep-11	15	15	238																											
ATP010	Extraction Wells ATP	16-Sep-11*	12-Oct-11	19	19	227																											
ATP130	Sludge/Lime Stabilization System ATP	19-Sep-11*	07-Oct-11	15	15	230																											
ATP030	Ion Exchange (IX) Tc-99 System	28-Sep-11*	11-Oct-11	10	10	228																											
ATP140	Bio-Solids Odor Control (Ammonia Scrubber) ATP	30-Sep-11*	20-Oct-11	15	15	221																											
ATP092	RAD Bldg - Process Support Components ATP	06-Oct-11*	19-Oct-11	10	10	222																											
ATP100	Process Odor Control (VPGAC) ATP	07-Oct-11*	20-Oct-11	10	10	221																											
ATP090	BIO Bldg - Process Support Components ATP	20-Oct-11*	16-Nov-11	20	20	202																											
Readiness Evaluation		16-May-11	11-Jan-12	185	185	68																											
2WPTSU1073a	Site Visit for Readiness Evaluation Team Leaders - #1	16-May-11*		0	0	209																											
2WPTSU1073b	Site Visit for Readiness Evaluation Team Leaders - #2	18-Aug-11*		0	0	143																											
2WPTSU1073c	Develop Assessment Plan & Readiness Evaluation Lines of Inquiry	18-Aug-11	19-Aug-11	2	2	143																											
2WPTSU1073d	Training Session for Readiness Evaluation Team	22-Aug-11	23-Aug-11	2	2	143																											
2WPTSU1074	200W P&T SU - Perform Readiness Evaluation - Train #1	12-Dec-11*	27-Dec-11	10	10	68																											
2WPTSU1074b	Draft Readiness Evaluation Report	28-Dec-11	04-Jan-12	5	5	68																											
2WPTSU1074c	Review Readiness Evaluation Report	05-Jan-12	11-Jan-12	5	5	68																											
2WPTSU1074d	Issue Readiness Evaluation Report w/Conditions of Approval		11-Jan-12	0	0	68																											



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Actual Work
 Critical Remaining Work
 Remaining Work
 Milestone



Appendix D – PRC Performance-Based Schedule

TPA Milestone Enter: Phase 1 Operations

TPA Milestone M-016-122

Begin Phase 1 operation of the new 200 West pump and treat system per the RD/RA WP and the 200-ZP-1 ROD. This action will provide the initial portion of the overall pump and treat capacity expected to be required by the 200-ZP-1 and 200-UP-1 RODs. This initial operation can provide treatment of the Tc-99 plume at the S-SX Tank Farm within the 200 UP-1 Operable Unit.

TPA Milestone M-016-120

DOE will have a groundwater treatment system (not to exceed 50 gpm pump and treat capacity) for the Tc-99 plume at S-SX Tank Farm within the 200-UP-01 Operable Unit. This milestone may be met by utilizing treatment capacity at another location such as the new 200 West pump and treat system or the Effluent Treatment Facility.

The seamless progression in bringing the biological process online and up to its production capacity is outlined below.

A prerequisite to beginning TPA Phase 1, for the 200W P&T, is the completion of the individual ATPs on the major system components. Completion of these ATP activities provides confidence the major system components will function as designed. This will set the stage for inoculation of the biological systems to start biomass development. A system test will be run with non-contaminated water to demonstrate the full system is capable of performing its function. This will be done prior to using contaminated groundwater.

A prerequisite to having groundwater treatment system capacity for treatment of the S-SX Tc-99 wells is the completion of the S-SX-related ATPs. Prior to the use of contaminated water, a system test will be run with non-contaminated water to demonstrate the system is capable of performing its function.

The biomass is the critical element in the treatment process. The beginning of Phase I operations of the 200W P&T system will be defined by the loading of water and carbon media into the first bio-reactor to initiate the growth of the biomass. This constitutes meeting TPA Milestone M-016-122. Once the microbes (bugs) have been inoculated, the colony needs time to grow and mature while being fed nitrate, carbon substrate, and nutrients. The length of time required for the microbes to reach full maturity is estimated to range from 9 to 13 weeks. As the colony propagates, the carbon tetrachloride selective microbes will be added. The biomass will then continue to grow to a stage where the amount of recirculation will be reduced and contaminated groundwater will be bled into the system until the process train reaches a flow of 1,000 to 1,250 gpm.

Completion of construction and testing of the S-SX Tc-99 treatment system with a capacity of 50 gallons per minute or more, such that it is ready to operate by December 31, 2011, constitutes meeting the TPA M-016-120 Milestone. Once the first train is fully operational, the flow of groundwater from the non-Tc-99 extraction wells will be reduced to accommodate the inflow of groundwater from the 200-ZP-1 and 200-UP-1 Tc-99 wells to begin Tc-99 treatment.

Appendix D – PRC Performance-Based Schedule

After Train 1 (first bioreactor) is online and operating on contaminated groundwater, the focus will turn to Train 2 (second bioreactor). Train 2 will go through a similar regimen, the exception being that the ATP on major pieces of equipment will be complete and the train will not have to go through the a full Readiness Evaluation. The Readiness Evaluation will have already covered the support infrastructure including configuration management and training and qualification of personnel. The S&GRP internal review will focus on any changes or lessons learned from Train 1 associated with bringing Train 2 online.

Sufficient extraction wells will be brought online to ramp Train 1 to a nominal flow of 1,000 gpm. For startup of Train 1, the treated water will be injected into the western injection well field (Injection Transfer Building No. 2 [ITB#2]), which will include six injection wells with an approximate injection capacity of 200 gpm per well for a total estimated injection capacity of 1,200 gpm.

In support of startup of Train 2, the injection well field associated with Injection Transfer Building No. 1 (ITB#1) will be used to support injection to the down-gradient eastern edge of the aquifer.

Once the inoculation of the microbes begins on Train 1, the transition from Construction (EPC) to Operations (S&GRP) will begin. A Readiness Evaluation will have been completed, which will have provided Senior Management and S&GRP "due diligence."

Construction will be nearing completion and EPC will have developed their construction turnover documentation for S&GRP acceptance.

When S&GRP starts to assume control of the facilities, some of EPC startup support will report to S&GRP as matrixed personnel. All work planning and work authorization will be controlled by S&GRP. The organization charts and the roles and responsibilities in this Startup Plan will be redefined closer to the time of transition.

Transition activities described above will be added to the integrated schedule.

Appendix D – PRC Performance-Based Schedule

3 Loops to Integrated ATP		Start-Up Sequence DRAFT					2011 2012									
Activity ID	Activity Name	Start	Finish	OD	RD	Total Float	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Total		28-Dec-11	06-Sep-12	177	177	0										
Startup		28-Dec-11	23-Apr-12	82	82	95										
FBR Reactor A Inoculation Process (Nitrate - Loop #1)		28-Dec-11	03-Feb-12	27	27	150										
L10010	Fill FBR/CST A w/Potable Water (~45K gal)	28-Dec-11*	30-Dec-11	3	3	95										
L10020	Add Carbon Media & Remove Fines	03-Jan-12	16-Jan-12	10	10	95										
L10030	Activate Odor Control	17-Jan-12	16-Jan-12	2	2	95										
L10040	Inoculate FBR for Nitrate Reduction on Recycle	19-Jan-12	20-Jan-12	2	2	95										
L10050	Operate FBR/CST A in Recycle	23-Jan-12	03-Feb-12	10	10	95										
M-016-120	TPA Milestone M-016-120: Capacity To Begin Treatment of Tc-99 Plume (S-SX)	28-Dec-11		0	0	177										
M-016-122	TPA Milestone M-016-122: Begin Phase 1 Operation of 200W Pump & Treat System	28-Dec-11		0	0	254										
Biomass Growth Process (Addition of MBR System - Loop #2)		06-Feb-12	02-Apr-12	40	40	95										
L20010	Fill RCT, FBR AMTSS, AMB, Sump & Piping w/Potable water	06-Feb-12	08-Feb-12	3	3	95										
L20020	Bring MBR System On-Line	09-Feb-12	10-Feb-12	2	2	95										
L20040	Operate Recycle Loop (must reach 2K mg/L or Start IATP)	13-Feb-12	27-Feb-12	10	10	95										
L20050	Start & Run WAS Pumps & Biosolids RDT System	28-Feb-12	02-Apr-12	25	25	95										
L20070	Ready for IATP		02-Apr-12	0	0	95										
Addition of Solids Handling Equipment (Integrated ATP - Loop #3)		03-Apr-12	23-Apr-12	15	15	95										
L30010	Integrated ATP & Flow to Injection Well	03-Apr-12	09-Apr-12	5	5	95										
L30040	Start Centrifuge, Operate & Monitor ASHT Levels	10-Apr-12	23-Apr-12	10	10	95										
L30050	Authorization/Approval to Begin Treatment of Groundwater		23-Apr-12	0	0	95										
Operational Test Procedure		06-Mar-12	06-Sep-12	130	130	0										
2WPTSU1074e	Close Readiness Evaluation Conditions of Approval	06-Mar-12*	19-Mar-12	10	10	30										
2WPTSU1074f	Request Operational Test Procedure "Go" - Train #1	20-Mar-12	26-Mar-12	5	5	30										
2WPTSU1074g	Perform Operational Test Procedure - Train #1	27-Mar-12	25-Jul-12	85	85	30										
2WPTSU1075c	Perform Operational Test Procedure - Train #2	06-Jun-12*	06-Sep-12	65	65	0										

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Actual Work Critical Remaining Work Summary
Remaining Work Milestone

APPENDIX E

SMP Implementation Strategy

Appendix E – SMP Implementation Strategy

The 200W P&T Facility requires an SMP strategy and implementation plan for future operations to be performed at this new facility. The project will develop and implement the required programs for safe and compliant operations. This strategy is discussed below.

The identification and implementation of SMP for the 200W P&T operation will include contractually required programs from CHPRC's prime contract with the DOE (Contract No. DE-AC06-08RL14788). Current approved and implemented program documents, such as HNF-11724, *CHPRC Safety Management Programs*, and all implementing procedures will be applied to the operation at 200W P&T using a graded approach. The cascade of the requirements of these documents, along with new facility safety documentation, e.g., an initial Hazard Categorization, will determine the risks associated with the scope of the project. This will provide the structure for the project's graded approach to SMP implementation.

Implementation of the ISMS/EMS will be through approved CHPRC programs. The reward of the CHPRC SMPs will be an enhancement for Environmental Safety & Health (ESH) compliance and will support the development of a performance-based training and qualification program.

As an example, the 200W P&T Startup Team will leverage the initial low-radiation hazard screen and the screening of other standard industrial hazards for future operations. This screening provides the basis for a crosswalk to all the applicable Company and Site ESH/Occupational Safety and Industrial Health policies and procedures. These policies and procedures will apply to all personnel within the CHPRC and its pre-approved subcontractors. Similarly, the implementation of the Radiological Protection Program elements, as required by 10 CFR 835, will be achieved via CHPRC-00073, *CHPRC Radiological Control Manual* to ensure the radiological controls are in place.

Prior to the commencement of operations, an S&GRP Site-specific Health and Safety Plan (HASP) as required by 29 CFR 1910.120(e) and 40 CFR 264.16 and 265.16 will be developed and implemented. This HASP will include additional operation-specific safety requirements and controls for the 200W P&T Facility. These may include hazards such as process chemicals, emergency management, notifications, drills, and medical response.

APPENDIX F

Equipment and Facilities

Appendix F – Equipment and Facilities

Functional Area SSC	CAT/ATP	Project Lead	Project Engineer	Startup Specialists and Engineers	Design Authority
1.0 Extraction Wells					
	2WPT-CAT-010-01	F. Gauthier	F. Gauthier, S. Murphy, J. DeLisle	G. Bergquist, L. Miller	R. Ryan A. Esparza S. Mosley
2.0 Extraction Transfer Bldg1 Raw Water					
	2WPT-CAT-020-01	F. Hahn	F. Gauthier, S. Murphy, J. DeLisle	K. Nell, L. Miller	R. Ryan A. Esparza J. Osorio S. Mosley
3.0 Extraction Transfer Bldg2 Raw Water					
	2WPT-CAT-022-01	F. Hahn	F. Gauthier S. Murphy J. DeLisle	K. Nell L. Miller	A. Esparza R. Ryan J. Osorio S. Mosley
4.0 Extraction Transfer Bldg3 (S-SX) Raw Water					
	2WPT-CAT-024-01	F. Hahn	F. Gauthier S. Murphy J. DeLisle	K. Nell L. Miller	A. Esparza R. Ryan J. Osorio S. Mosley
5.0 Ion Exchange (IX) Fluid Processing Boundaries:					
	2WPT-CAT-030-01	F. Gauthier	R. Wiseman A. Riffle S. Wilcox	G. Bergquist L. Miller	A. Esparza R. Ryan S. Mosley
6.0 Fluid Bed Reactor (FBR) System					
	2WPT-CAT-040-01	R. Hanks	A. Esparza A. Riffle S. Wilcox	S. Burke L. Miller (Elec/I&C)	B. Breedlove R. Ryan
6.1 FBR Equalization Tank					
	2WPT-CAT-040-02	R. Hanks	A. Esparza A. Riffle S. Wilcox	S. Burke L. Miller	B. Breedlove R. Ryan
7.0 Membrane Bio Reactor (MBR) System					
	2WPT-CAT-050-01	R. Hanks	R. Wiseman A. Riffle S. Wilcox	S. Burke L. Miller	B. Breedlove R. Ryan
8.0 Air Stripping (Treated Water)					
	2WPT-CAT-060-01	F. Gauthier	R. Wiseman A. Medina J. DeLisle	S. Burke L. Miller	A. Esparza R. Ryan

Appendix F – Equipment and Facilities

Functional Area SSC	CAT/ATP	Project Lead	Project Engineer	Startup Specialists and Engineers	Design Authority
9.0 Injection Transfer Bldg 1 Finish Water					
	2WPT-CAT-070-01	F. Hahn	D. Krantz A. Medina J. DeLisle	K. Nell L. Miller	A. Esparza R. Ryan J. Osorio S. Mosley
10.0 Injection Transfer Bldg 2 Finish Water					
	2WPT-CAT-072-01	F. Hahn	A. Medina J. DeLisle	K. Nell L. Miller	A. Esparza R. Ryan S. Mosley
11.0 Injection Wells					
	2WPT-CAT-080-01	F. Gauthier	F. Gauthier A. Medina J. DeLisle	K. Nell L. Miller	S. Mosley A. Esparza R. Ryan
12.0 BIO Bldg Process Support Components					
	2WPT-CAT-090-01	F. Hahn, F. Gauthier	F. Gauthier	L. Miller	J. Osorio R. Ryan
12.1 Sulfuric Acid Chemical Feed System					
	2WPT-CAT-090-02	F. Hahn, F. Gauthier	A. Esparza	L. Miller (Elec/I&C)	R. Ryan J. Osorio
12.2 Phosphoric Acid for FBR System					
	2WPT-CAT-090-03	F. Hahn, F. Gauthier	R. Wiseman	L. Miller (Elec/I&C)	J. Osorio R. Ryan
12.3 Carbon substrate to FBR					
	2WPT-CAT-090-04	F. Hahn, F. Gauthier	R. Wiseman	L. Miller S. Burke	J. Osorio R. Ryan
12.4 Micronutrient to FBR System					
	2WPT-CAT-090-05	F. Hahn, F. Gauthier	R. Wiseman	L. Miller S. Burke	J. Osorio R. Ryan
12.5 Sodium Nitrate to Recycle Tank System					
	2WPT-CAT-090-06	F. Hahn, F. Gauthier	R. Wiseman	L. Miller S. Burke	J. Osorio R. Ryan
12.6 Sodium Hypochlorite to Aeration Membrane Systems					
	2WPT-CAT-090-07	F. Hahn, F. Gauthier	A. Esparza	L. Miller S. Burke	J. Osorio R. Ryan
12.7 Citric Acid to Aeration Membrane Splitter Box System					
	2WPT-CAT-090-08	F. Hahn, F. Gauthier	A. Esparza	L. Miller S. Burke	J. Osorio R. Ryan
12.8 Sodium Bisulfate to Aeration Membrane System					
	2WPT-CAT-090-09	F. Hahn, F. Gauthier	A. Esparza	L. Miller S. Burke	J. Osorio R. Ryan

Appendix F – Equipment and Facilities

Functional Area SSC	CAT/ATP	Project Lead	Project Engineer	Startup Specialists and Engineers	Design Authority
12.9 Ferric Chloride to Aeration Membrane Splitter Box System					
	2WPT-CAT-090-10	F. Hahn, F. Gauthier	A. Esparza	L. Miller S. Burke	J. Osorio R. Ryan
12.10 Sodium Hydroxide to aeration Membrane system					
	2WPT-CAT-090-11	F. Hahn, F. Gauthier	A. Esparza	L. Miller S. Burke	J. Osorio R. Ryan
12.11 Anti-Scalant to Air Stripper System					
	2WPT-CAT-090-12	F. Hahn, F. Gauthier	R. Wiseman	L. Miller S. Burke	J. Osorio R. Ryan
12.12 Cationic Polymer System					
	2WPT-CAT-090-13	F. Hahn, F. Gauthier	R. Wiseman	L. Miller S. Burke	J. Osorio R. Ryan
13.0 RAD Bldg Process Support					
	2WPT-CAT-092-01	F. Hahn,, F. Gauthier	A. Esparza	L. Miller (Elec/I&C)	J. Osorio R. Ryan
14.0 Process VOC Control VPGAC					
	2WPT-CAT-100-01	R. Hanks	R. Wiseman A. Medina J. DeLisle	K. Nell L. Miller (Elec/I&C)	A. Esparza R. Ryan
15.0 IX Solids Handling					
	2WPT-CAT-110-01	F. Gauthier	D. Krantz S. Murphy S. Wilcox	K. Nell	A. Esparza R. Ryan
16.0 Bio Solids Handling					
	2WPT-CAT-120-01	F. Gauthier	D. Krantz A. Riffle S. Wilcox	J. Bradbury	R. Ryan J. Osorio
17.0 Lime Stabilization					
	2WPT-CAT-130-01	F. Hahn	A. Esparza A. Riffle S. Wilcox	G. Bergquist	R. Ryan J. Osorio
18.0 Bio Solids Odor Control (Ammonia Scrubber)					
	2WPT-CAT-140-01	R. Hanks	R. Wiseman S. Murphy J. DeLisle	G. Bergquist	J. Osorio
19.0 SCADA					
	2WPT-CAT-150-01	R. Hanks	S. Wilcox	L. Miller (Elec/I&C)	S. Mosley

APPENDIX G

Test Methodology

Appendix G – Test Methodology

1.0 CONSTRUCTION ACCEPTANCE TEST (CAT)

The objective of the CAT is to ensure all vendor equipment is complete and installed as designed and in accordance with vendor instructions. This supports full system operation, with minimal issues, during the execution of the ATP. The CAT is defined and developed by the PRC Startup Team; reviewed by groups as defined in Appendix C, *PEP R2A2*; and approved by Project Engineering, the Startup Manager, and Project Management.

1.1 Properly Anchored Equipment

The anchoring requirements are identified by the SDC and vendors. It validates the seismic anchoring assumptions in the supporting design media. Depth specified for anchoring and torque ranges will be defined, as needed, and documented by the SDC. The anchoring will be documented in the GC Commissioning Plan in accordance with design engineering requirements. The anchoring maybe witnessed or verified by the GC's construction contractor inspectors on an as-required basis and be provided to CHPRC by the submittal process in support of construction testing or equipment commissioning.

1.2 Electrical Equipment Control Wiring Verification

Physical inspections will ensure that wiring is securely landed on the specified terminal locations and labeled with correct conductor identification before energization.

The verification of correct electrical control scheme will be performed and documented by the GC via an approved Quality Assurance (QA) document submitted in support of construction completion or equipment commissioning.

1.3 Electric Motor Verification/Testing

During the performance of the CATs, lubrication will be checked before bump test is performed. Equipment grounds will be checked to ensure continuity of connections. The motors will be disconnected from driven equipment where necessary and megger tested to ensure proper insulation resistance of the stator windings before applying voltage. The voltage will be applied momentarily and checked for correct direction of rotation. The phase wiring will be changed as needed for correct rotation. The electrical verification/testing of process equipment may be witnessed or verified by CHPRC QA personnel.

1.4 Correctly installed Fluid Processing Equipment

The SDC will identify the types of verification of piping and pumps. The specified testing method before OTP, for all fluid processing equipment, will employ the use of potable water. Each major piece of equipment will be defined and documented by SDC on the design drawings, specifications, and vendor-approved submittals.

1.5 Equipment Testing

The testing will be performed and documented by the GC via an approved QA document. The testing may be witnessed or verified by CHPRC QA personnel.

1.6 CAT Process

The detailed CAT procedures will be developed by the Startup Team and distributed for review by the S&GRP Project Engineer Lead to the applicable organizations as identified in Appendix

Appendix G – Test Methodology

C, *PEP R2A2*. The CAT will be approved by the appropriate project engineers. The EPC GC will develop Quality Assurance Inspection Plans (QAIPs) using procedures (CATs) developed by the Startup Team. At the discretion of the Startup Team, all (or sections) of the CAT may be performed to augment the QAIP.

During the performance of the QAIP, the Facility is under the control of the EPC GC. The performance of the QAIP will be communicated to project personnel by placing the activity in the project calendar, which is controlled initially by the GC with guidance provided by the Startup Team. This will allow interested parties who want to observe the QAIP to plan their time. The Startup Team members, as well as Engineering, will be observing the performance of the QAIPs, as they deem necessary.

After completion of the QAIP and subsequent submittal from the GC to CHPRC, the Startup Engineer will review the elements of the QAIP to the appropriate CAT. When the Startup Engineer is satisfied that the elements of the CAT have been met, the CAT will be reviewed by the appropriate Project Engineers and accepted by the TA. After approving the CAT, the Startup Team's TA will prepare a report and provide it to S&GRP Engineering Lead, who will distribute the report for review to applicable organizations as identified in Appendix C, *PEP R2A2*. After reviews are complete and comments resolved, the Project Engineers will approve the report.

The end state of the CAT will be a systematic demonstration that equipment and systems were installed in accordance with the design, and the system is ready for systems testing during the ATP.

2.0 ACCEPTANCE TEST PROCEDURE PROCESS

The Startup Team has not yet determined the total number of ATPs that will be developed. Current plans anticipate the development of approximately 20 ATPs (19 functional areas and 1 IATP). This document will be revised when the best path has been determined. The objective of the ATP is to demonstrate full system compliance with the FDC and that the final constructed/installed systems/subsystems can operate successfully as designed. If water is required during performance of ATPs, only potable water will be used. The testing validates the hydraulic assumptions of the supporting design media. Electrical controls shall be tested by initial operation of equipment to ensure that each interlock and control function operates according to the schematic diagrams and description of operations required by SDC and/or the manufacturer's schematics and operating instructions.

It is intended the LLE vendors will support the EPC GC with installation and perform their own acceptance testing and startup procedures/test. The ATP process will be performed in two phases:

- A. The individual ATPs will be designed to provide evidence that the system satisfies functional performance requirements in 19 functional areas. It is anticipated the 19 areas will be:
 - 1) Extraction Wells
 - 2) Extraction Transfer Bldg 1 Raw Water
 - 3) Extraction Transfer Bldg 2 Raw Water
 - 4) Extraction Transfer Bldg 3 (S-SX) Raw Water

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- 5) IX Fluid Processing
- 6) FBR System
- 7) MBR System
- 8) Air Stripping (Treated Water)
- 9) Injection Transfer Bldg 1 Finished Water
- 10) Injection Transfer Bldg 2 Finished Water
- 11) Injection Wells
- 12) BIO Bldg - Process Support Components
- 13) RAD Bldg - Process Support Components
- 14) Process VOC Control (VPGAC)
- 15) IX Solids Handling (Resin Loading, Unloading, and Disposal)
- 16) Bio-Solids Handling (Centrifuge, Rotary Drum Thickener)
- 17) Lime Stabilization
- 18) Bio-solids Odor Control (Ammonia Scrubber)
- 19) SCADA

- B. The system IATP will be performed on completion of the individual ATPs. If the Readiness Evaluation Team is performing their evaluation during IATP, the Readiness Evaluation Team will be requested to witness the equipment in operation, the training of the operators, and the use of procedures for equipment operation.

The prerequisites to the ATP will be CATs performed satisfactorily at specified process subsystem and component levels, as identified in Appendix F. It is the intention of the Startup Team that during the IATP, a single train will use approximately 1,000 gpm flow to document system operation. Software testing is incorporated into the ATP and will be demonstrated by testing and operation of the facility during ATP. The ATP will be written in accordance with PRC-PRO-EN-286, *Testing of Equipment and Systems* or approved equivalent. The Startup Team will prepare ATPs and provide them to the S&GRP Engineer Lead who will distribute the procedures to SDC, Engineering, QA, S&GRP Operations, and S&GRP Management as identified in Appendix C, *PEP R2A2*. After the review cycle, the ATP will be approved by the Startup Manager and S&GRP Operations Management in accordance with Appendix C, *PEP R2A2*. The ATP will be conducted under the control of EPC GC providing labor and field work supervision. S&GRP Operations will provide assistance as required. The performance of the ATPs will be introduced via the POD/POW, which will be controlled by the EPC. The Startup Team members, as well as Engineering, will periodically observe the performance of the ATPs, as they deem necessary. After test completion, the Startup Team will provide test results/reports to the S&GRP Engineer Lead who will distribute the report accordingly.

After completion of the ATPs, the Startup Engineer will perform a review to ensure all elements within the ATP have been met. After approving the ATP, the Startup Team's TA will prepare a report and provide it to the S&GRP Engineering Lead, who will distribute the report for review to applicable organizations as identified in Appendix C, *PEP R2A2*. After reviews are complete, S&GRP Operations Management will approve the report.

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3.0 CALIBRATIONS

Calibrations and preventive maintenance required for performance of the ATP will be identified as a prerequisite. The table below is an initial list of components that require calibration for safety or process control. Each instrument will be reviewed in accordance with PRC-PRO-MN-490, *Calibration Management Program* to establish calibration requirements.

Operations and Process Equipment Requiring Calibration	
Equipment	Function
Flow Meters	Monitoring flow levels from wells and facility processes. Required for flow-pacing chemical feed systems
pH Monitors	Process monitoring; required for chemical dosing
Level Sensors and Switches	Control of pump rates and prevention of overflow conditions
Pressure Instrumentation	Process control and system alarms
Water Quality Instrumentation	Process control and performance monitoring
Stack Air Emissions Quality Parameters	Process control and performance monitoring

4.0 OPERATIONAL TEST PROCEDURE (OTP)

The primary objective of the OTP is to validate operating and maintenance procedures and complete operator training. The secondary objective is to monitor process and system performance during extended run time to demonstrate the facility is meeting the design requirements.

The Startup Team will prepare the OTP Test Procedure and transmit it to the S&GRP Engineering Lead for distribution in accordance with Appendix C, *PEP R2A2*. After review, S&GRP Operations Management will provide final approval. An FDC matrix was developed, revised, and reviewed to ensure compliance to specifications; a construction completion document will be completed; and any remaining construction items will be tracked on the project punchlist. The OTP will then begin following the IATP, including a successful completion of the Readiness Evaluation. The OTP will utilize contaminated groundwater and will be executed under S&GRP 200W P&T Operations Management control. Required calibrations and preventative/routine maintenance for full facility operation will be identified as prerequisites and will be completed prior to test initiation. Essential drawings will be as-built and issued prior to start of the OTP. Specific support drawings may be as-built during OTP.

The approved OTP will be in the format of a work package utilizing the Operation Procedures for performance. The Startup Team will prepare the OTP report and send the report to the S&GRP Engineer Lead for distribution in accordance with Appendix C, *PEP R2A2*. After review, the report will be sent to the S&GRP Operations Manager for approval and acceptance of the 200W P&T Facility.

The OTP will be complete prior to any request for the AA to release the facility for unrestricted operations.

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5.0 DATA

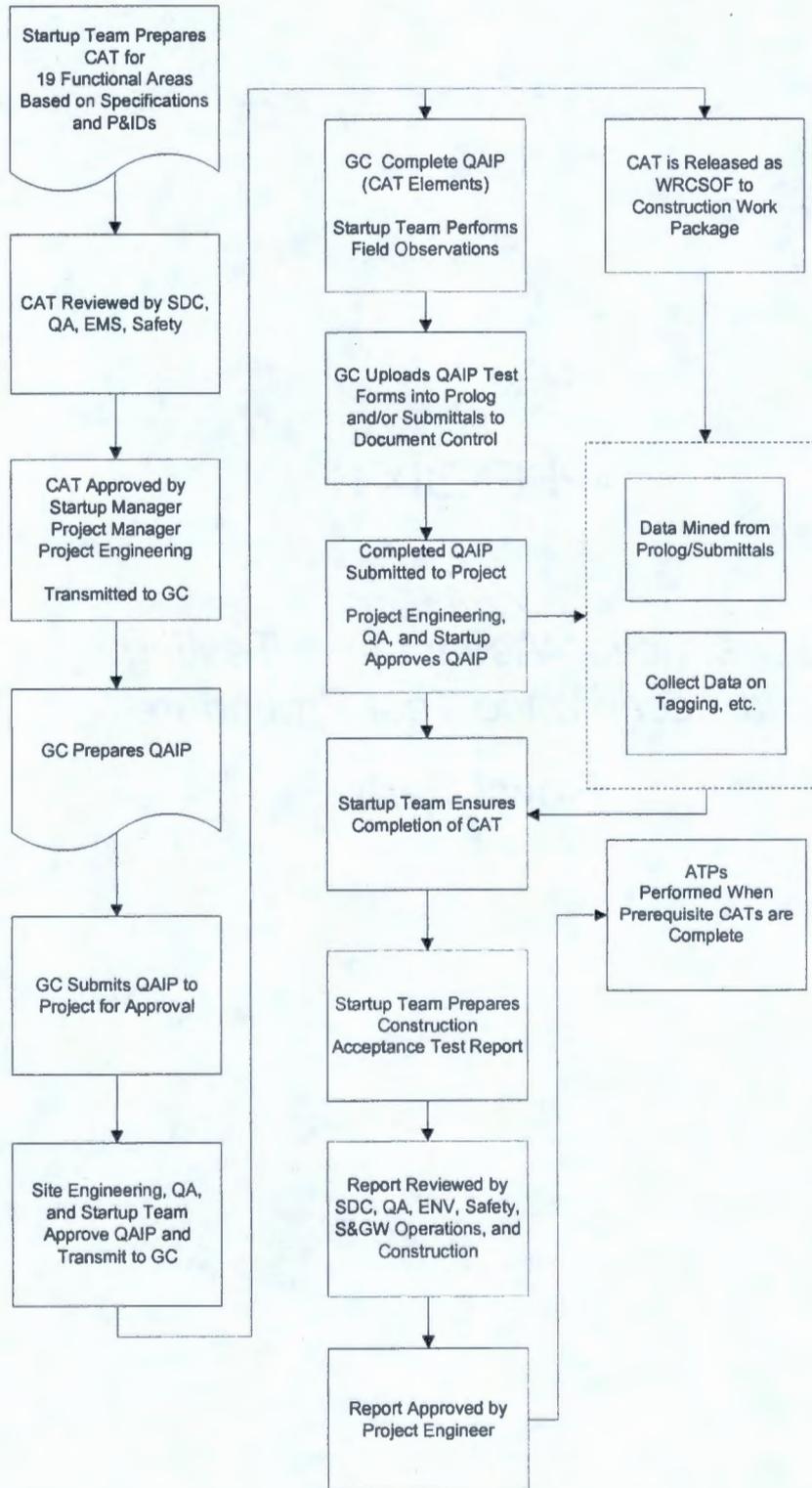
Submittals for CAT, ATP, and OTP will be retained in construction project files. The data collected from CATs, ATPs, and OTPs will be issued into Hanford Document Control System (HDCS) as test reports. Test logs will be established and maintained by the TA for the ATP and OTP. Document files, e.g., Construction Completion Document, WPs, procedures, tests, etc., will become part of the quality evidence used to support the 200W P&T project during the Readiness Evaluation.

APPENDIX H

Construction Acceptance Testing and Acceptance Test Procedure Flow Charts

Appendix H – CAT Flow Chart

200W P&T CAT Process Block Diagram



Appendix H – ATP Flow Chart

200W P&T ATP Process Block Diagram

