

United States Government

Department of Energy

# memorandum

Office of River Protection

**JAN 17 2013**

DATE:

REPLY TO

ATTN OF:

TRS:JHW 13-TRS-0003

SUBJECT: THE U.S. DEPARTMENT OF ENERGY (DOE), OFFICE OF RIVER PROTECTION (ORP) ANNUAL WORKFORCE ANALYSIS AND STAFFING PLAN REPORT

TO: Karen L. Boardman, Chairperson  
Federal Technical Capabilities Panel

Reference: Memorandum from K. L. Boardman to Distribution, "Annual Workforce Analysis and Staffing Plan Report for Calendar Year 2012," dated October 24, 2012.

As required by DOE O 426.1, Change 1, "Federal Technical Capability," and the Reference, attached is the ORP's Annual Workforce Analysis and Staffing Plan Report for Calendar Year (CY) 2012. The subject report was prepared in accordance with the reference's guidance and represents the necessary technical resources required to provide oversight of operations conducted in ORP's assigned nuclear facilities. This report is submitted in support of the Federal Technical Capability Panel's biannual report to the Secretary of Energy.

ORP began CY 2012 with an onboard count of 139 employees. ORP presently stands at 134 employees onboard, 11 less than the Environmental Management-funded ceiling of 145. Of this total, 101 employees are classified as technical staff as defined in DOE O 426.1, Change 1.

If you have any questions, please contact me, or your staff may contact James H. Wicks, FTCP Agent, at (509) 376-3522.



Kevin W. Smith  
Manager  
Office of River Protection

Attachment

10/1/24

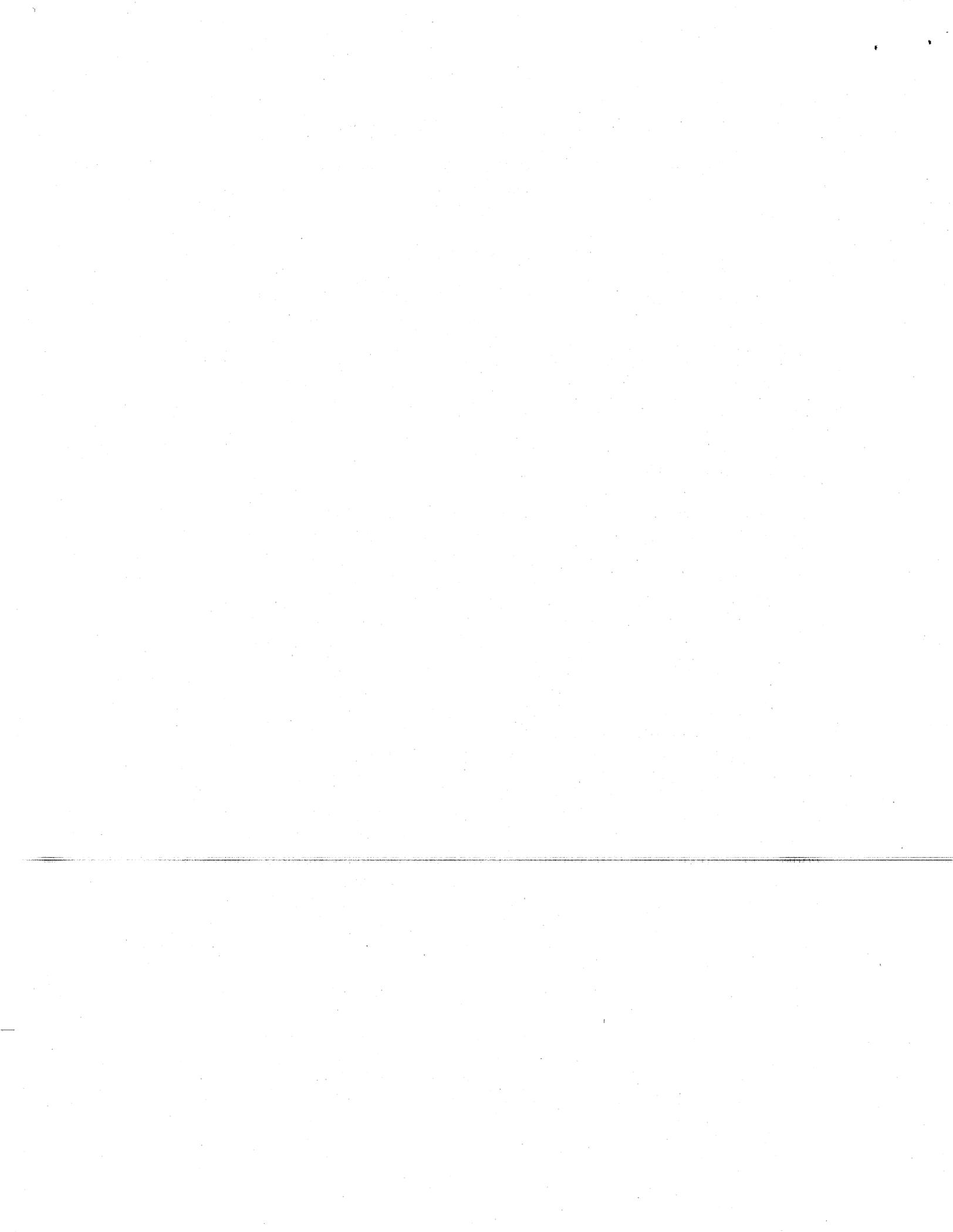
**Annual Workforce Analysis and Staffing Plan Report  
as of December 31, 2012  
U.S. Department of Energy (DOE), Office of River Protection (ORP)  
Richland, WA**

**Section One: Current Mission and Potential Changes:**

The River Protection Project mission is to safely retrieve and treat Hanford's tank waste and close the Tank Farms to protect the Columbia River. This mission statement includes Tank Farms' daily operating activities, Single-Shell Tank (SST) waste retrievals, upgrade of the Tank Farms infrastructure to deliver waste feed to the Waste Treatment and Immobilization Plant (WTP), completion of the WTP construction, transition to commissioning, and startup, operation of the 222S Analytical Services and Testing Laboratory, and operation of the 242A Tank Farms' Evaporator.

**1. Current Mission Technical Challenges:**

- ORP is composed of two major projects, specifically the Tank Farms and the WTP projects. The Tank Farms contractor, Washington River Protection Solutions LLC (WRPS) employs 1506 personnel. Bechtel National, Inc. (BNI) employs 2800 personnel at the WTP. Advanced Technologies and Laboratories International, Inc. (ATL) employs 86 personnel at the 222S Laboratory. This results in a contractor to Federal staff oversight ratio of approximately 30 to 1. The demands of oversight and project management of the largest DOE construction site and revitalizing the aging infrastructure of Tank Farms, place substantial demands on the ORP technical and nuclear safety staffs.
- The WTP project is entering the project phase defined by system turnover from construction to testing and design validation leading to commissioning. This new phase demands Federal staff oversight to validate designs, adjudicate differences between hazards and controls, and verify test results against design criteria for the next several years to support the approach to operations in year 2019. BNI has begun the collaborative process of drafting the Documented Safety Analysis (DSA) for the combined WTP Analytical Laboratory (LAB), Balance of Facilities (BOF), and the Low-Activity Waste (LAW) Vitrification Plant collectively known as the LBL Facilities. BNI has also begun the Hazards Analysis team meetings for the LBL which will span the first half of Calendar Year 2013. The goal is to have a draft DSA ready for final acceptance and writing of the accompanying Safety Evaluation Report (SER) in early 2014. ORP has established a Safety Basis Review Team (SBRT) and a Senior Advisory Board providing oversight of the process with representatives from the Office of Environmental Management (EM) EM-40, Office of the Chief of Nuclear Safety, and the Office of Science.
- Near-term activities in Tank Farms include SST retrieval, systems upgrade planning, and interim tank closure activities. Contractor resources may increase over the next five years, depending on the budget, to support supplemental waste treatment designs and installation of waste feed delivery systems to support commissioning of the WTP. Additionally, staff



oversight of tank waste retrievals and assessment of new retrieval technologies, designed to remove a larger percentage of tank waste, will increase the scope of responsibilities for both the Federal technical and project staff. Moreover, a growing amount of work, dedicated to the development of strategies to reduce the lifecycle risk associated with operating the Tank Farms beyond its designed life, is underway.

- Significant technical issues supporting the final design of the WTP and potential design requirements affecting Tank Farms infrastructure remain to be resolved, specifically:
  - Redefine the testing program for the WTP pulse-jet mixed vessels to require full scale testing of the actual vessels using relevant chemical and physical simulants to demonstrate their design functions.
  - Perform analysis to ensure adequate equipment redundancies necessary to allow the waste treatment mission to continue if a problem is identified or a component fails, and to allow for inspection, detection, and in-situ repair capabilities.
  - Evaluate issues involving the potential build-up of hydrogen gas and criticality in the event of inadequate mixing issues, as well as the structural design of the vessels and piping designs to ensure their adequacy.
  - Provide input regarding the test program and the design solutions needed to resolve issues with erosion and corrosion of vessel and piping materials.
  - Review the capabilities needed to ensure that the waste that will be fed to the Pretreatment (PT), LAW, or High-Level Waste (HLW) vitrification facilities has characteristics that are consistent with what the facility can safely and effectively process. Analyze opportunities to precondition the waste, if necessary, prior to it being sent to the PT Facility, and/or segregate the more difficult to treat waste to enable a direct feed to the HLW Facility or process this waste in some other way.
  - Mitigate the postulated consequence of Hydrogen in Piping and Ancillary Vessels events in the WTP.
  - Identify a technically appropriate WTP spray leak scenario methodology.

## **2. Potential Future Challenges to Mission Affecting Technical Staffing:**

- Tank Farm Operation is projectized into an operations and retrieval organization. The retrieval team retrieves single-shelled waste storage tanks on a prescribed schedule and is responsible to improve the efficiency and effectiveness of the retrieval process. The goal is to increase the number of tanks retrieved per year and the effectiveness of the retrieval process. The growth in contractor's infrastructure and potential construction projects may create a Federal staffing demand beyond the existing human capital plan.
- The Nuclear Safety staff is at its authorized end-strength. Over the next two years, review of the LBL DSA and development of the associated SER, will tax the Nuclear Safety Division, the WTP Engineering Division and other Subject Matter Experts (SME), (e.g., fire protection engineer Safety Systems Oversight, environmental compliance staff). As discussed above,



the SBRT will face the challenge to coordinate technical reviews by SMEs within the existing ORP technical staff and judicious use of contracted assistance based on availability and cost under a constrained budget.

**Section Two - Site Characterization Table**

**Number of Hazard Category 1, 2, or 3 Nuclear Facilities:**

**HC1**   0  

**HC2**   4  

1. WTP HLW Facility (under construction, CD-3)
2. WTP PT Facility (under construction, CD-3)
3. Tank Farm
4. 242A Evaporator

**HC3**   3  

1. WTP LAW Facility (under construction, CD-3)
2. WTP LAB (under construction, CD-3)
3. 222S Laboratory

Note:

1. While the WTP facilities are classified according to their eventual hazard classifications, the project is today a non-radiological construction site categorized as CD-3.
2. As part of the DSA evolution, BNI is verifying the calculation that determines the Hazard Category of the LAW Facility. Early indication is that the Hazard Category of the LAW Facility may change from HC3 to HC2.

**Number of Radiological Facilities:**   0  

**Number of High or Moderate Hazard Non-Nuclear Facilities:**   1  

1. WTP BOF (under construction, CD-3)

**Number of Low Hazard Non-Nuclear Facilities:**   0



**Number of DSA:**   3  

1. Tank Farms
2. 242A Evaporator
3. 222S Laboratory

**Number of PDSA:**   5  

- WTP Facilities:
  1. PT Facility
  2. HLW Vitrification Plant
  3. LAW Vitrification Plant
  4. LAB
  5. BOF

**Number of Safety Systems:**

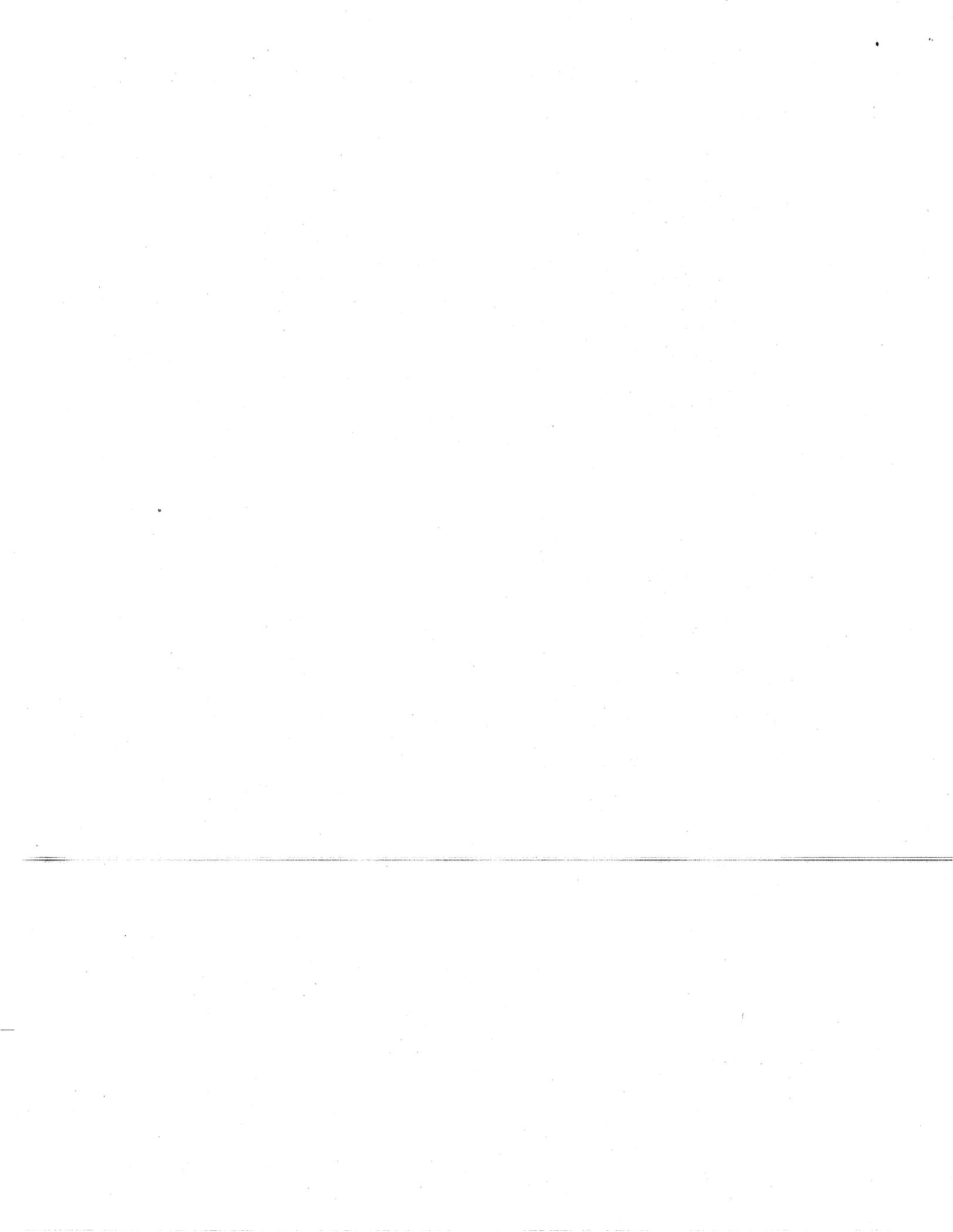
- Tank Farms – 8
- 242A Evaporator – 2
- 222S Laboratory – 0
- WTP – 87

**Number of Site Contractor Full-Time Equivalents (FTE):**

- BNI WTP = 2800
- WRPS personnel assigned across the Tank Farms, 222S Laboratory support personnel, 242A Evaporator, and System One Project = 1506
- ATL, 222S Laboratory = 86

**Number of ORP Federal Office Full-Time Equivalents (FTE):** 145 authorized, 138 onboard

The technical staff accounts for 101 employees of the total 145 ORP authorized headcount.



**Section Two – Technical Staffing Summary Table**

Technical Capability	For All Facilities		Comments
	Number of Full-Time Equivalents (FTE) Needed	Number of FTEs Onboard	
Senior Technical Safety Managers	13	13	10 Fully qualified, 3 in-training.
Safety System Oversight (SSO) Personnel	8	8	Includes the Fire Protection SSO.
Facility Representatives (FacRep)	14	14	8-Tank Farm, 5-Waste Treatment and Immobilization Plant (WTP), 1 open WTP FacRep Posting, 1 FacRep assigned as Engineering Supervisor.
<b>Other Technical Capabilities:</b>			
Aviation Safety Manager	0	0	Not applicable to Office of River Protection (ORP) Mission.
Aviation Safety Officer	0	0	Not applicable to ORP Mission.
Chemical Processing	5	5	Increase in 1 from 2011 report (Intern rejoined ORP after graduate school).
Civil/Structural Engineering	2	2	WTP (2), Tank Farm (0), lost Tank Farms engineer to retirement.
Construction Management	0	0	Project Management decision to retain this Functional Area Qualification (FAQ) within scope of WTP FacReps qualifications.
Criticality Safety	4	4	The 4 Criticality Safety Engineers are dual qualified as Nuclear Safety Specialists. Nuclear Safety Division Director also qualified as Criticality Safety Engineer.
Deactivation & Decommissioning	0	0	FAQ assigned to the Richland Operations Office [RL].
Electrical Systems	3	3	Increase by 1 since 2011 report.
Emergency Management	0	0	Emergency Management managed for Hanford Site by RL.
Environmental Compliance	3	3	Unchanged from 2011 report.
Environmental Restoration	0	0	FAQ not applicable to ORP Mission.
Facility Maintenance Management	0	0	Responsibility assigned to SSO.
Fire Protection Engineering	1	1	Unchanged from 2011 report.
Industrial Hygiene	2	2	Unchanged from 2011 report.
Instrumentation & Control	2	1	Unchanged from 2011 report.
Mechanical Systems	9	9	Increased by 2 from 2011 report.
NNSA Packaging Cert. Engineer	0	0	Not applicable to ORP Mission.
Nuclear Explosive	0	0	Not applicable to ORP Mission.
Nuclear Safety Specialist (NSS)	9	9	Unchanged from 2011 report.
Occupational Safety	1	1	Unchanged from 2011 report.
Quality Assurance (QA)	5	5	Unchanged from 2011 report.
Radiation Protection	2	2	Unchanged from 2011 report.
Safeguards & Security	0	0	FAQ assigned to RL.
Safety Software Quality Assurance (SQA)	0	0	QA personnel complete both QA and SQA FAQs.
Technical Program Manager	2	2	Unchanged from 2011 report.
Technical Training	1	1	Technical Training FAQ requirements assigned to Federal Technical Capabilities Panel Agent.
Transportation & Traffic Management	0	0	Not applicable to ORP Mission.
Ventilation & Off-Gas System	3	3	2 qualified, 1 in training. (This is a Draft FAQ in RevCom)
Waste Management	10	10	Decrease by 1 from 2011 report.
Weapons QA	0	0	Not applicable to ORP Mission.
Federal Project Directors	14	14	Unchanged from 2011 report.



### **Section Three: Current shortages and plans for filling them**

The following identifies existing shortfalls in technical staffing to meet the current needs of the WTP and Tank Farms projects:

- One Facility Representative backfilling a position vacated by promotion to a WTP Engineering supervisor;
- One new position as the Operations Manager for WTP Start-Up and Commissioning Integration Division;
- One General Engineer for assignment as a Facility Engineer for the Tank Farms programs; and
- One Business Services position.

ORP continues to negotiate with EM Headquarters to identify potential end-strength to meet the needs of the WTP approach to commissioning and an accelerating pace of Tank Farms operations.

### **Section Four: Projected shortage/surplus over next five years**

Sixteen percent (16%) of the current 138 employee workforce is eligible to retire. An additional 25% will be eligible to retire in the next five years. The last two year's attrition has been up because of the Voluntary Separation Incentive Payments (VSIP). The ORP is projecting an attrition percentage of 10% in 2013, following 12% attrition in 2012. At the beginning of Fiscal Year (FY) 2011, ORP received authority to offer a VSIP to eligible employees. The Voluntary Early Retirement Authority was previously approved and was extended through September 30, 2012. The projected demand over the next five years is to increase staffing to from the present 138 to 158 FTEs to support the WTP as it transitions to commissioning and operation. ORP will need to hire approximately 65 new employees through FY 2017, to fill new vacancies and backfill projected attrition. ORP has been managing to a decreasing FTE ceiling staffing plan for the past few years. In order to ensure the success of the WTP and the ability to feed waste from the Tank Farms, ORP will need to maintain an effective workforce as described in ORP's FY 2013 - 2017, Human Capital Management Plan (HCMP). The ORP's authorized employee ceiling has decreased from 163 FTEs in FY 2011 to 159 FTEs beginning of FY 2012, to 153 FTEs with the merger of the ORP financial team with the Richland Operations Office. DOE's EM approved FTE ceiling when the HCMP was last updated was 147 FTEs, which is now down to 145 FTEs.

### **Section Five: General comments or recommendations related to the Technical Staffing**

Recommendation: A Functional Area Qualification (FAQ), which is emerging from the WTP and Tank Farms look ahead to commissioning, is that of a Software Engineer. The field of Electrical Engineering is morphing into four unique areas: Electrical System (High and Medium High Voltage power distribution systems), Instrumentation and Control, Electrical Safety (including those systems and processes that ensure electrical isolation), and Software Engineering. ORP believes that a FAQ specifically developed for Software Engineers is warranted based on the complexity of modern systems, the increases in Institute of Electrical and



Electronics Engineers code specificity, and control systems components demanding requirements to comply with environmental qualification and Consensus Standards compliance.

To date, ORP has been successful in hiring technically talented engineers from the United States Navy's Nuclear Propulsion Program, Army Corps of Engineers, and local Hanford Site contractors who are seeking a broader career opportunity. ORP recognizes that it must have experienced engineers who are capable of reviewing designs for compliance with technical standards, overseeing a robust testing program and configuration management, and who possess a strong sense of nuclear safety culture. These criteria are especially true as the WTP progresses toward commissioning and as Tank Farms transitions to routine waste delivery from its safe-storage mission. This is a narrowly focused technical skillset, which is becoming increasingly competitive as the resurgence in commercial nuclear plant construction becomes a reality.

