

**Airborne Hazards and Open Burn Pit Registry  
System Design Document**



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12/19/2014	1.1	Updates after architecture review		
12/29/2014	1.2	Updated to include preliminary designs for the option periods		
1/2/2015	1.3	Addressed comments from Dr. Ciminera and Ryan Striker		

## Artifact Rationale

The System Design Document (SDD) is a dual-use document that provides the conceptual design as well as the as-built design. This document will be updated as the product is built, to reflect the as-built product. Per the Project Management Accountability System (PMAS) Guide, the SDD as a conceptual design is required prior to the Milestone 1 Review. (Sections 1, 2, 3, 4, 5, 7, 9 need to be populated, as applicable.) The as-built design for each delivery must be incorporated prior to the Milestone 2 Review. (The entire document needs to be populated or updated, as applicable.)

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# 1. Introduction

Open Burn Pit Registry: On January 10, 2013, the President enacted Public Law ([PL 112 260](#)) requiring the Department of Veterans Affairs (VA) to establish an open burn pit registry for Veterans who may have been exposed to burn pits in Iraq or Afghanistan (refer to Appendix A for [Public Law 112 260](#)). Section 201 of this PL requires the registry to be established no later than one year after the date of enactment and in coordination with the Secretary of Defense. The law indicates VA may include any information determined necessary to ascertain and monitor the health effects of the exposure of members of the Armed Forces to toxic airborne chemicals and fumes caused by open burn pits. As a result of uncertain exposure data, VA should consider all Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND) Veterans as potentially exposed to burn pits and eligible for registry participation.

The law defines an Open Burn Pit as “designated by the Secretary of Defense to be used for disposing solid waste by burning in the outdoor air”. However, open burn pits were used frequently in Iraq and Afghanistan and Department of Defense (DoD) did not require or maintain records for open burn pits prior to 2009. Based on existing participation for the Web Mobile Solution (WMS) application, VA should anticipate 100,000 new participants per year, 60,000 of which may request an optional in-person VHA medical evaluation. Non-enrolled, enrolled, symptomatic, asymptomatic Veterans, and Veterans with significant concerns may request in-person registry evaluations.

The currently deployed interim Web Mobile Solution (WMS) Burn Pit Registry (BPR), referred to as WMS or WMS BPR throughout this document, provides Veterans screening and evaluation processes, tracking and care to improve quality treatment for Veterans exposed to open burn pits, which were used to dispose of waste, including potentially hazardous material. The WMS BPR consists of (a) a public self-registration web portal, which Veterans or Service Members use to complete eligibility questionnaire, and (b) a Mongo database, which stores the data entered from the web portal and (c) a clinical portal whose access is restricted to authorized users within intranet.

## 1.1.Purpose of the SDD

The purpose of this document is to provide in sufficient detail how the Airborne Hazards and Open Burn Pit (AHOBPR) Registrant Portal (WMS BPR) and Clinical Web Application will satisfy the requirements in the RSD and will be the document that the developers will use to develop the overall system.

## 1.2.Identification

The table below identifies the required software and hardware for this solution.

**Table 1 – COTS and Open Source Software**

Software	Version	Production Environment	
		Qty	License Provided By
Microsoft® Windows Server®	Microsoft Windows Server 2008 R2 Enterprise 64-bit	2	AITC
Microsoft® IIS	7.5	2	AITC
Microsoft SQL Server® with installed: <ul style="list-style-type: none"> <li>SQL Server Integration Services (SSIS)</li> <li>SQL Server Analysis Services (SSAS)</li> <li>SQL Server Reporting Services (SSRS)</li> </ul>	Microsoft SQL Server 2008 Enterprise R2	2	AITC
.NET Framework	3.5, SP 1	2	AITC
Red Hat Linux	5.x	1	MAE
Apache		1	MAE
Node.js	0.10.32	1	Open Source
Express.js	3.6.0	1	Open Source
Connect.js	2.15.0	1	Open Source
Bootstrap.js	2.3.2	1	Open Source
Backbone.js	1.1.2	1	Open Source
Jade.js	1.3.1	1	Open Source
Log.js	1.4.0	1	Open Source
Mocha.js	1.18.2	1	Open Source
Passport.js	0.2.0	1	Open Source
Pdfkit.js	0.6.2	1	Open Source
Request.js	2.34.0	1	Open Source
Underscore.js	1.6.0	1	Open Source



**Table 2 – Prerequisite Hardware**

<b>.Functional Server Name</b>	<b>Operating System</b>	<b>32 or 64 bit</b>	<b>Processor (# x 500Mhz)</b>	<b>RAM (GB)</b>	<b>Storage (MB)</b>	<b>Virtual Machine?</b>
CRS Production Web Server	Windows Server 2008 R2 Enterprise	64	2 x 2.4Ghz Quad Core Equivalent	32	163840 (OS Drive)	No
CRS Production SQL Server	Windows Server 2008 R2 Enterprise	64	2 x 2.4Ghz Quad Core Equivalent	32	163840 (OS Drive)	No
MAE Public-Facing Web Server	Red Hat 5.x	TBD	TBD	TBD	TBD	No
MAE Node.Js Server	Red Hat 5.x	TBD	TBD	TBD	TBD	TBD

### 1.3.Scope

An order (VA118-1011-0022) was issued to develop a new end-to-end enterprise Airborne Hazards and Open Burn Pit Registry (AHOBPR) to more effectively capture and process AHOBPR demographic, exposure, and health related data that may determine long-term health impacts to Veterans. The new end-to-end AHOBPR system will include the WMS BPR interim solution, build upon the Converged Registry Solution (CRS) platform data store, and provide a new intranet-only accessible web portal to manage the registry and facilitate the care of the participants. The AHOBPR data store will be tied to other VA and DoD services end points for clinical, demographic, contact and scheduling data. The AHOBPR will include the following items:

- An AHOBPR user interface to automated data collection from external systems such as the Computerized Patient Record System (CPRS), the Corporate Data Warehouse (CDW), Medical Domain Web Services (MDWS), VistA, and the DoD (such as occupational exposure data, Individual Lifetime Exposure Record (ILER))
- Be integrated with the VHA Support Service Center (VSSC) so that the VSSC can obtain AHOBPR data that for analyzing health outcomes, for outreach, for reports to Congress, and for other stakeholders, to generate research hypotheses, and to determine the effectiveness of VHA health services to these specific Veteran populations.

The finished end-to-end enterprise AHOBPR product will consist of (a) a database; (b) a web-based portal that includes a public facing (Internet) portal and a VA facing (Intranet) portal; and (c) a reporting, analysis and data cube capability.

This SDD covers the funded portion of order VA118-1011-0022. It currently excludes the scope of the two optional tasks; however, preliminary design descriptions for the option periods are provided in the additional information.

**Table 3: Scope Inclusions**

<b>Includes</b>
1) Public-Facing Portal (Participant Portal)
a) Self-registration
b) Automating Veteran eligibility for registry inclusion

<b>Includes</b>	
c)	The ability for Veterans and Service Members to electronically (via a public facing portal) enter health assessment data and respond to questionnaires
2)	VA-Facing Portal (Staff Portal)
a)	Provide VHA Central Office, Office of Public Health (OPH), staff and VHA field staff (clinicians, providers, health care personnel) intranet web portal access to the AHOBPR back end database
b)	Provide analysis and reporting capability for Veterans and Service Members including both standard and ad hoc reporting and with participant (individual) and aggregate views
c)	Build the portal upon the Converged Registries Solution platform
3)	Database
a)	Porting the existing registrant (MongoDb) data base to the new end-to-end AHOBPR data base
4)	System Integration
a)	Integrate the Registration Portal eBenefits Integration via SSO redirect
b)	Provide web services for authorized external systems to consume AHOBPR data
c)	Data extracts to be used for analysis and outreach by DoD and VA analysts and care providers using external business intelligence repositories and tools.
d)	Use enterprise services to obtain data from authoritative sources

**Table 4 Scope Exclusion**

<b>Excludes</b>	
1)	Questionnaire usability enhancements (Option Period 1 – OWRN: 3.1.2A)
2)	Provide the ability for VHA staff to supply subsets of eligible participants with online health risk communication and outreach information on an ongoing and recurring basis. (Option Period 1 – OWRN: 3.12,3.12.1)
3)	Provide ability for VHA staff to electronically request additional information from eligible participants on an ongoing and recurring basis. . (Option Period 1 – OWRN: 3.13, 3.13.1, 3.1.1A, 3.13.2, 3.13.3)
4)	The Bi-Directional DoD ILER interface (Option Period 2 – PWS 5.6)
5)	Provide the ability to electronically notify the appropriate health care facility’s staff to schedule an in-person health concern and exposure evaluation. (Option Period 2 – OWRN: 3.9, 3.9.1, 3.9.2)
6)	Provide the ability for a Veteran to request contact with a member of his/her assigned PACT via the web portal. (OWNR: 3.14)
7)	Provide the ability to monitor Veterans requesting in person clinical appointments and those who were scheduled and those who had completed appointments. (Option Period2 - OWRN: 3.16.4)
8)	Provide the ability for open burn pit exposure evaluation data to be integrated into the EHR. (Option Period 2 – BN 4, OWRN: 4.1, 4.1.1, 4.4, 4.4.1, 5.1.2)

Excludes
9) Automated data collection from external systems such as the Computerized Patient Record System (CPRS), the Corporate Data Warehouse (CDW), Medical Domain Web Services (MDWS), VistA, and the DoD (such as occupational exposure data, Individual Lifetime Exposure Record (ILER))
10) Update VistA health record via CRS integration (e.g., CPRS, MDWS, ETL)

## 1.4. Constraining Policies, Directives and Procedures

- Compliance with the *Veteran's Affairs (VA) Directive 6500, Information Security Program*. VA Directive 6500 may be found in its entirety at [REDACTED]
- Compliance with the *Office of Management and Budget (OMB) Circular A-130, "Appendix III, Security of Federal Automated Information Resources."* Circular A-130 may be found in its entirety at [REDACTED]
- Compliance with VA requirements for *Section 508 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794d)*. Section 508 requirements are listed on the VA Section 508 Office web site at [REDACTED]
- Compliance with VA *Handbook 6500.3, Certification and Accreditation of VA Information Systems*. VA Handbook 6500.3 may be found in its entirety at [REDACTED]
- Compliance with ASM Research, Inc.'s Quality and Project Management Policy
- Compliance with ASM Research, Inc.'s Technical Solution (Engineering) Processes

## 1.5. User Characteristics

**Table 5 User Characteristics**

User Community	User Attributes
<b><i>Internet Public</i></b> (Anyone who browses to the public web site)	<ul style="list-style-type: none"><li>• Has access to the internet via a computer or mobile device browser.</li><li>• Has familiarity with electronic form data entry</li><li>• Reads English</li></ul>
<b><i>Registrants</i></b> (Eligible and Consenting Veterans and Service Members)	<ul style="list-style-type: none"><li>• Has access to the internet via a computer or mobile device browser.</li><li>• Has familiarity with electronic form data entry</li><li>• Reads English</li><li>• Has a DS Logon</li></ul>
<b><i>VHA Office Public Health staff</i></b>	<ul style="list-style-type: none"><li>• Has access to VA intranet</li><li>• Is a user in AHOBPR Clinical Portal</li></ul>
<b><i>Environmental Health Coordinator staff</i></b>	<ul style="list-style-type: none"><li>• Has access to VA intranet</li><li>• Is a user in AHOBPR Clinical Portal</li></ul>
<b><i>VHA Clinical Field Staff</i></b>	<ul style="list-style-type: none"><li>• Has access to VA intranet</li><li>• Is a user in AHOBPR Clinical Portal</li></ul>

## 1.6.Relationship to Other Documents and Plans

The inputs to this document are the

- Airborne Hazards and Open Burn Pit Registry (AHOBPR) Development Performance Work Statement (PWS),
- Environmental Health Registries including Airborne Hazards and Open Burn Pit Registry Supplemental to New Service Request #20121207 Business Requirements Change Document (BRCD)
- Requirements Gap Analysis Report For Environmental Health Registries including Airborne Hazards and Open Burn Pit Registry
- Requirements Specification Document (RSD) for AHBOPR

## 1.7.Definitions, Acronyms, and Abbreviations

See A.2 Acronym List and Glossary

## 1.8.References

**Table 6 References**

<b>Document Title</b>	<b>Rpt #</b>	<b>Date</b>	<b>Published By</b>
<b>eBenefits Partner Integration Guide v. 1.2</b>	N/A	6/18/13	VA's Veterans Relationship Management (VRM) program's Enterprise Veteran Self Service (EVSS) activity
<b>Open Burn Pit (OBP) Registry DRAFT System Design Document v.0.01</b>	N/A	Dec 2013	Veterans Health Administration (VHA)
<b>Department of Veterans Affairs Converged Registries Solution (CRS) (Registries Enhancements) System Design Document v.1.6</b>	N/A	Mar 2014	VA Office of Information & Technology (OI&T), Product Development (PD)
<b>Burn Pit Registry Architecture and Design v290414-1811-781</b>	N/A	4/29/14	VA Mobile Health
<b>Veteran Information/Eligibility Reporting Services (VIERS) Military History Service Contract Document v0.1</b>	N/A	7/25/13	Data Services Reference Architecture
<b>EVSS – eBenefits Partner Integration Guide v1.2</b>	N/A	6/18/2013	
<b>VIERS Military History Service Description v1.0</b>	N/A	Jul 2013	VRM Data Services Reference Architecture
<b>VLER Data Access Service (DAS) Interface Control Document (ICD) with Consumer and Producer Services</b>	N/A	Jan 2013	Virtual Lifetime Electronic Record (VLER) Program Management Office (PMO)
<b>VLER Gateway (Inbound) Web Services/HTTPS v1.05</b>	N/A	Jul 2013	Virtual Lifetime Electronic Record (VLER) Program Management Office (PMO)
<b>Health Adapter 3.0 Documentation</b>	N/A	9/4/2014	
<b>AHOBPR CTS Extract Information</b>	N/A		
<b>CTS Extract Info Attachment A</b>	N/A		
<b>CTS-Deployment Information Paper</b>	N/A	April 2013	
<b>Sample Extract</b>	N/A		

## 2. Background

### 2.1. Overview of the System

AHOBPR is a registry of Service Members and Veterans who were potentially exposed to airborne toxic chemicals and fumes from open-air burn pits and other sources in Iraq and Afghanistan. The registry consists of a database of registrants, their exposures and their health conditions that may be clinically relevant to the diagnosis or treatment of the individuals or the monitoring of the target population. The registry is accessible from two web portals (a public portal and a VA staff portal) and include a reporting, analysis and data cube capability.

An order (VA118-1011-0022) was issued to develop a new end-to-end enterprise Airborne Hazards and Open Burn Pit Registry (AHOBPR) to more effectively capture and process AHOBPR demographic, exposure, and health related data that may determine long-term health impacts to Veterans.

The new end-to-end AHOBPR system will include the WMS BPR interim solution, built upon the Converged Registry Solution (CRS) platform data store, and providing a new intranet-only accessible web portal to manage the registry and facilitating the care of the participants. The AHOBPR data store will be tied to other VA and DoD services end points for clinical, demographic, contact and scheduling data.

The primary users of the system are:

- *Internet Public*. Anyone who browses to the public web site and is interested in the registry effort. They will view information about the registry that has been made public and can attempt to self-register to apply to become a participant.
- *Registrants*. Veterans and Service Members who wish to participate in the registry. They must logon using a DS Logon. They will update contact and demographic information about themselves, consent to participating in the registry, request reconsideration of their eligibility (if necessary and desired), respond to survey questions, and request a registry-related in-person evaluation (i.e., exam).
- *VHA Office Public Health Staff*. Staff will monitor and shepherd the registrants through the process, including the manual review of eligibility.
- *Environmental Health Coordinator*. Coordinator will respond to Veterans and Service Member inquiries, provide resources, and may assist in scheduling an optional in-person evaluation.
- *VHA Clinical Field Staff*. Performs the exam. Enters/accepts registry data into the EHR. Orders specialty consults as necessary.

**Table 7 User Role Mapping**

Portal User	Role Description	Responsibilities
Staff / Clinical Application Users	Registry Manager	Full control including User Administration and Maintenance of Flags and other Controlled Lists
	Care Team ( <i>Environmental Health Coordinators, VHA Clinical Field Staff</i> )	View and Update Registry, Run Reports, Create and Run Ad Hoc Reports
	Advanced User: ( <i>VHA Office Public Health Staff</i> )	View and Update Registry, Run Reports, Create and Run Ad Hoc Reports, Perform Data Analysis
Registrant Portal Users	Anonymous User (Public)	View Public Information
	Registered Veterans / Service Members	View Public Information, View and Update their Profile, Request Eligibility Review
	Eligible and Consenting Veterans / Service Member	View Public Information, View and Update their Profile and Questionnaires, Communicate with VA Registry Staff

## **2.2.Overview of the Business Process**

### **2.2.1.Registrant Portal (previously WMS BPR)**

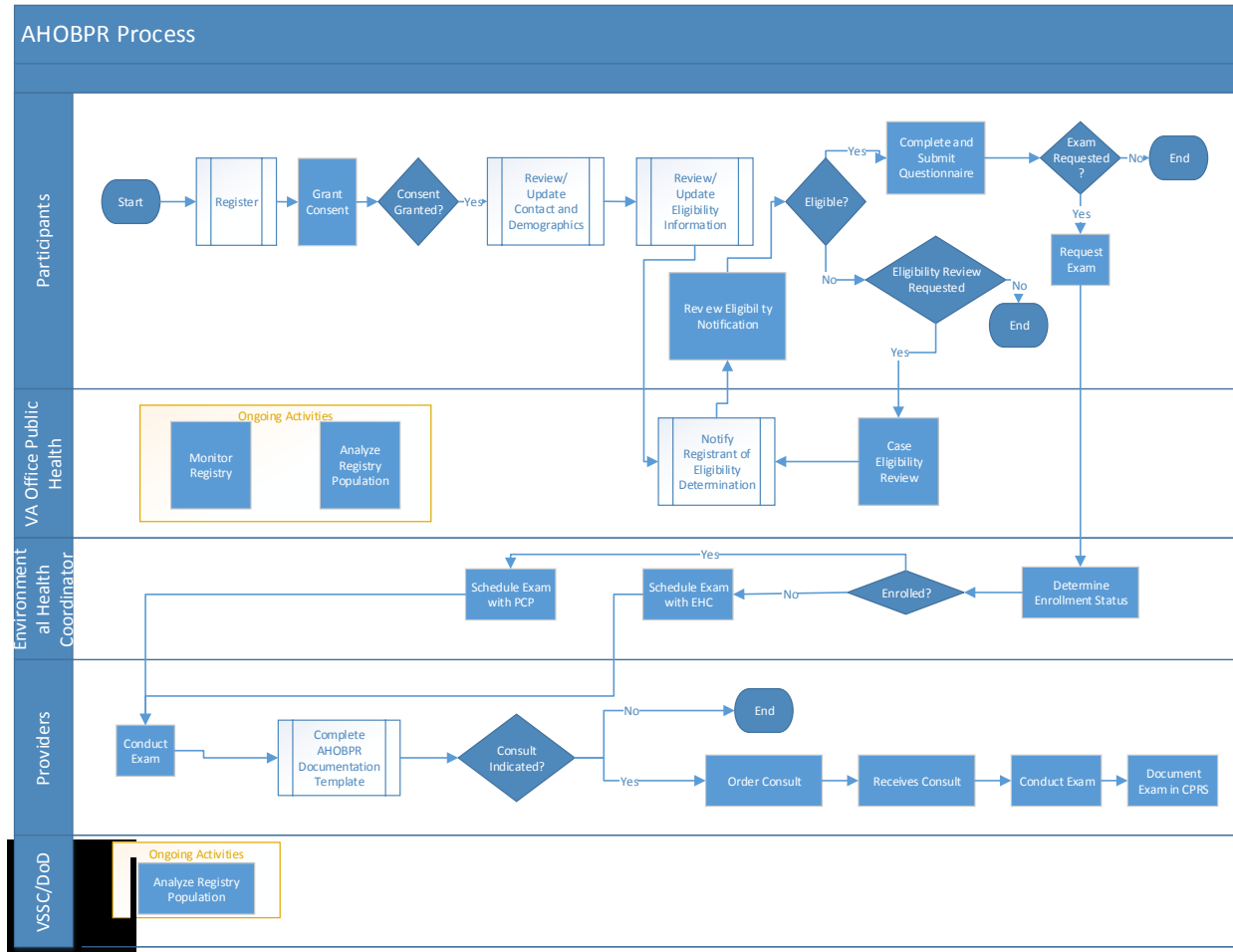
The enhanced Registrant Portal will be a secure public-facing web application that will be used by Veterans, Retired Military, and Active Duty personnel to collect and store airborne hazard related information.

The system will start off by collecting AHOBPR Self Registration demographic and service information via a secure Web-Portal hosted at eBenefits. This information will be used to determine Veterans' eligibility for the AHOBPR registry. If a Veteran is determined to be eligible they will then need to complete additional information using the Web-Portal including the Self-Assessment Questionnaire. All entered data will be saved to the central registry database. Upon submission of the completed questionnaire, the responses will be available for reporting and analysis.

### **2.2.2.Clinical (Staff) Web Application**

The Clinical Web Application will allow VHA staff access to the information entered by the Veteran to monitor a registrant's progress and assist them in completing the questionnaire. It will also provide the ability for authorized staff to change a registrant's eligibility status under circumstances described below. System administrators will be able to use it to manage users and user roles, and other users will be able to generate reports against individual AHOBPR participants and in aggregate.

**Figure 1: TO-BE Process Model**



## 2.3. Business Benefits

The ability to more effectively capture and process AHOBPR demographic, exposure, and health related data will enable the VHA to determine long-term health impacts of the exposures to Veterans.

- Eliminates all manual and error prone processes currently being practiced such as emailing, faxing etc.
- Provides a registry of data specific to air borne hazards and burn pit injuries that can be used to more accurately determine the effects of exposure to burn pits to certain populations and individual Veterans.
- May increase Veteran participation and inclusion in the OBP Registry because it is now more accessible and easier to register.
- Establishes trusted interfaces between various departments such as VA and DoD.



- Decreases labor costs by introducing automation of certain processes such as the determination of a Veterans' eligibility for the OBP Registry.
- Reduces errors such as failure to include all required data during the registration process.
- The opportunity to identify and track SMs/Vets with service related burn pit related injuries.
- The opportunity to conduct research and evaluate the treatment modalities that optimize outcomes.

## **2.4.Assumptions and Constraints**

### **2.4.1.Design Assumptions**

There are no design assumptions at this time.

### **2.4.2.Design Constraints**

- The application must be web-based, without installing any client plug-ins.
- The contract requires development of the new AHOBPR clinical portal leveraging VA's existing Converged Registries Solution (CRS) architecture. Therefore, Microsoft ASP.NET and SQL Server database are chosen as the development platform, which is the same platform used by CRS.
- The contract requires enhancement of the AHOBPR registrant portal leveraging VA's existing WMS BPR architecture. Therefore, Node.js and Backbone.js is the development platform for the Registrant portal.
- The contract requires AHOBPR Registrant Portal to be integrated into VA's eBenefits. Therefore, the Registrant Portal will be integrated through their Single Sign-on with Redirection method.

### **2.4.3.Design Trade-offs**

There are a number of design decisions that are pending, including:

- Whether to use an enterprise persistence service to store the questionnaire responses before they are submitted or use an AHOBPR developed service.
- Whether to use an enterprise service to retrieve Health Factors entered into VistA and the dates of AHOBPR evaluation encounters or to retrieve them through direct database reads (using SSIS) of CDW.
- Whether to store Contact information or to depend on real-time calls to the VIERS Contact Information Service.
- Whether to use an enterprise service to store and retrieve user contact preferences or use an AHOBPR developed service.
- Whether to save health factors or to always depend on real-time calls to an as yet unidentified enterprise service.

## 2.5.Overview of the Significant Requirements

### 2.5.1.Overview of Significant Functional Requirements

**Table 8 Signification Functional Requirements**

ID	Requirement
<b>AHOBPR PWS 1.0 Background</b>	<p>The finished end-to-end enterprise AHOBPR product will consist of (a) a database; (b) a web-based portal that includes a public facing (Internet) portal and a VA facing (Intranet) portal; and (c) a reporting, analysis and data cube capability. Development will include:</p> <p>...</p> <p>(d) Building an intranet web portal by which VA providers, clinicians, and AHOBPR staff can interface or integrate with various VA services and end points such as DoD, Veterans Health Information Systems and Technology Architecture (VistA), Enrollment Systems Redesign (ESR), Veteran Information/Eligibility Reporting System (VIERS), CRS, Computerized Patient Record System (CPRS), VHA Support Service Center (VSSC) Corporate Data Warehouse (CDW) functions, Identity and Access Management (IAM), eBenefits, Administrative Data Repository (ADR).</p>
<b>NEED/ARCH BN 2</b>	Utilize nationally standardized terminology for all fields in the patient management tool/registry/information system where available
<b>NEED/ARCH BN3</b>	Allow eligible Veterans and Service members (hereafter referred to as eligible participants) to self-register into the Airborne Hazards and Open Burn Pit Registry via an on-line secure Internet portal accessible from any location (which includes participants not currently registered in the VA health system) and store this data in a centralized location(s)/database(s). Reference Appendix E of the BRCD for Registry Eligibility Criteria.
<b>NEED1555 BN 4</b>	Provide the ability for open burn pit exposure evaluation data to be integrated into the EHR.
<b>NEED1555 BN 5</b>	Provide a VHA wide level (enterprise level) Airborne Hazards and Open Burn Pit Registry that contains Veteran self-reported data, demographics, health care health record data (this includes data from the on-line portal storage database as well as other VHA databases such as VistA), and data from external sources such as exposure data from the Department of Defense.
<b>NEED1555 BN 6</b>	Provide field staff with Airborne Hazards and Open Burn Pit Registry tools/utilities/user interfaces to retrieve, review, export, analyze and report data.
<b>OWNR6.2.1</b>	Provide aggregated standard reports by facility, VISN, national, or DoD Branch of Service.
<b>OWNR6.2.2</b>	Provide the ability to view aggregated standard reports by period of participation – weekly, monthly, quarterly, semi-annually, annually.
<b>OWNR6.2.3</b>	Provide standard reports by individual.

## 2.5.2. Overview of Functional Workload / Performance Requirements

ID	Requirement
<b>NONF2811</b>	Include instrumentation to measure all performance metrics specified in the Non-Functional Requirements section of the BRD. At a minimum, systems will have the ability to measure reporting requirements for Responsiveness, Capacity, and Availability as defined in the non-functional requirements section of this document.
<b>NONF2812</b>	Make the performance measurements available to the IT Performance Dashboard to enable display of “actual” system metrics to customers and IT staff.
	The internet web portal system shall respond to Veteran user actions in 5 seconds or less in 98% of the attempts, and never more than 20 seconds. Both the internet portal system and the registry shall respond to staff user actions in 10 seconds or less in 98% of the attempts. For system intense report queries, such as use of the data cube, it is expected the response time would be extended.

## 2.5.3. Overview of the Technical Requirements

ID	Requirement
<b>AHOBPR PWS 1.0 Background</b>	Development will include: <ul style="list-style-type: none"> <li>(a) Re-using/refactoring the current WMS BPR public self-registration web portal code;</li> <li>(b) Porting the existing registrant (Mongo) data base to the new end-to-end AHOBPR data base;</li> <li>(c) Building upon the CRS platform;</li> </ul>
<b>AHOBPR PWS 5.4.1</b>	The Contractor shall refactor/re-use the currently deployed interim WMS BPR HTML5 and Java code. The Contractor shall enhance the Public Facing Web Portal HTML5 + Java code, and re-host the code (i.e., re-host on the eBenefits platform). The contractor shall migrate the current Burn Pit data in MongoDB to SQL Server.
	VA approved Identity and Access mechanisms must be used per VA Handbook 6500. Currently, MAE VAMF Authorization Services provide a front end to VA authorized IAM for BPR phase 1.

#### 2.5.3.1. Overview of Interface Requirements

ID	Requirement
<b>OWNR5.2.2</b>	Provide an automated feed of participant demographic and clinical data from health record, VistA, and/or other VHA databases.
<b>OWNR5.2.3</b>	Provide an automated feed of process metrics data (such as – but not limited to– timeliness of survey completion and sequence of online registration and subsequent clinical appointment scheduling) from on-line portal into central databases.
<b>OWNR5.2.4</b>	Provide an automated feed of process metrics data (e.g. eligibility, enrollment status, appointments) from health record, VistA, and/or other databases such as CDW, VSSC, or VLER-DAS.
<b>OWNR5.3.2</b>	Provide the ability to access existing VA data from DoD via specific authorized data feeds and/or file transfers; to include at a minimum, a list of individuals deployed to Iraq and/or Afghanistan to determine registry eligibility.
<b>OWNR5.3.3</b>	Provide the ability to receive existing VA data from the DoD via specific authorized data feeds and/or file transfers; to include at minimum, information about locations of exposure by individuals as well as exposure specific data.
<b>OWNR6.4</b>	Provide ability to export data to an analytics database such as CDW, VSSC, or VLER-DAS and provide ad-hoc business extracts to business owner (OPH).

#### 2.5.4. Overview of the Security or Privacy Requirements

ID	Requirement
<b>AHOBPR PWS 4.6</b>	The C&A requirements do not apply and a Security Accreditation Package is not required.

#### 2.5.5. Overview of System Criticality and High Availability Requirements

None.

#### 2.5.6. Single Sign-on Requirement

Single Sign-on between eBenefits and the public-facing portal and the Clinical (Staff) Web Application will be via the eBenefits mandated VA Identity and access Management (IAM) through the VA Authenticated Federated Infrastructure (VAAFI) for all except staff without a VistA account. Single Sign-on for the staff without VistA access will be through Active Directory.

### **2.5.7.Requirement for Use of Enterprise Portals**

ID	Requirement
<b>AHOBPR PWS 5.4.1</b>	The Contractor shall ... re-host the code (i.e., re-host on the eBenefits platform

### **2.5.8.Special Device Requirements**

None

## **2.6.Legacy System Retirement**

None.

## 3. Conceptual Design

### 3.1. Conceptual Application Design

#### 3.1.1. Application Context

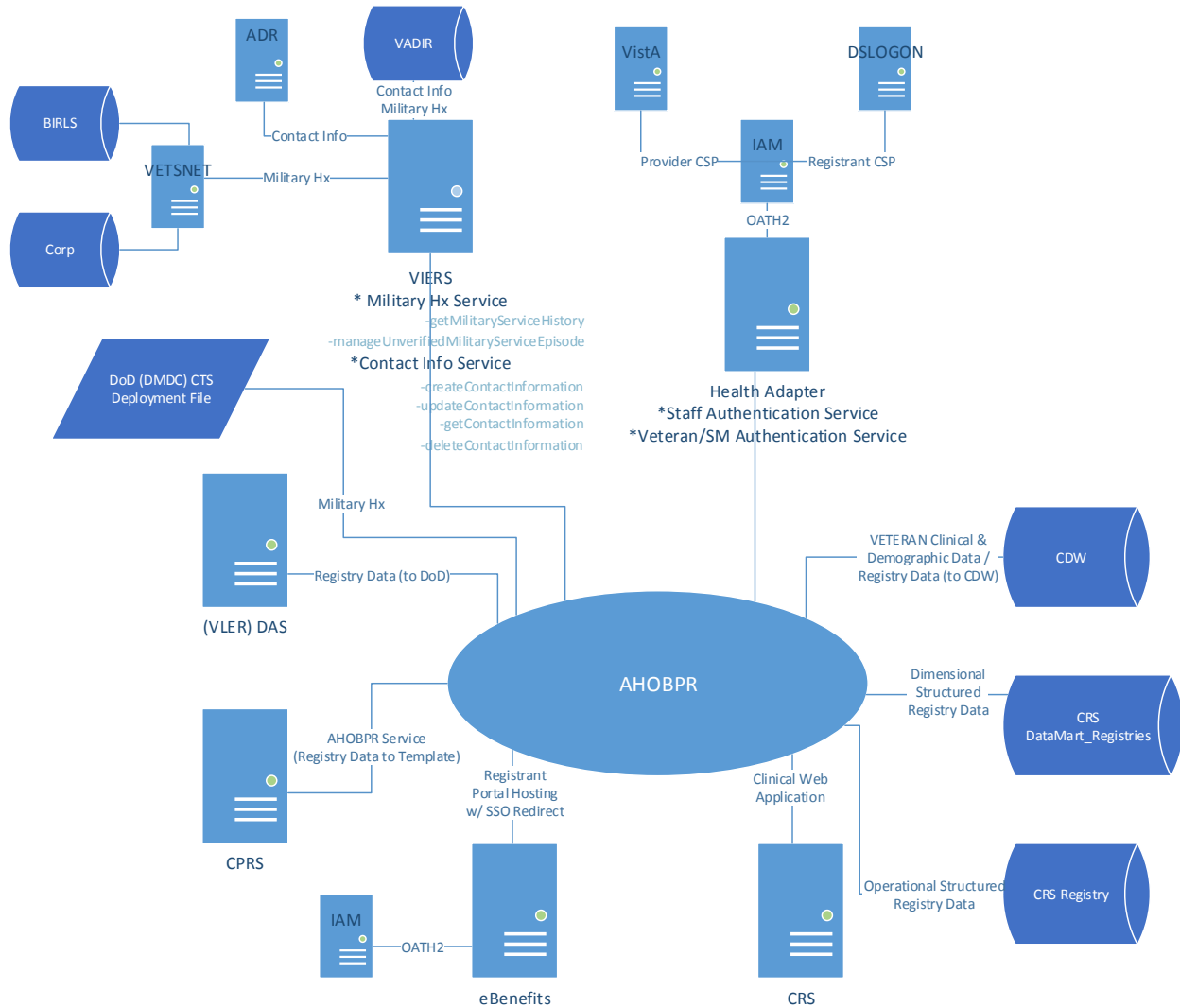


Figure 2: Application Context Diagram

#### 3.1.2. High-Level Application Design

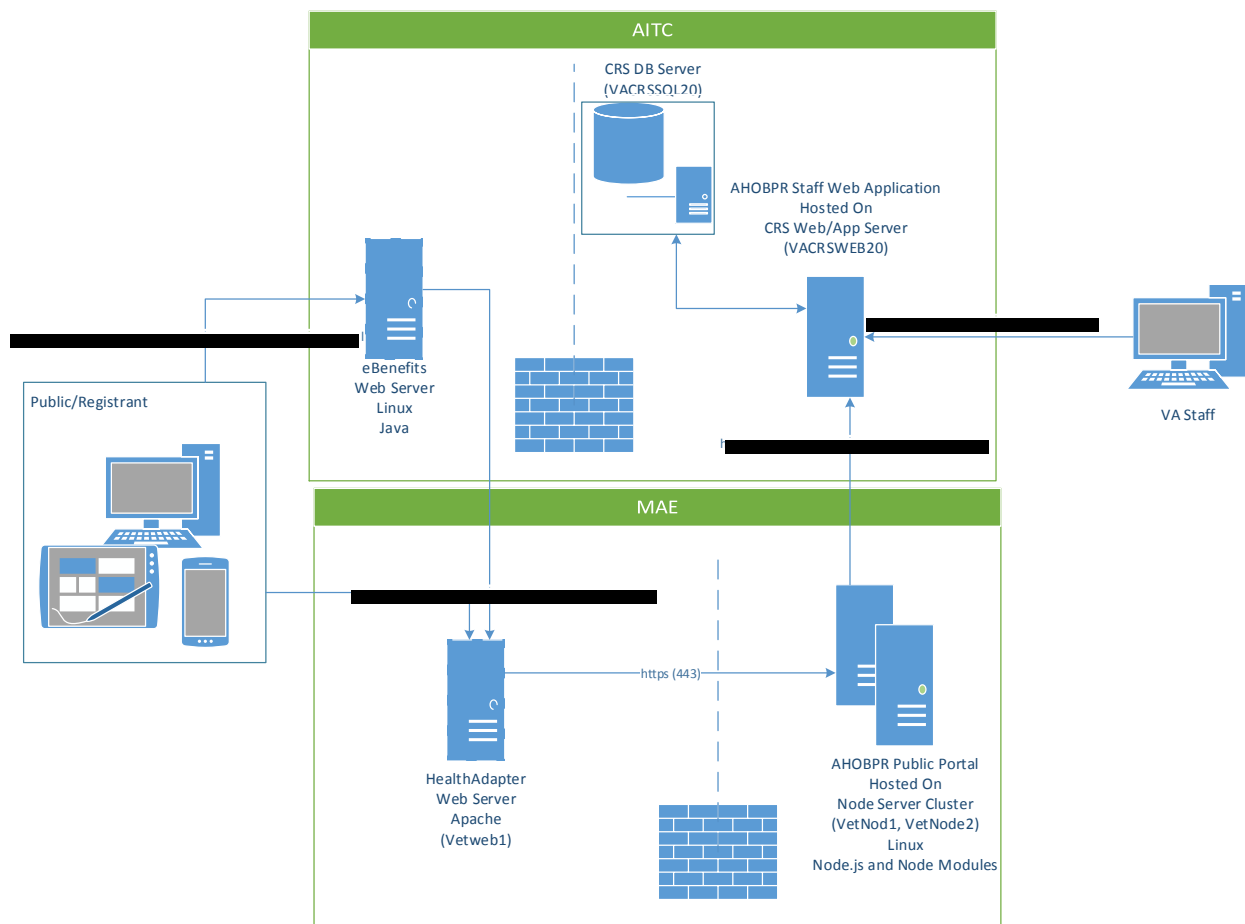
The AHOBPR Registry consists of a secured public facing portal that allow Veterans and Service Member to electronically register for consideration into the AHOBPR registry and populate questionnaire information if eligible. The existing WMS BPR registry hosted in the MAE will be refactored to support SSO from eBenefits and persistence of its data into the AHOBPR central repository via web service. This solution is based on Node.js and node modules. The existing data access layer will be modified to call AHOBPR RESTful services to save and retrieve its data.

There will also be a Clinical (Staff) Web Application that will be used by VHA and Field staff to monitor the registration progress of Veterans, make updates and corrections to the information entered if required, assess a Veteran's eligibility into the AHOBPR registry, and provide reporting capabilities. This portal will be built on the Converged Registry Solution platform.

The registry data used for reporting will be replaced to the CRS Data Warehouse and SQL Server Reporting Services will be used to support the standard reporting against it. The aggregate standard reports will be use report against data cubes developed using SQL Server Analysis Services when that is advantageous.

### 3.1.3. Application Locations

AHOBPR is located at the Austin Information Technology Center (AITC). VHA Clinical (Staff) Web Application is within the Converged Registries System. The public facing application is hosted in the MAE, but accessed via eBenefits which is also hosted at the AITC.



**Table 9 - Application Locations**

Application Component	Description	Physical Location	Network Address
AHOBPR Proxy Server	Public-Facing Web Server (Vetweb1) that redirects to an internal Web Server Cluster (Vethax)	MAE	[REDACTED]
AHOBPR Application Server	Node.js application hosted on the HealthAdapter Cluster within the firewall	MAE	Internal address. See MAE documentation. Uses HTTPS, port 443
eBenefits Portal	Secured Public-Facing Web Application	AITC	[REDACTED]
Staff Web Application	VA Intranet Web Application and Registry Database	AITC	[REDACTED]
Registry Repository	The CRS SQL Server database including the AHOBPR schema	AITC	SQL Server Native Client Database Connection (VACRSSQL20)

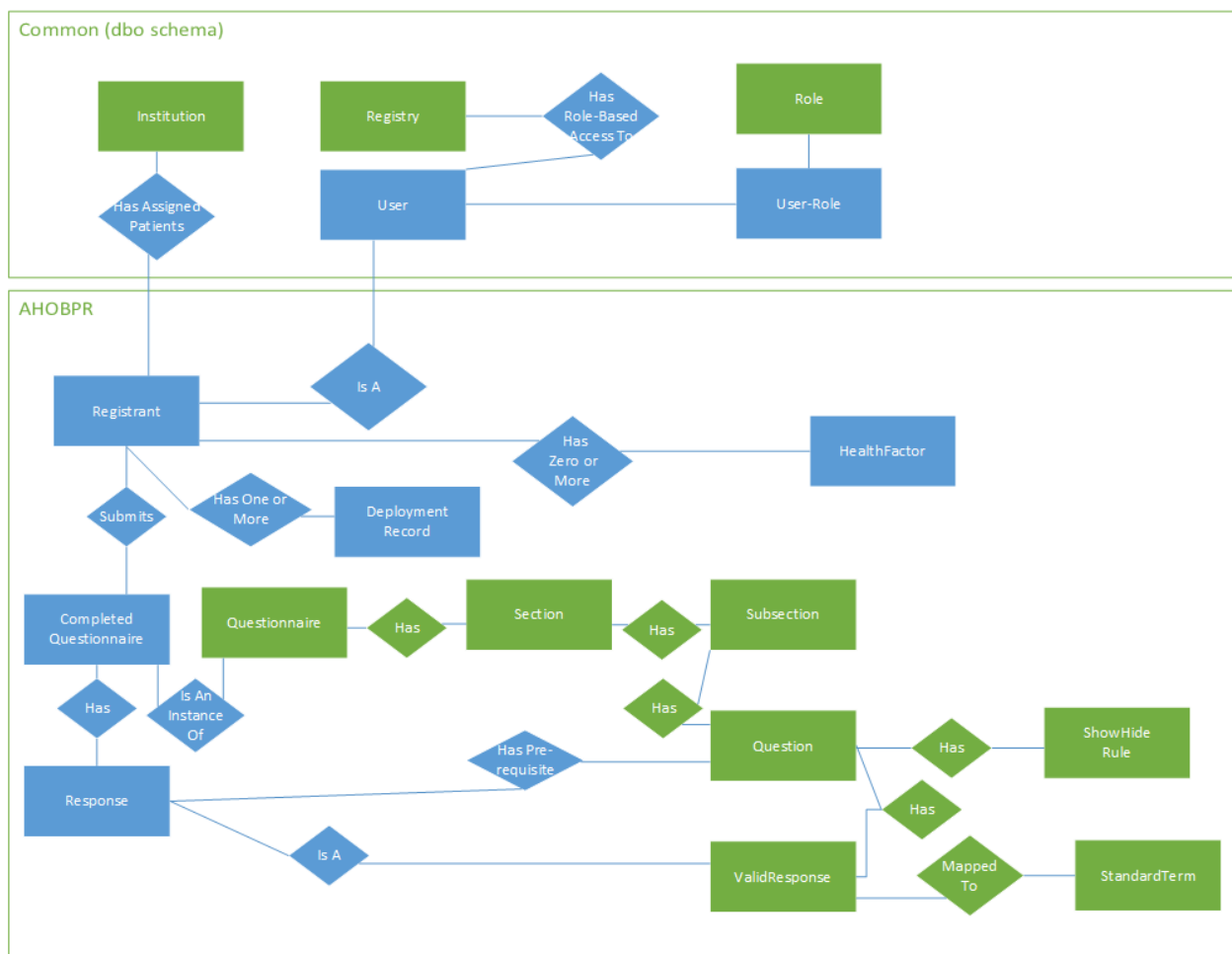
## 3.2. Conceptual Data Design

### 3.2.1. Project Conceptual Data Model

The AHOBPR operational CDM is depicted in Figure 4. It includes the metadata that defines the questionnaire to be filled out by the participants and allows it be modified and versioned dynamically and simplifies the mapping of the responses to standard terms. The questionnaire metadata tables are green in the figure.



**Figure 3: Conceptual Data Model (Chen notation)**



### 3.2.2.Database Information

**Table 10 – Database Information**

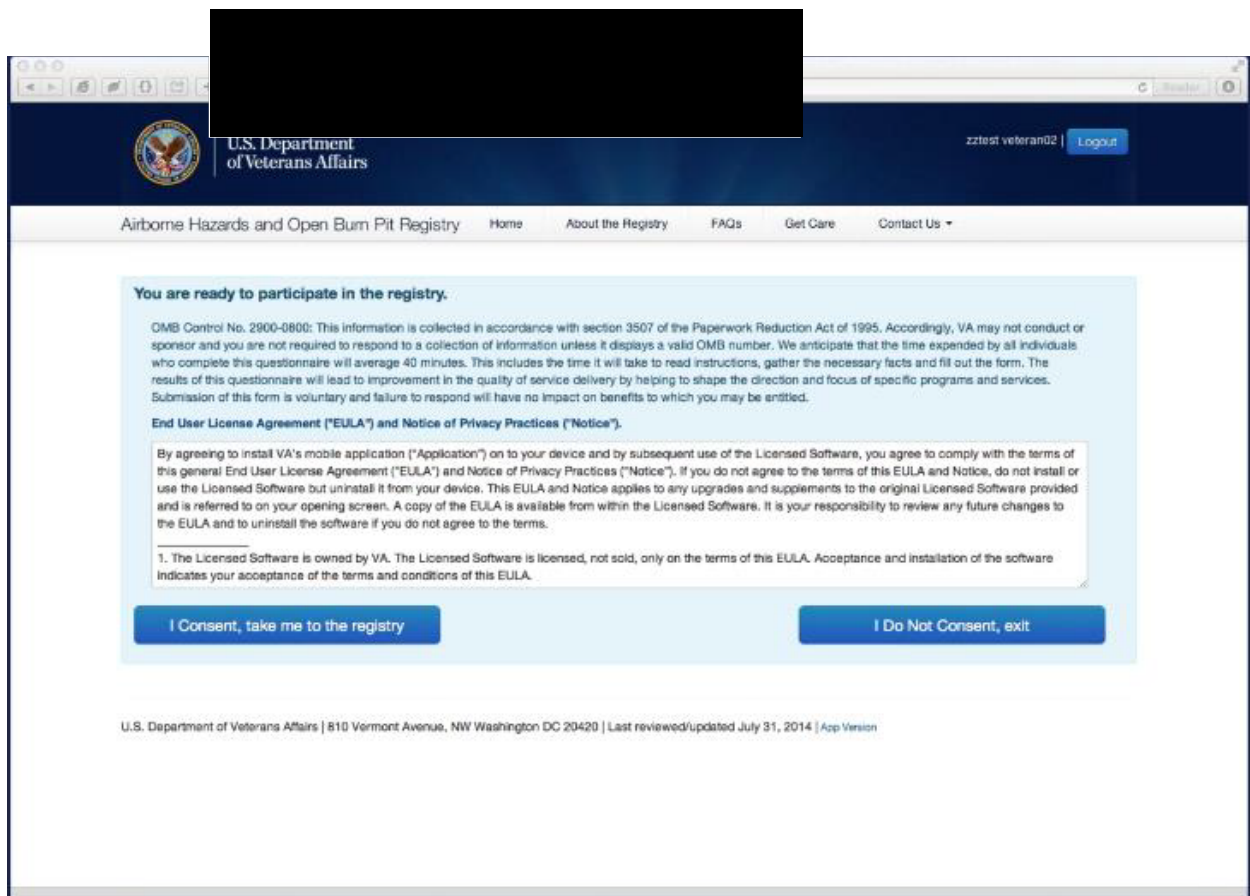
Database Name	Description	Type	Structure Changes
Registry	The Converged Registries Solution (CRS) database that contains participant demographic data as well as data that pertains to each registry, including AHOBP. The intranet staff and the public registrant portal use the same database.	SQL Server 2008 R2 (may be upgrading outside of this effort to 2012)	A new schema will be added to the existing database to store AHOBPR participant and questionnaire data.
Datamart_Registries	The CRS reporting services will use this OLAP database to report on aggregated data from the Registry database.	SQL Server 2008 R2 (may be upgrading outside of this effort to 2012)	A new schema will be added to the existing database to store AHOBPR facts for reporting purposes. New dimension may also be required. Those that are AHOBPR specific will be created in the new schema. Any that are not, will which created in the dbo schema.

### 3.2.3.User Interface Data Mapping

#### 3.2.3.1. Application Screen Interface

##### 3.2.3.1.1. Consent

**Error! Reference source not found.,** represents the screen that asks the registrant if they consent to participate in the registry.



**Figure 4 Consent Page**

**Table 11 Consent Screen Description**

Graphical User Interface (GUI) Field	Table	Field
<b>“I Consent” button</b>	AHOBPR.Registrant	Std_Registrant_State_Id = <<CONSENT ID>> Consent_Flag = ‘True’ ( <i>calculated</i> ) ConsentEntered = <<datetime clicked>>
<b>“I Do Not Consent” button</b>	AHOBPR.Registrant	Std_Registrant_State_Id = <<NOCONSENT ID>> Consent_Flag = ‘False’ ( <i>calculated</i> ) ConsentEntered = <<datetime clicked>>

### 3.2.3.1.1. Verify Contact Information

The screenshot below represents the screen for the registrant to verify their contact information.

Table 12 Verify Contact Information Page

The screenshot shows a web browser window with the title "Airborne Hazards and Open Burn Pit Registry". The page has a dark blue header with the Department of Veterans Affairs logo and a "Logout" button. Below the header is a navigation bar with links: "Airborne Hazards and Open Burn Pit Registry", "Home", "About the Registry", "FAQs", "Get Care", and "Contact Us". The main content area has a tab labeled "1 Verify Contact Information". Below the tab is the heading "Our Current Record of Your Contact Information". This is followed by a table of contact information:

First Name:	zztest
Last Name:	veteran02
Address:	223344 SW 189th St. Suite 200
City/APO/FPO:	Walkabout
State:	FL
Zip Code:	23490
Country:	US
Phone:	5065551234
Mobile:	
Email Address:	zztest.veteran02@nowhere.com

Below the table are two buttons: "My Contact Information is Correct" (blue) and "No, I Need to Update My Information" (orange). At the bottom of the page, there is a footer: "U.S. Department of Veterans Affairs | 810 Vermont Avenue, NW Washington DC 20420 | Last reviewed/updated July 31, 2014 | App Version".

Table 13 Contact Information Screen Description

GUI Field	Table	Field
“My Contact Information is Correct” button	AHOBPR.Registrant_Record_Info	Contact_Info_Verified_Date = <<datetime clicked>>
“No, I Need to Update My Information” button	AHOBPR.Registrant_Record_Info	

### 3.2.3.1.2. Verify Eligible Deployment History

The following screenshot represents the screen for the registrant to confirm their deployment history.

**Figure 14 Verify Eligible Deployment History**



**Table 15 Verify Eligible Deployment History Screen Description**

GUI Field	Table	Field
<b>“Yes/ No” Option button</b>	AHOBPR.Deployment_History	User_Verified_Flag= ‘True’ or ‘False’
<b>Province, Country</b>	AHOBPR.Deployment_History	Deployment_Country
<b>“Add” Button</b>	AHOBPR.Deployment_History	User_Entered_Flag= ‘True’

### 3.2.3.1.3. Add Deployment History

Add Deployment History represents the screen for the registrant to enter their deployment history.

The screenshot shows a web browser window displaying the 'Add Deployment History' form. The browser's address bar shows a 'Reader' icon. The form is part of the 'Airborne Hazards and Open Burn Pit Registry' and includes a 'Logout' button. The form fields are as follows:

- Army:** A dropdown menu with 'Army' selected.
- Begin Date:** A date picker with 'Month' set to 'Jul', 'Day' set to '4', and 'Year' set to '2000'.
- End Date:** A date picker with 'Month' set to 'Nov', 'Day' set to '12', and 'Year' set to '2000'.
- Conflict:** A text input field containing 'Test'.
- Base:** A text input field containing 'Freedom I'.
- Country:** A text input field containing 'Iraq'.

At the bottom of the form are two blue buttons: 'Add' and 'Cancel'.

Figure 8 Add Deployment History

Table 16 Add Deployment History Screen Description

GU) Field	Table	Field
<b>Branch</b>	AHOBPR.Deployment_History	Std_Branch_Of_Service_Id
<b>Begin Date</b>	AHOBPR.Deployment_History	Deployment_Start_Date
<b>End Date</b>	AHOBPR.Deployment_History	Deployment_Start_End_Date
<b>Conflict</b>	AHOBPR.Deployment_History	Duty_Project_Code
<b>Base</b>	AHOBPR.Deployment_History	Deployment_Base
<b>Country</b>	AHOBPR.Deployment_History	Deployment_County

### 3.2.3.1.4. Update Contact Information

Update Contact Information represents the screen for the registrant to update their contact information.

**Figure 5 Update Contact Information**

**Table 17 Update Contact Screen Description**

GUI Field	Table	Field
<b>Country</b>	AHOBPR.Registrant_Address	Country
<b>Address</b>	AHOBPR.Registrant_Address	Address1
<b>Address Line 2</b>	AHOBPR.Registrant_Address	Address2
<b>City/APO/FPO</b>	AHOBPR.Registrant_Address	City
<b>State/Post Office Designation</b>	AHOBPR.Registrant_Address	State
<b>Zip Code</b>	AHOBPR.Registrant_Address	Zip
<b>Phone</b>	AHOBPR.Registrant_Phone	Phone

#### 3.2.3.1.5. Request Eligibility Review

Request Eligibility Review represents the screen for the registrant to request a review of their deployments in order fill out the questionnaire.



GUI Field	Table	Field
“Request an Eligibility Review” button	AHOBPR.Registrant	Std_Registrant_State_Id

#### 3.2.3.1.6. Review Eligibility

The staff be able to search for registrants requesting review, review their record and then change their status to either “Eligible” or “Review – Not Eligible” (i.e., ineligible after review).

In Registrants section: the user would select the “Change Status” menu item.



Current User: Leslie Yager  
Role(s): AHOBPR Registry Manager  
1/2/2015 12:03:33 PM

Select Status of the Registrants you would like to consider changing, in this case “Review”:

Total Registrants Found: 19

To sort please click table headings

ID	Registrant Name	Duty Status	Registrant Current Status	
58	CLARK, RONALD A-20	Active Duty	Review	Select
32	COLLINS, ROGER A-49	Retiree	Review	Select
43	DAVIS, DAVID A-5	Veteran	Review	Select
31	EDWARDS, RYAN A-48	Retiree	Review	Select
52	HARRIS, DONALD A-14	Retiree	Review	Select
50	JACKSON, PAUL A-12	Veteran	Review	Select
41	JONES, MICHAEL A-3	Veteran	Review	Select
29	LASTNAME-FIVE, CARL A-46	Retiree	Review	Select
40	LASTNAME-SIX, ROBERT A-2	Veteran	Review	Select
38	LAST-THREE, FIRST-THREE	Retiree	Review	Select

1 2

Current User: Leslie Yager  
Role(s): AHOBPR Registry Manager  
1/2/2015 12:11:36 PM

The registrant list can be sorted by name or duty status to help finding the individual or to facilitate the ordered review.



UNITED STATES DEPARTMENT OF VETERANS AFFAIRS  
Airborne Hazards and Open Burn Pit Registry

RegistrantsReportingAdministrationHelp

[Check System](#)

Registrant Search  
Change Status

Deployment History

Conflict	Location	Branch	Time Period
	Iraq	US Marine Corps	7/4/2005 - 1/27/2006
	Kyrgyzstan.	US Army	11/15/2010 - 11/17/2010
	Afghanistan	US Army	11/18/2010 - 12/17/2010
	Kuwait	US Army	12/18/2010 - 12/28/2010
	Unknown	US Army	12/29/2010 - 1/5/2011
	Kuwait	US Army	1/6/2011 - 1/12/2011
	Afghanistan	US Army	1/13/2011 - 7/3/2011
	Kyrgyzstan.	US Army	7/20/2011 - 7/23/2011
	Kuwait	US Army	5/24/2013 - 5/27/2013
	Afghanistan	US Army	5/28/2013 - 11/16/2013
	Kuwait	US Army	11/17/2013 - 11/21/2013
	Kuwait	US Army	11/22/2013 - 12/4/2013
	Kuwait	US Army	12/5/2013 - 12/5/2013
	Afghanistan	US Army	12/6/2013 - 5/5/2014
	Kuwait	US Army	5/6/2014 - 5/14/2014

Back to Search Results

Current User: Leslie Yager  
Role(s): AHOBPR Registry Manager  
1/2/2015 12:19:58 PM

On the Change Status page the user can change the status of the registrant to Eligible or Review – Not Eligible.

One of the following Admin Flags will be automatically added to the Registrants record:

- Status Change: "Review" to "Eligible"
- Status Change: "Review" to "Review Not-Eligible"
- Status Change: "Not-Eligible" to "Eligible"
- Status Change: "Not-Eligible" to "Review Not-Eligible"

These Status can be used as a filter in the Ad Hoc Report and the Ad Hoc Report can be exported to MS Excel and other formats.

**REPORTING > AD HOC REPORT**

Selection Criteria

**Status:**  
 No Consent [Add](#)  
 Consent [Add All](#)  
 Not Eligible [Remove](#)  
 Review [Remove](#)  
 Review - Not Eligible [All](#)

**Selected Status:**

**Duty Status:**  
 Active Duty [Add](#)  
 Retiree [Add All](#)  
 Veteran [Remove](#)  
[Remove](#)  
[All](#)

**Selected Duty Status:**

**Questionnaire Started by Date (mm/dd/yyyy):**

**Questionnaire Completed by Date (mm/dd/yyyy):**

**Health Concerns?:** All ☒ Yes ☐ No ☐

**Request to be Seen?:** All ☒ Yes ☐ No ☐

**Registry Flags:**  
 -- Select One --  
 Status Change: "Review" to "Eligible"  
 Status Change: "Review" to "Review Not-Eligible"  
 Status Change: "Not-Eligible" to "Eligible"  
 Status Change: "Not-Eligible" to "Review Not-Eligible"  
 FFF  
 ZZZ  
 Call - No Answer  
 Welcome Letter Sent  
 High Risk  
 Congress List  
 Left a message  
 Follow up Call

**Questions:** -- Select One --

[Run Report](#) [Print/Export Report](#) [Save Search Criteria](#)

### 3.2.3.1.7. Questionnaire

Questionnaire presents the screens for the participant to respond the questions in the questionnaire.

Airborne Hazards and Open Burn Pit Registry

Home About the Registry FAQs Get Care Contact Us

HEALTH CARE UTILIZATION

CONTACT PREFERENCES

Please answer all questions for each deployment below.

- Iraq: 02/1991 to 08/1991, A, Desert Storm

A. Were you exposed to soot, ash, smoke, or fumes from the Gulf War oil fires?

Please select an answer

Answer Required

B. Where did you spend **most** of your time during these dates?

☐ Iraq base Enter base name. Answer Required

☐ I do not wish to answer

☐ Don't know

C. If you were at more than one base, where did you spend the **second most** amount of time during these dates?

☐ Iraq base Enter base name. Answer Required

☐ I was not at any other bases

**Figure 6 Questionnaire**

See A.5 for the full list of questions and responses in the Questionnaire.

**Table 18 Questionnaire Screen Description**

GUI Field	Table	Field
<<Standard Response Selection Field>>	AHOBPR. Form_Response_Question	Std_Form_Answer_Id Start_Date Completed_Date
<<Free Text Entry Field>>	AHOBPR. Form_Response_Question	Answer_Free_Text Start_Date Completed_Date

### 3.2.3.2. Application Report Interface

#### 3.2.3.2.1. Aging Report

The following figure represents the Aging Report. It is responsible for reporting on the age of current participants who have reached a given status. The Aging report is grouped by 2 dimensions, the current registrant status and the time span between when they achieved their current status and the date/time the report is run.

**Note: The individual report associated with this report is the Status Report by State.**



**Figure 6 Aging Report**

**Table 19 Report Filter Parameter Mapping**

Report Filtering Parameter(s)	Database Criteria
None Identified	

**Table 20 Report Aggregation Type Mapping**

Report Grouping Parameter	Database Criteria
<b>Facility</b>	FROM Referral JOIN Std_Institution JOIN Registrant GROUP BY Std_Institution.Id
<b>VISN</b>	FROM Referral JOIN viewFacilitiesByVisn JOIN Registrant GROUP BY viewFacilitiesByVisn.VisnId
<b>State</b> ( <i>Proposed Requirement</i> )	FROM Referral JOIN Std_Institution JOIN Registrant GROUP BY Std_Institution.StreetState_Id
<b>Participation Period – Specified Dates</b>	FROM Referral JOIN Registrant GROUP BY CAST(Referral.Referral_Date AS Date)
<b>Participation Period – Weekly</b>	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, WeekOfYear
<b>Participation Period – Monthly</b>	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CalendarDim.Month
<b>Participation Period – Quarterly</b>	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CalendarDim.FiscalQuarter
<b>Participation Period – Semi-Annually</b>	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CEILING(CalendarDim.FiscalQuarter / 2)
<b>Participation Period –Annually</b>	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year

**Table 21 Report Field Mapping**

Report Field	Database Calculation
<b>Registrant Status</b>	Registrant.Status.
<b>0-30 Days</b>	SUM(CASE WHEN DATEDIFF(day, GETDATE(), Registrant.Registrant_State_Last_Updated_Date) THEN 1 ELSE 0 END)

Report Field	Database Calculation
<b>31-60 Days</b>	SUM (CASE WHEN DATEDIFF(day, GETDATE(), <b>Registrant.Registrant_State_Last_Updated_Date</b> ) BETWEEN 31 AND 60 THEN 1 ELSE 0 END)
<b>61-90 Days</b>	SUM (CASE WHEN DATEDIFF(day, GETDATE(), <b>Registrant.Registrant_State_Last_Updated_Date</b> ) BETWEEN 61 AND 60 THEN 1 ELSE 0 END)
<b>91+Days</b>	SUM (CASE WHEN DATEDIFF(day, GETDATE(), <b>Registrant.Registrant_State_Last_Updated_Date</b> ) > 90 THEN 1 ELSE 0 END)

### 3.2.3.2.2. Status Report by Location

The following screen shot represents the Status Report by Location. Its purpose is to provide a filtered report based on the registrant status grouped by state or facility (facility select not shown). The values populated in the State list are only those currently found in the database; the values for the Status list are only those currently found in the database. Multiple statuses and/or multiple states may be chosen as filters. The status shown should be the status of the registrant during the time span selected using the begin and end date fields.

**Note: The aggregate report associated with this report is the Aging Report.**

UNITED STATES DEPARTMENT OF VETERANS AFFAIRS  
Airborne Hazards and Open Burn Pit Registry

Registrants Reporting Administration Help [Check System](#)

Status by Location Report **REPORTING > STATUS BY LOCATION REPORT**

Selection Criteria

As of Date: 12/7/2014

State: AK AL AR AZ CA VA Add Add All Remove Remove All

Status: No Consent Consent Not Eligible Review Review - Not Eligible Participant Add Add All Remove Remove All

Run Report Print/Export Report

To sort please click table headings

Registrant Name	Registrant Record Status	# Days at Status	State	VISN	Facility
<a href="#">ANTHONY RODRIGUEZ</a>	Participant	64	VA		
<a href="#">BRIAN ROBINSON</a>	Participant	62	VA		
<a href="#">CHRISTOPHER ANDERSON</a>	Participant	53	VA		
<a href="#">DANIEL THOMAS</a>	Participant	54	VA		
<a href="#">EDWARD MARTINEZ</a>	Participant	61	VA		
<a href="#">GARY HALL</a>	Participant	13	VA		
<a href="#">JEFFREY KING</a>	Participant	17	VA		
<a href="#">John Smith</a>	Participant	66	VA		
<a href="#">JOSEPH MOORE</a>	Participant	51	VA		
<a href="#">KEVIN LEWIS</a>	Participant	65	VA	01	TOGUS MAINE VAMC

1 2

Current User: Leslie Yager  
Role(s): AHOBPR Registry Manager, AHOBPR Advanced User, AHOBPR Care Team  
12/7/2014 6:59:19 PM

**Figure 7 - Status Report by State**

**Table 22 Report Filter Parameter Mapping**

Report Filtering Parameter(s)	Database Criteria
Location(s)	Std_Institution IN (<Locations>)
Status(es)	Registrant.Status IN (<Statuses>)

**Table 23 Report Fields**

Field	Database Calculation
Registrants Name	Registrant.Last_Name + ', ' + Registrant.First_Name
Registrant Record Status	Registrant.Status
# Days at status	DATEDIFF(day, Registrant.StatusChanged, GETDATE())
State	Std_State.POSTALNAME FROM Registrant JOIN Std_Institution JOIN Std_State

### **3.2.3.2.3. Registration Report**

This is a placeholder for a new report. The participation report will be separated into two reports. This one will be for the metrics pertaining to new registrations before a questionnaire has been completed. See the Participation Report.

### 3.2.3.2.4. Participation Report

The following figure represents the Participation Report; its purpose is to provide a quick view of the participation within the registry. The report can be filtered by questionnaire completion date between the “Begin Date” and “End Date” fields as well as by facility (not shown). Note that doing so will filter out those who do not have a status of “Participant”.

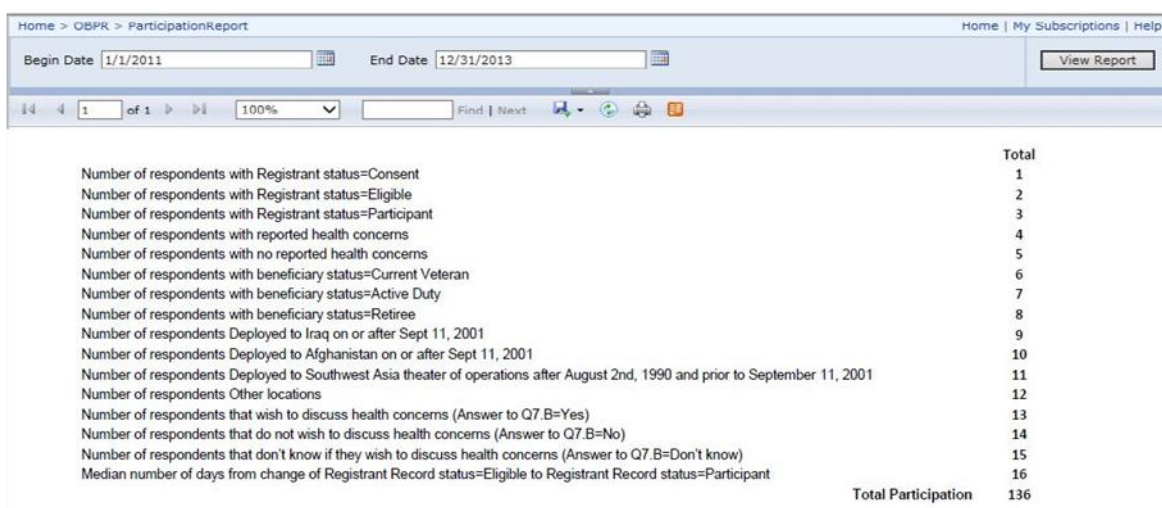


Figure 8 - Participation Report

Table 24 Report Filter Parameter Mapping

Report Filtering Parameter(s)	Database Criteria
Between Begin Date and End Date	Form_Response.Questionnaire_Complete_Date BETWEEN <BeginDate> AND <EndDate>

Table 25 Report Aggregation Type Mapping

Report Grouping Parameter	Database Criteria
Facility	FROM Referral JOIN Std_Institution JOIN Registrant GROUP BY Std_Institution.Id
VISN	FROM Referral JOIN viewFacilitiesByVisn JOIN Registrant GROUP BY viewFacilitiesByVisn.VisnId
Participation Period – Specified Dates	FROM Referral JOIN Registrant GROUP BY CAST(Referral.Referral_Date AS Date)
Participation Period – Weekly	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, WeekOfYear
Participation Period – Monthly	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CalendarDim.Month



Report Grouping Parameter	Database Criteria
Participation Period – Quarterly	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year,CalendarDim.FiscalQuarter
Participation Period – Semi-Annually	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CEILING(CalendarDim.FiscalQuarter / 2)
Participation Period –Annually	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year

**Table 26 Report Fields**

Field	Description
<b>Registrant Status Totals</b>	COUNT(*) WHERE Registrant.EligibleFlag = 'True' AND Registrant.ConsentFlag = 'True' GROUP BY Registrant.Registrant_State_Id
<b>Reported Health Concerns Total</b>	COUNT(*) WHERE EXISTS (Form_Response JOIN Std_Form_Answer WHERE Std_Form_Answer.HeathConcernFlag = 'True')
<b>No Reported Health Concerns Total</b>	COUNT(*) WHERE NOT EXISTS (Form_Response JOIN Std_Form_Answer WHERE Std_Form_Answer.HeathConcernFlag = 'True')
<b>Beneficiary Status Totals</b>	COUNT(*) WHERE Registrant.EligibleFlag = 'True' AND Registrant.ConsentFlag = 'True' GROUP BY Patient.BeneficiaryStatus
<b>Deployment Location Totals</b>	COUNT(*) WHERE Registrant.EligibleFlag = 'True' AND Registrant.ConsentFlag = 'True' AND Deployment.Deployment_Start_Date criteria met AND Deployment.Deployment_End_Date criteria met GROUP BY Deployment_History.Deployment_Country, Deployment_History.TheaterId
<b>Wish To Discuss Total</b>	COUNT(*) WHERE EXISTS (Form_Response.Form_ResponseId = @WishToDiscussResponseId)
<b>Do Not Wish To Discuss Total</b>	COUNT(*) WHERE EXISTS (Form_Response.Form_ResponseId = @DoNotWishToDiscussResponseId)
<b>Do Not Know if They Wish To Discuss Total</b>	COUNT(*) WHERE EXISTS (Form_Response.Form_ResponseId = @DoNotKnowWishToDiscussResponseId)

Field	Description
<b>Medium Number of Days Eligible to Participant</b>	fnMedian(Process_Metrics.Process_Metrics_Value) WHERE Process_Metrics.Process_Metrics_id = @EligibleToParticipant

### 3.2.3.2.5. Selected Questionnaire Report (recommended to be dropped by Dr. Ciminera)

The following figure represents the Selected Questionnaire Report. The purpose of this report is to view the responses to a select group of questions. The response are filtered based on a time span between the “Begin Date” and End Date”. This report is grouped by the theater location which can be selected through a check box drop down list (shown below) and, optionally, by facility, VISN and branch of service, and/or period of participation. Additionally the grand totals for all theaters will conclude the report. The output displays the question number and the count of responses for each question.

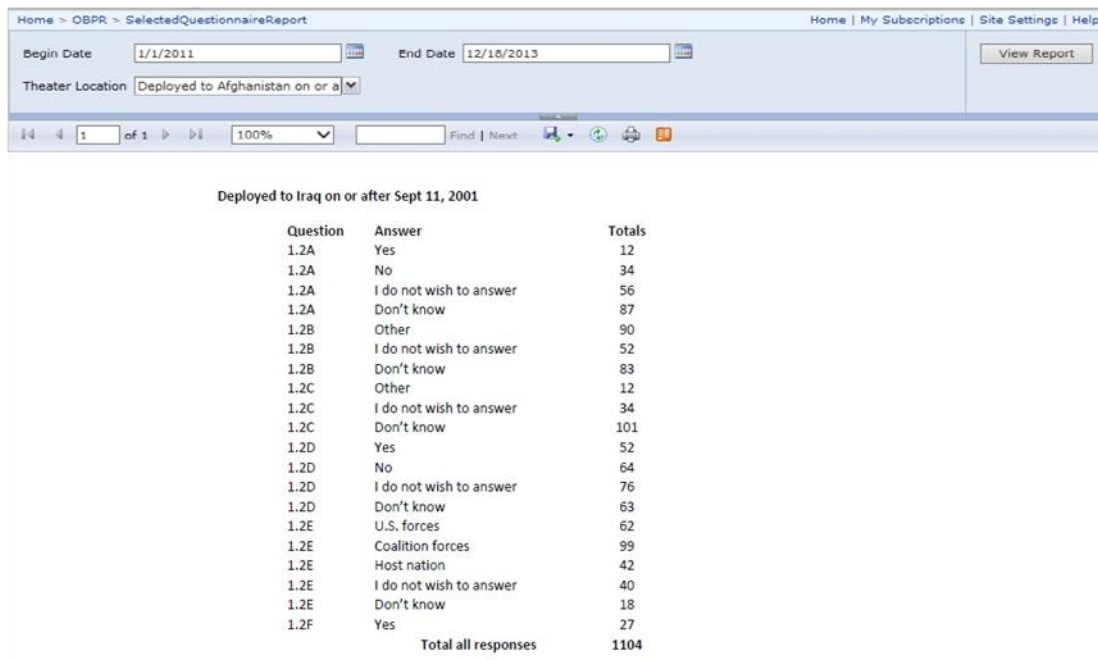


Figure 9 - Selected Questionnaire Report

Deployed to Afghanistan on or a

☐ (Select All)

☒ Deployed to Afghanistan on or after Sept 11, 2001

☐ Deployed to Iraq on or after Sept 11, 2001

☐ Deployed to Southwest Asia theater of operations after August 2nd, 1990 and prior to September 11, 2001

☐ Other

Figure 10 - Drop down selection for Selected Questionnaire Report

Table 27 Report Filter Parameter Mapping

Report Filtering Parameter(s)	Database Criteria
Between Begin Date and End Date	Form_Response.Questionnaire_Complete_Date BETWEEN <BeginDate> AND <EndDate>

Table 28 Aggregation Type Mapping

Report Grouping Parameter	Database Criteria
Theater	FROM Registrant JOIN Deployment_History GROUP BY Deployment_History.Theater
Facility	FROM Std_Institution JOIN Registrant GROUP BY Std_Instituion.Id
VISN	FROM viewFacilitiesByVisn JOIN Registrant GROUP BY viewFacilitiesByVisn.VisnId

Report Grouping Parameter	Database Criteria
Participation Period – Specified Dates	FROM Registrant GROUP BY CAST(Referral.Referral_Date AS Date)
Participation Period – Weekly	FROM Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, WeekOfYear
Participation Period – Monthly	FROM Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CalendarDim.Month
Participation Period – Quarterly	FROM Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CalendarDim.FiscalQuarter
Participation Period – Semi-Annually	FROM Registrant JOIN CalendarDim GROUP BY CalendarDim.Year, CEILING(CalendarDim.FiscalQuarter / 2)
Participation Period –Annually	FROM Referral JOIN Registrant JOIN CalendarDim GROUP BY CalendarDim.Year

**Table 29 – Report Field Mapping**

Field	Description
Theater Location	FROM Deployment_History.Theater
Question	DISTINCT Std_Form_Question.Text FROM Std_Form_Question JOIN Form_Response_Question WHERE Form_Response_Question.Std_Question_Id IN (@SelectedQuestionList)
Answer	DISTINCT Std_Form_Answer.Text FROM Std_Form_Answer JOIN Form_Response_Question WHERE Form_Response_Question.Std_Question_Id IN (@SelectedList)
Totals	COUNT(*) WHERE Form_Response.Std_Question_Id IN (@SelectedList) GROUP BY Form_Response_Question.Response_Id

### 3.2.3.2.6. Ad-Hoc Report

The following figure represents the Ad-Hoc Report (6.3BA); It provides the ability for the user to search for registrants based on the following criteria (3.12AA): Registrant Record Status, Questionnaire start date, Questionnaire completion date, Response to specific question, responses for the selected question, Duty Status, Health Concerns, Request to be seen and

facility (not shown). If a question is selected in the filter criteria, the answers will be shown in the results grid.

Registrant Name	Registrant Record Status	Questionnaire Start Date	Questionnaire Complete Date	Duty Status	Health Concerns	Request to be seen
Beckham, Schott	No Consent	12/01/2013	12/31/2013	active	YES	NO
Levy, Mike	Consent	11/01/2013	12/31/2013	retired	NO	YES
Gillingwater, Amy	NotEligible	10/01/2013	12/31/2013	inactive	YES	NO
Hymes, David	Review	09/01/2013	12/31/2013	active	NO	YES
Wang, sherry	Review NE	08/01/2013	12/31/2013	retired	YES	NO
Gupta, Kapil	Eligible	07/01/2013	12/31/2013	inactive	NO	YES
Adams, amy	Participant	06/01/2013	12/31/2013	active	YES	NO
Kareddy, Vijay	No Consent	05/01/2013	12/31/2013	retired	NO	YES
Seabolt, Roy	NotEligible	04/01/2013	12/31/2013	inactive	YES	NO
Fredes, Brenda	Review	03/01/2013	12/31/2013	active	NO	YES
Perez, Fred	Review NE	02/01/2013	12/31/2013	retired	YES	NO
Gates, Bill	Eligible	01/01/2013	12/31/2013	inactive	NO	YES
Watson, Tom	Participant	12/02/2013	12/31/2013	active	YES	NO
Nicklaus, Jack	Participant	11/02/2013	12/31/2013	retired	NO	YES
Toms, Bobby	No Consent	10/02/2013	12/31/2013	inactive	YES	NO
Couples, Fred	Consent	09/02/2013	12/31/2013	active	NO	YES
Crocker, Joe	NotEligible	08/02/2013	12/31/2013	retired	YES	NO
Buffett, Jimmy	Review	07/02/2013	12/31/2013	inactive	NO	YES
Oreilly, Bill	Review NE	06/02/2013	12/31/2013	active	YES	NO
Hanley, sean	Eligible	05/02/2013	12/31/2013	retired	NO	YES

Figure 11 - Ad-Hoc Report

Table 30 - Ad-Hoc Report Field Mapping

Field	Description
Registrant Name	Registrant.Last_Name + ' ' + Registrant.First_Name
Registrant Record Status	Registrant.Registrant_State_Id
Questionnaire Start Date	Form_Response.Questionnaire_Started_Date
Questionnaire Complete Date	Form_Response.Questionnaire_Completed_Date
Duty Status	FROM Registrant JOIN Std_Service_Registrant_State_Id.Service_Registrant_State_Id

Field	Description
Health Concerns	CASE WHEN EXISTS (Form_Response JOIN Std_Form_Answer WHERE Std_Form_Answer.Heath_Concern_Flag = 'True')  THEN Yes ELSE No  END
Request to be seen	Registrant.Requested_Evaluation_Flag
Registrant record creation date	Registrant.Created
Response to Question	May be any of the values chosen in the criteria for response to specific question.

The Ad Hoc Report will have the ability for a user to save a set of Search Criteria:

Current User: Leslie Yager  
Role(s): AHOBPR Registry Manager  
1/2/2015 12:47:23 PM

### 3.2.3.3. Unmapped Data Elements

The following table defines those fields that are not mapped to any particular UI element but exist in each database table for the AHOBPR project; these fields are used to manage and provide diagnostic information about the data maintained in each database table.

**Table 31 – Unmapped Data Elements**

Field	Description	Purpose
<b>CREATEDBY</b>	The user id of the user that created the record.	This field keeps track of the user that created the field.
<b>UPDATEDBY</b>	The user id of the user that last updated the record.	This field keeps track of the user that last updated the record.
<b>CREATED</b>	The date that the record was inserted into the table.	Keeps track of the date that the record was created.
<b>UPDATED</b>	The date that the record was last updated.	Keeps track of when the record was last updated.
<b>ROW_VERSION</b>	Field that is required by .Net LINQ	To keep track of the rows version.

### 3.3. Conceptual Infrastructure Design

The AHOBPR persistent databases and the server supporting the intranet staff Web application will reside at AITC as described above. All support and routine maintenance of these servers will be carried out by AITC staff.

The public facing portal including the survey engine and session database will be hosted at the MAE. All support and routine maintenance of these servers will be carried out by MAE staff.

There is nothing unique about AHOBPR requiring any additional resources or technology different than those currently being used by the other CRS.

#### 3.3.1. System Criticality and High Availability

There are no system criticality or high availability requirements.

#### 3.3.2. There are no system criticality or high availability requirements Special Technology

None. The technology required is for general purpose network routing, web application hosting, and database hosting.

**Table 12: Special Technology Requirements**

#### 3.3.3. Technology Locations

**Table 9 – Technology Locations**

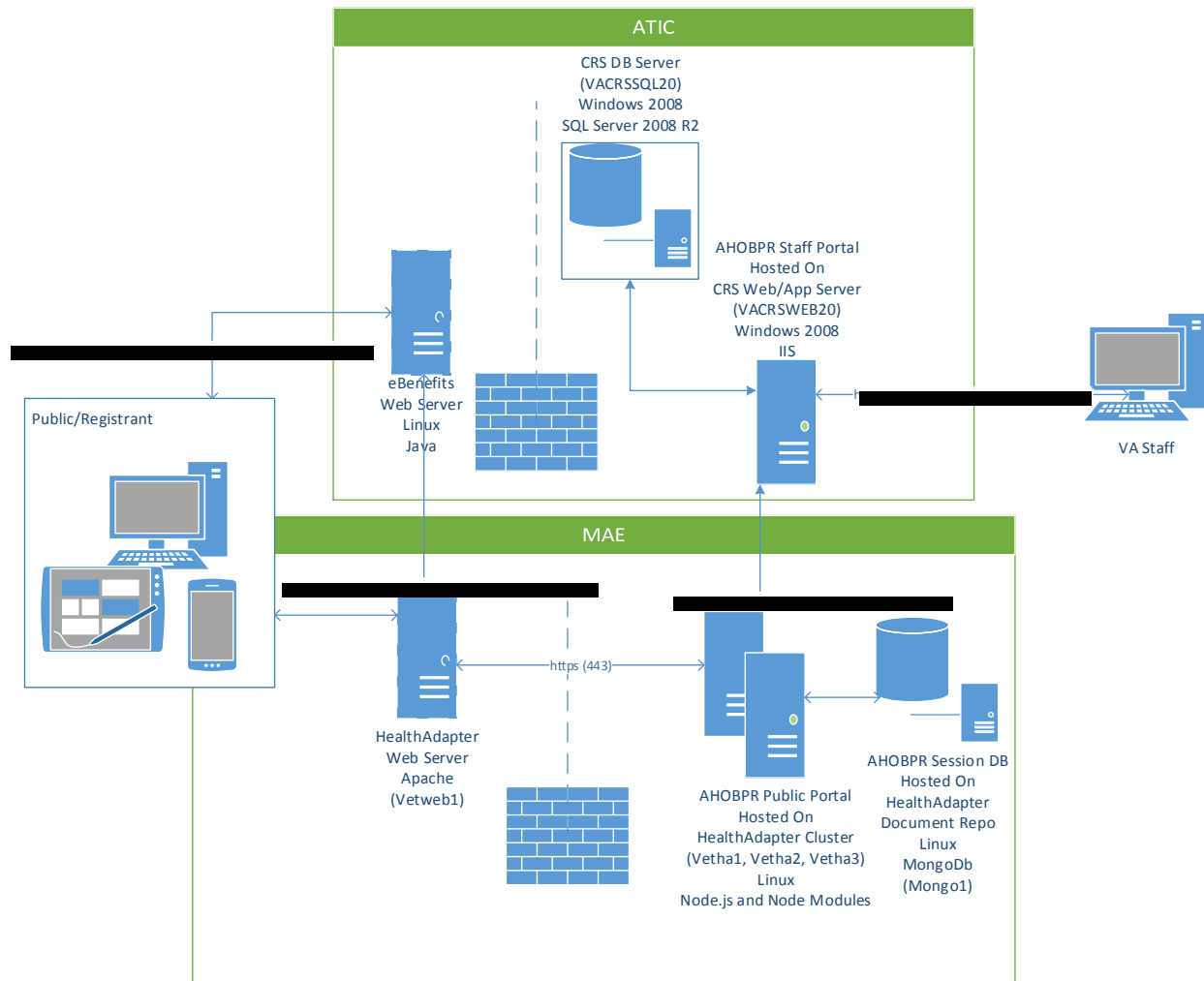
Technology Component	Location	Usage
<b>PRODUCTION</b>		
<b>Workstations</b> (VHA Office of Public Health Staff)	Any physical location that allows access to VHA network either through direct connection or Virtual Private Network (VPN)	Web Browser to access AHOBPR services housed at AITC
<b>Workstations</b>	Any internet-connected location.	Web Browser secure access to AHOBPR public facing eBenefits web site housed at AITC

(Veterans, Active Duty Service Members, Retirees)		
Registry	VA AITC	Includes the Web server supporting the staff application, data interfaces to external systems, and Database server for the AHOBPR registry.
Registrant Portal	VA MAE	Public-facing portal Web server and session database servers to support the registrant portal.
<b>TEST</b>		
Registry	VA AITC	QA TESTDATA environment
Registrant Portal	TBD	
<b>DEVELOPMENT</b>		
Registry	VA AITC	Development environment at AITC
Registrant Portal	TBD	



### 3.3.4. Conceptual Infrastructure Diagram

#### 3.3.4.1. Location of Environments and External Interfaces



**Figure 12: Conceptual Infrastructure Diagram**

## 4. System Architecture

The CRS platform will be used for the Clinical (Staff) Web Application and the WMS BPR application will be refactored to be used for the Registrant (Public-facing) Portal. Enterprise service will be used where available, performant and implementable within the project schedule.

### 4.1. Hardware Architecture

The AHOBPR design will use existing hardware at the MAE and the AITC.

[Insert the ACE table when complete.]

### 4.2. Software Architecture

The overall architecture of the AHOBPR application consists of two main applications: The Registrant Portal, and the Clinical / Staff web application. Both interact with their respective users and follow the intended business logic as defined in the RSD.

The Clinical / Staff web application is written in ASP.NET using C#, and compiled in VS2K08 and runs in IIS on the application server(s) and can be accessed through a browser.

The Registrant Portal web portal is written JavaScript using Node.js and node modules and runs on a Linux server.

The AHOBPR solution is comprised of two applications (the Registrant (Public-facing) Portal and the Clinical (Staff) Application) each of which extends an existing, deployed application or platform (WMS BPR and CRS, respectively). As part of this effort, the design does not introduce any COTS or Open Source products; however, the solution will continue to rely products implemented in the existing platforms. See 4.5 Enterprise Architecture for the list of products.

### 4.3.Network Architecture

The network infrastructure will be provided and maintained by the AITC and MAE.

### 4.4.Service Oriented Architecture / ESS

#### 4.4.1.Services Provided

AHOBPR will provide RESTful service to support CRUD operations against the registry. The base URL for AHOBPR provided services will be:

██

The RESTful services' read operations will support an Option parameter that will support at least these two options (see Figure 13 Option Usage):

- URIOOnly: Returns a JSON array of URIs of the resources matching query string (or all items in the collection if no query parameters are provided) instead of an array of the matching objects. Applies only to resource collections.
- LazyLoad: Returns all the simple attributes, but only a HATEOAS link to the component objects that have their own resource identifiers (end points). Applies only to composite resource objects and collections with composite resources. The Figure 14 is an example of a lazy load of a questionnaire form object.

```
/<<Resource>>?Option=URIOOnly  
/<<Resource>>?Option= LazyLoad
```

**Figure 13 Option Usage**

```
{  
  "userId": <<userId>>,  
  "formId": <<formId>>,  
  "responseStatus": {  
    "lastSectionId": <<sectionId>>,  
    "lastSubSectionId": <<lastSubSectionId>>,  
    "questionnaireStartedDate": <<questionnaireStartedDate>>,  
    "questionnaireCompletedDate": <<questionnaireCompletedDate>>  
  },  
  "links": [ {  
    "rel": "responses",  
    "href": exposureQuestioinnaires/<<exposureQuestioinnnaireId>>/responses  
  } ]  
}
```

**Figure 14 Lazy Loaded Object**

**Table 32 AHOBPR RESTful Resources and Methods**

Resource	HTTP Methods
exposureQuestionnaires	Get --List Matching Post --Create New Item
exposureQuestionnaires/⟨⟨itemId⟩⟩	Get --Retrieve Put --Replace
exposureQuestionnaires/⟨⟨itemId⟩⟩/responses	Get --List Matching Put --Replace all Post --Create New
exposureQuestionnaires/⟨⟨itemId⟩⟩/responses/⟨⟨itemId⟩⟩	Get --Retrieve
registrants	Get --List Matching Post --Create New
registrants/⟨⟨itemId⟩⟩	Get --Retrieve, Put --Replace
registrants/⟨⟨itemId⟩⟩/addresses	Get --List Matching Put --Replace all Post --Create New Item
registrants/⟨⟨itemId⟩⟩/addresses/⟨⟨itemId⟩⟩	Get --Retrieve, Put --Replace Delete
registrants/⟨⟨itemId⟩⟩/emails	Get --List Matching Put --Replace all Post --Create New Item
Registrants/⟨⟨itemId⟩⟩/Emails/⟨⟨itemId⟩⟩	Get --Retrieve, Put --Replace Delete
Registrants/⟨⟨itemId⟩⟩/Phones	Get --List Matching Put --Replace all Post --Create New
Registrants/⟨⟨itemId⟩⟩/Phones/⟨⟨itemId⟩⟩	Get --Retrieve, Put --Replace Delete

#### 4.4.2. Services Required/Consumed

Service	Resource	Method
<b>Authorization Service</b> (Used for Registrant Authentication)	/AuthorizationServices/oauth/token	HTTP Get
	/AuthorizationServices/provider/authorize	HTTP Get
	/AuthorizationServices/rest/token	HTTP Delete
	/AuthorizationServices/logout	HTTP Get
<b>Registration Service</b>	/AuthorizationServices/oauth/token	HTTP Get
	/AuthorizationServices/provider/authorize	HTTP Get

Service	Resource	Method
	/AuthorizationServices/rest/token	HTTP Delete
	/AuthorizationServices/logout	HTTP Get
<b>VIERS Military History Service</b>	/VIERSService/v2/MilitaryHistoryService/ MilitaryHistoryService	getMilitaryServiceHistory
<b>VIERS Contact Information Service</b>	TBD	createContactInformation updateContactInformation getContactInformation deleteContactInformation
<b>(VLER) DAS</b>	TBD	TBD

## 4.5. Enterprise Architecture

### CRS Platform:

Product	TRM Status and Comments
<b>Microsoft Internet Information Service (IIS) 7.5</b> <b>(Windows Server 2008 R2)</b>	Approved w/Constraints until CY2018 Q4 when it is deprecated (approved for existing applications only)
<b>SQL Server 2008 R2 or 2012</b>  TRM decision includes the database engine, SSIS, SSRS and SSAS each of which is used in the AHOBPR design.	Both versions are “Approved with Constraints”. 2008 R2 will be deprecated CY2015 Q2. 2012 will not be deprecated on the TRM timeframe (beyond CY2020 Q4). As one of many registries on the CRS platform, we are not responsible for the migration of the CRS platform to SQL Server 2012, but we will implement on the version of SQL Server in production at the time of AHOBPR national deployment.  [REDACTED]
<b>ASP.net 4.5</b>	Approved, unconditionally from CY2014 Q4 through CY2016 Q4 and beyond.
<b>Microsoft .NET Framework 3.5 SP1, 4 or 4.5.2</b>	Version 3.5 SP1 is “Approved with Constraints”. Version 4.0 will be deprecated (in favor of 4.5.2) as of CY2015 Q1. We are currently developing against version 3.5 because the CRS platform is using that version. However, they plan to move to 4.0 well before we go into production. We will convert to 4.0 when they do. If the CRS platform migrates to the VA preferred 4.5.2, we will use it.

**WMS BPR Application:**

Product	TRM Status and Comments
<b>Red Hat Linux 5.x</b>	Approved with Constraints though out the base period of this task.
<b>Apache HTTP Server (?)</b>	2.2.27 and 2.4.10 are Approved with Constraints.  We do not implement or modify the Apache server, we simply use this part of the existing MAE infrastructure to route the messages to our servers.
<b>Node.js 0.10</b>	Approved with Constraints from task award (and before) through CY2020 Q4 and beyond. Node.js is an extensible framework with many independently developed “modules”. Some of the modules currently used by WMS BPR and plan to be leveraged by AHOBPR are: <ul style="list-style-type: none"><li>• Connect.js</li><li>• Jade.js 1.3.1</li><li>• Log.js 1.4.0</li><li>• Mocha.js 1.18.2</li><li>• Pdfkit.js 0.6.2</li><li>• Request.js 2.34.0</li></ul>
<b>Express.js 3.6.0</b>	Approved with Constraints from task award (and before) through CY2020 Q4 and beyond.
<b>Passport.js 0.2.1</b>	Approved without constraints through CY2020 and beyond.
<b>Bootstrap. 3.2</b>	Approved without constraints through CY2020 and beyond.
<b>Underscore 1.6.0</b>	Approved without constraints through CY2020 and beyond.
<b>Backbone 1.1.2</b>	Approved without constraints through CY2020 and beyond.
<b>Nginx (version?)</b>	Version 1.20 is Approved with Constraints, but deprecated Version 1.30 is Approved with Constraints but will be deprecated CY2015 Q4.  Version 1.4.2 and 1.6.0 are approved for new development throughout our PoP.

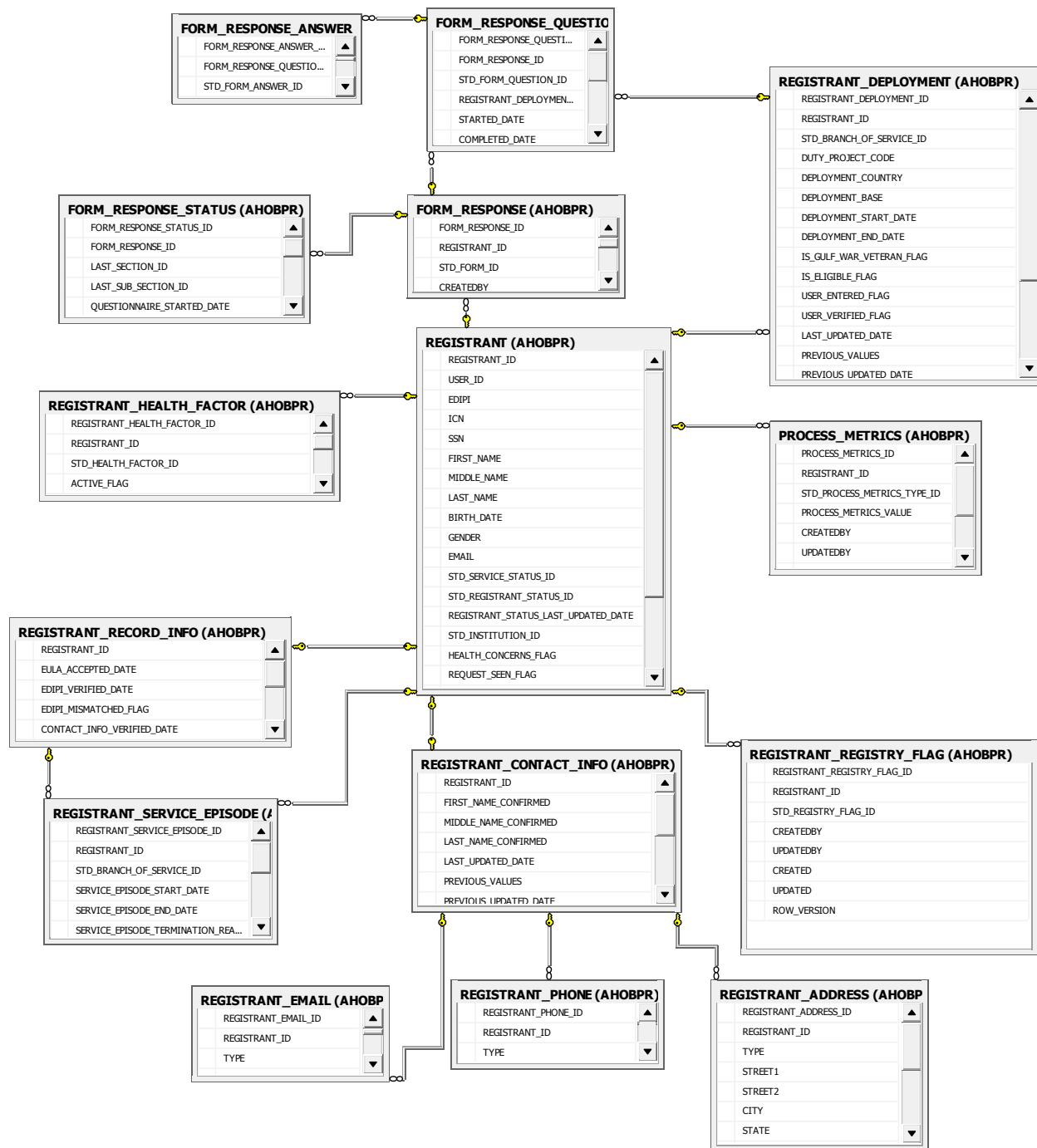
## **5. Data Design**

### **5.1.DBMS Files**

AHOBPR will use the CRS database, Registries, for its operational transactions. One schema will be added to this database to hold AHOBPR specific tables. The new schema will be named AHOBPR. The schema model is shown below.

**Figure 15 AHOBPR Schema Data Model**

The reporting and analysis features of AHOBPR will primarily use the CRS data mart, DataMart\_Registries, for its data. A new schema will be created in it, AHOBPR, to hold registry specific facts. If new dimensions are required we will negotiate their location with the CRS Registry Sustainment group. Conformed dimensions should be stored in a common schema (one





that is not dedicated to AHOBPR). The design for data model will be performed in preparation for the sprint in which it will be implemented.

## **5.2.Non-DBMS Files**

No significant operational non-database system files will be used, exception standard ASP .NET, Node.js and SQL Server configuration and log files.

## 6. Detailed Design

### 6.1. Hardware Detailed Design

The Hardware Detailed Design required for the base period can be visualized in Figure 4, found in Section 3.3.4.

### 6.2. Software Detailed Design

The detail designs will be created and documented in preparation for and during the sprint in which they will be developed.

#### 6.2.1. Conceptual Design

##### 6.2.1.1. Product Perspective

###### 6.2.1.1.1. User Interfaces

All the user interfaces browser-based, that is, HTML to be rendered by a browser. The staff user interface will follow the style established for the CRS. The registrant's portal will follow the style established by the existing WMS BPR.

The user interface for the Staff Web-Application and Registrants Portal is detailed in section User Interface Data Mapping.

###### 6.2.1.1.2. Hardware Interfaces

The Hardware Detailed Design required for the base period can be visualized in Figure 12: Conceptual Infrastructure Diagram, found in Section 3.3.4.1.

###### 6.2.1.1.3. Software Interfaces

**Table 33 – Software Interfaces**

Interface	Version	Purpose	Definition i.e. Web-Service
<b>VADIR</b>	TBD	To extract Deployment Records for a Veteran.	Web Service (SOAP, XML)
<b>eBenefits</b>	TBD	To extract DSLOGON information for a participant.	HTTPS Link
<b>(VLER) DAS</b>	TBD	To send registry records to DoD	Web Service (RESTful, XML)
<b>VA HealthAdapter</b>	TBD	Staff and registrant authentication	Web Service (RESTful, JSON)
<b>.NET Data Provider for SQL Server</b>	.Net 3.5	To connect to the SQL Database	TCPIP

###### 6.2.1.1.4. Communications Interfaces

Secure use of TCP in CRS environment via HTTPS for the browser and web service connections.

###### 6.2.1.1.5. Memory Constraints

To be determined

#### **6.2.1.1.6. Special Operations**

Backups handled by AITC and the MAE, no other known special operations.

#### **6.2.1.2. Product Features**

See the AHBPR Requirements Specification Document.

#### **6.2.1.3. User Characteristics**

- See section 1.5 User Characteristics.

#### **6.2.1.4. Dependencies and Constraints**

The solution will need to meet VA Enterprise Standards for development language, security, 508 compliance, web-framework, application-framework, and integration with other VA systems.

The Web-Interfaces shall meet all standard VA requirements as stated in VA Graphics Standard Guide.

The acquisition of all technical specification for all APIs to include HealthAdapter, VADIR, and VLER DAS need to be provided.

The Staff Web Application must use .Net 3.5 and the Web-UI must have the same look and feel as other Registry applications that have already been developed within the CRS.

### **6.2.2. Specific Requirements**

#### **6.2.2.1. Database Repository**

CRS Integration

- The registry data must be stored in the CRS database.
- Table: [dbo].[STD\_REGISTRY]

CODE	NAME	DESCRIPTION_TEXT
AHOBPR	Airborne Hazards and Open Burn Pit Registry	Airborne Hazards and Open Burn Pit Registry

#### **6.2.2.2. System Features**

#### **6.2.2.3. Design Element Tables**

The design element tables will be completed in preparation for or during the sprint the design element will be implemented.

### **6.3. Network Detailed Design**

These components are being provided by VA to support this development effort. There are no requirements for the procurement of any additional communications technology.

### **6.4. Service Oriented Architecture / ESS Detailed Design**

The SOA/ESS detail design will be completed in preparation for or during the sprint the designs will be implemented. Embedded are the external documentation we have gathered to date.

#### **6.4.1. eBenefits Integration**

AHOBPR access will be a navigation option from within eBenefits. When selected, users will be redirected via a Single Sign-on (SSO) enabled link.

Single Sign On is the ability for multiple applications to pass a user between systems without requiring the user to re-authenticate. There are various patterns in the industry, but EVSS only allows integration via VA Identity and Access Management (IAM) through the VA Authentication Federated Infrastructure (VAAFI).

The two supported patterns for VA internal and external websites respectively are Reverse Proxy with SSL Headers and SAML Web SSO.

Reverse proxy security is provided as a high performance solution for websites inside the VA firewalls and thus will be used for AHOBPR. Systems inside the VA can use firewalls and other security mechanisms to prevent “man-in-the-middle” attacks. Therefore streamlined security is possible.

In the reverse proxy w/SSL headers pattern, VAAFI passes the identity traits to the application in the form of HTTP headers on the SSL communication. These headers are interrogated by the application and used to establish the secure session.

Considerations include the following:

- Sessions: VAAFI enforces a 15 minute session timeout. Applications should not support an authenticated session outside of VAAFI if the authentication initiated through VAAFI.
- Logout: VAAFI provides an SSO logout (pkmslogout) that kills the SSO session and disconnects all web applications. No logout signal is transmitted to those applications
- Domains: VAAFI requires authenticated traffic route through the domain: “eauth.va.gov”. It is important to handle cookies and JavaScript appropriately.
- Refer to IAM VAAFI integration guide for further details.
- Refer to EVSS – eBen Partner Integration Guide, July 18, 2013 v1.2

### **6.4.2. Service Description for VIERS Military History Service**

Refer to the following documents:

- VIERS Military History Service Description

### **6.4.3. Service Design for VLER DAS**

Refer to the following documents:

- VLER DAS ICD January 2013 v1.022
- VLER GatewayInboundICD-HTTPS July 2013 v1.05

### **6.4.4. HealthAdapter Authentication Services**

The HealthAdapter will be used as a wrapper to IAM SSOe services. VistA will be used as the authentication provider for clinical users, while DSLOGON will be used for registrants.

Refer to the following documents:

- Health Adapter 3.0 Documentation, 04 Sept 2014

## **7. External System Interface Design**

We have requirements for a bidirectional interface with CDW as well as importing a service member data from DoD. The detail designs for these requirements will be added in preparation for or during the sprint in which they will be developed. Embedded are the external documentation we have gathered to date.

### **7.1. Supplemental DoD Deployment History File (CTS Deployment File)**

Refer to the following documents:

- AHOBPR CTS Extract Information
- CTS Extract Info Attachment A
- CTS-Deployment Information Paper
- Sample Extract

## 8. Human-Machine Interface

### 8.1.Interface Design Rules

The Clinical Web-Application will use standard .Net 3.5 controls and will be 508 compliant.

The Registrant Portal will use HTML 5 controls and be 508 compliant.

### 8.2.Inputs

- Keyboard
- Pointing device

### 8.3.Outputs

- Screen by screen output as is defined in section 3.2.3 User Interface Data Mapping.
- File output to user local workstation.
- Reports to a browser accessible printer.

### 8.4.Navigation Hierarchy

The navigation hierarchy and user interface screen/pages will evolve and be updated during each development sprint.

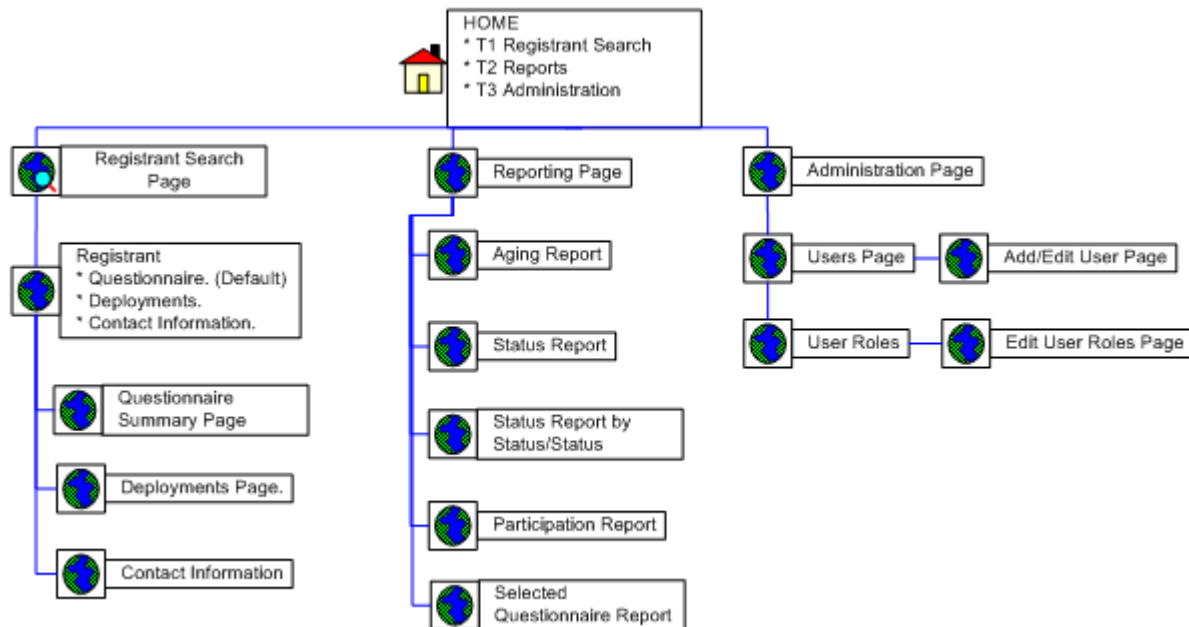
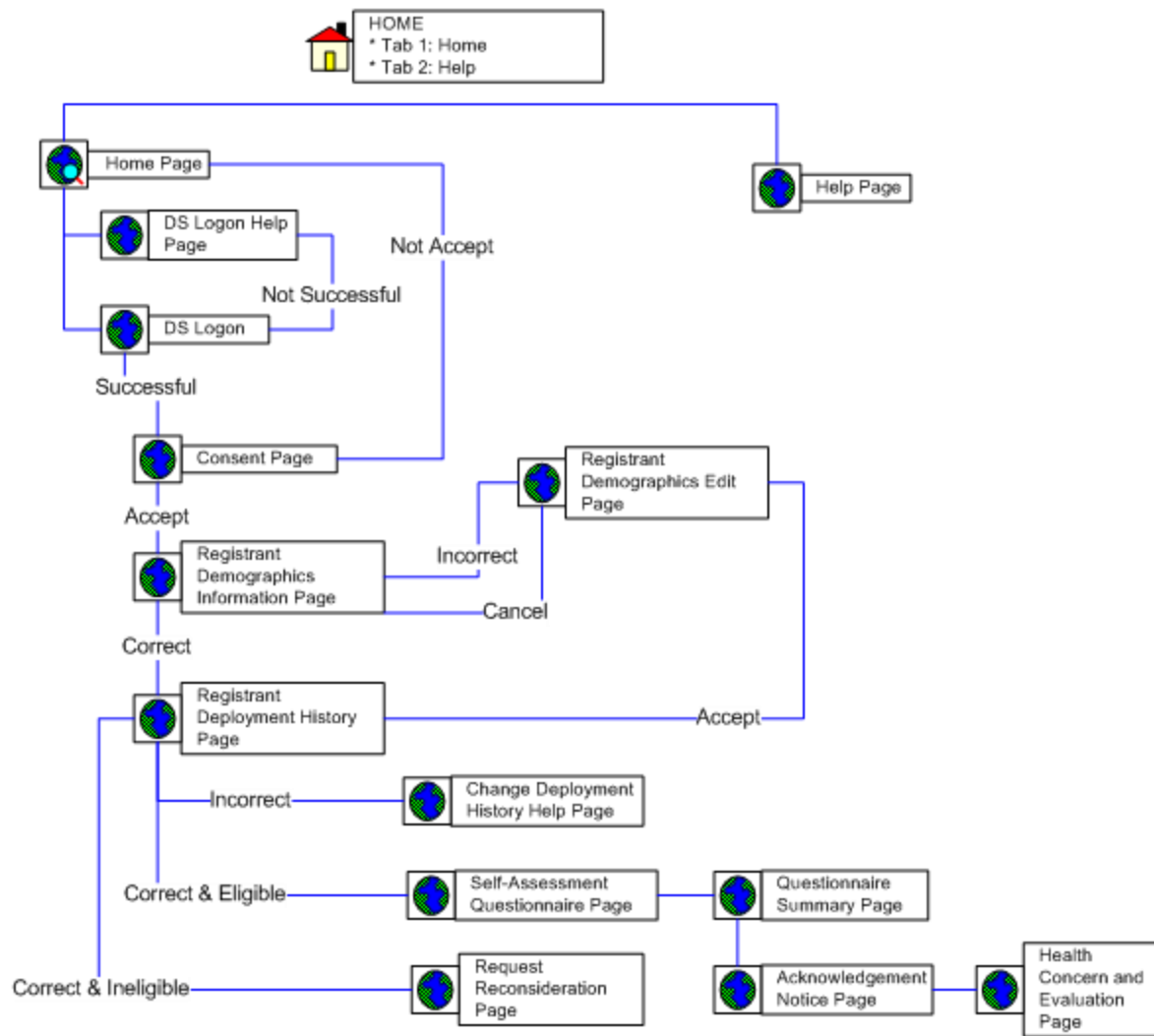


Figure 16 Staff Web-Application Page Navigation



**Figure 17 Registrant Portal Page Navigation**

## 9. Security and Privacy

### 9.1.Security

The Registrant Portal's access will be controlled by a SSO arrangement with eBenefits.

The process is diagrammed in Figure 18 Staff Authentication Sequence.

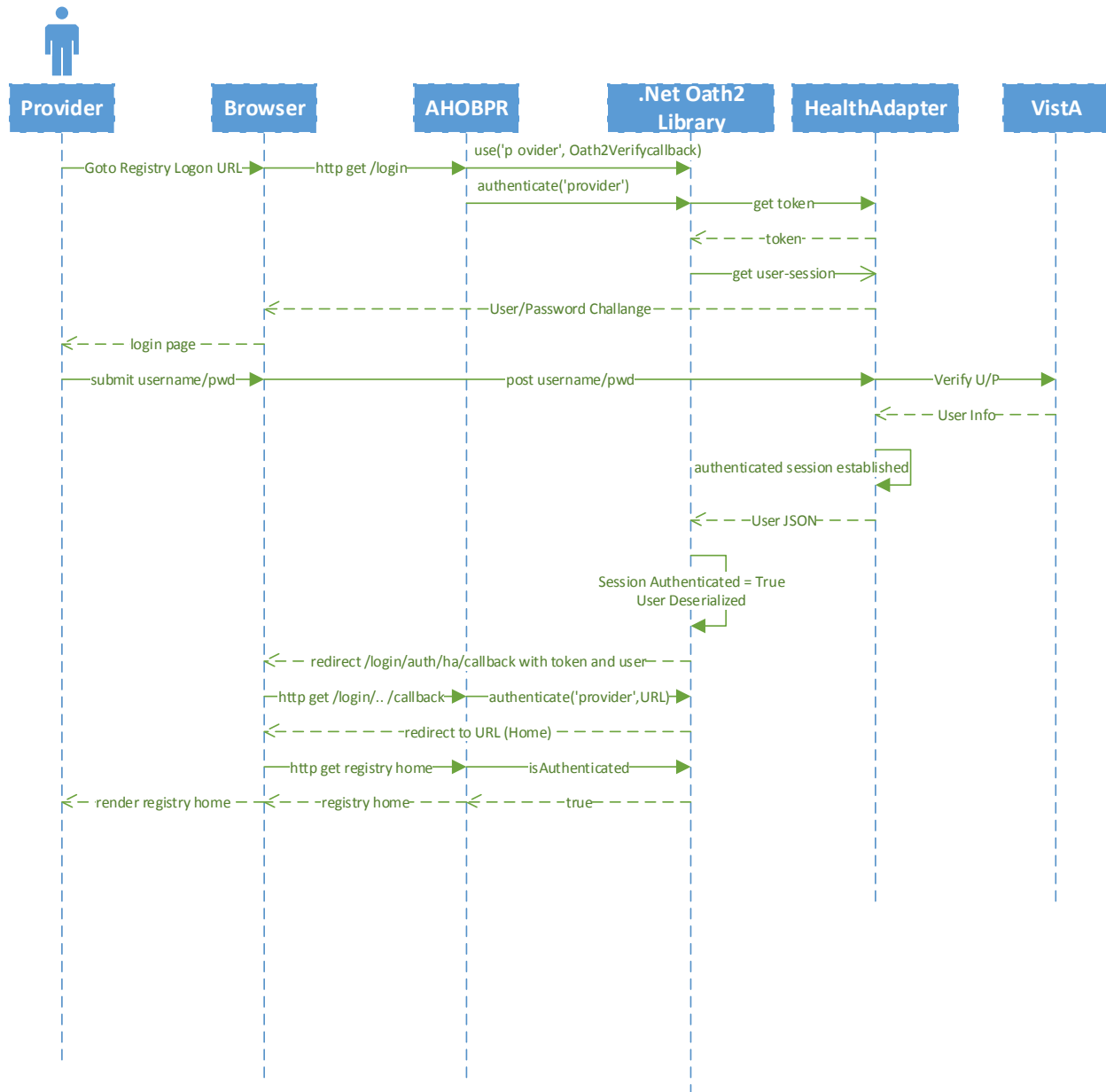


Figure 18 Staff Authentication Sequence



## 9.2. Identification

## 9.3. Authorization

The Clinical (Staff) Web-Application will control access via HeathAdapter using VistA logon credentials.

Table: [dbo].[STD\_ROLE]

CODE	NAME	DESCRIPTION_TEXT
AHOBPR_REGISTRY_MANAGER	AHOBPR Registry Manager	AHOBPR Registry Manager who
AHOBPR_ADVANCED_USER	AHOBPR Advanced User	AHOBPR Advanced User
AHOBPR_CARE_TEAM	AHOBPR Care Team	AHOBPR Care Team

## Attachment A – Approval Signatures

This section is used to document the approval of the System Design Document. The review should be conducted face to face where signatures can be obtained ‘live’ during the review. If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add /es/name by each position cited. Example provided below.

The Chair of the governing Integrated Project Team (IPT), Business Sponsor, IT Program Manager, and Project Manager are required to sign.

---

Signed:

Date:

, Integrated Project Team (IPT) Chair

---

Signed:

Date:

, MD, Business Sponsor

---

Signed:

Date:

, Program Manager

---

Signed:

Date:

, Project Manager

## A. Additional Information

### A.1. RTM



### A.2. Acronym List and Glossary

Table 59: Glossary

Term	Meaning
AITC	Austin Information Technology Center
BN	Business Need
BRD	Business Requirements Document
CA	Certification and Accreditation
CDW	Corporate Data Warehouse
CPRS	Computerized Patient Record System
CRS	Converge Registry Solution
DoD	Department of Defense
DS Logon	DoD Self Service Logon
EHR	Electronic Health Record
ESS	Enterprise Shared Services
FIPS	Federal Information Processing Standard
HATEOAS	<a href="#">Hypermedia as the Engine of Application State</a>
HDS	Health Data System
HIG	Health Information Governance
HIM	Health Information Management
HITSP	Health Information Technology Standards Panel
HL7	Health Level Seven
HTML	<a href="#">Hypertext Markup Language</a>
ICN	Integration Control Number
IHE	Integrating the Healthcare Enterprise
ILER	Individual Lifetime Exposure Record

Term	Meaning
ISO	International Organization for Standardization
IT	Information Technology
LOINC	Logical Observation Identifiers, Names, and Codes
MAE	Mobile App Environment
MDWS	Medical Domain Web Service
MU	Meaningful Use
MVI	Master Veteran Index
NSR	New Service Request
NTRT	New Term Rapid Turnaround
OEF/OIF/OND	Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn
OIT	Office of Information and Technology
OPH	Office of Public Health
OWNR	Owner Requirement
PACT	Patient Aligned Care Team
PL	Public Law
SM	Service Member
SME	Subject Matter Expert
SNOMED CT	Systematized Nomenclature of Medicine Clinical Terms
STS	Standards and Terminology Services
UI	User Interface
VA	Department of Veterans Affairs
VADIR	VA/DoD Identity Repository.
VETS	VA Enterprise Terminology Services
VIERS	Veterans Identity Eligibility Reporting System. VRM Veteran Identity/Eligibility Reporting System (VIERS) provides consuming business applications with access to a standard, enterprise view of person demographic, contact, military service and other benefits information including benefits eligibility profile.
VHA	Veterans Health Administration. VHA administers the United States Veterans Healthcare System, whose mission is to serve the needs of America's Veterans by providing primary care, specialized care, and related medical and social support services.
VISN	Veterans Integrated Service Network
Veterans Information	VistA is a comprehensive, integrated health care information system composed of numerous software modules.

Term	Meaning
Systems Technology Architecture (VistA)	See <a href="#">V</a> and <a href="#">ht</a> VistA enables the creation of a comprehensive, integrated, electronic record for each patient that is viewable by all clinicians at VA medical facilities, thus eliminating the need for paper medical records. Approximately 100 separate applications are currently in use with VistA including: healthcare provider; registration; financial management; enrollment; patient data exchange and eligibility applications. In 2007, VistA Imaging was implemented which allows multimedia data (for example, radiology images) to be linked to patient's electronic medical records. VistAWeb allow clinicians to see health data from any other VA facility where the Veteran has received health care.
VRM	Veteran Relationship Management program office. The Veterans Relationship Management (VRM) Program Management Office (PMO) engages, empowers, and serves Veterans and other clients with seamless, secure, and on-demand access to benefit information and services.
WMS	Web and Mobile Solutions, a development organization within the VHA. Was responsible for the development of WMS BPR.
WMS BPR	Web and Mobile Solutions' Burn Pit Registry. The legacy system this effort is to reuse or refactor.
508 Compliance	Section 508 of the Rehabilitation Act as amended, 29 U.S.C. Section 794(d), requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, they shall ensure that this technology is accessible to people with disabilities. Agencies must ensure that this technology is accessible to employees and members of the public with disabilities to the extent it does not pose an "undue burden." Section 508 speaks to various means for disseminating information, including computers, software, and electronic office equipment.

### A.3. Required Technical Documents

### A.4. Attach Documents

### A.5. Open Burn Pit Self-Assessment Questionnaire

Question Number	Question / Section / Condition	Response
1	Deployment History Segment	1 to many relationship 1 segment for each deployment
1.1	Deployment Data from the VA Defense Information Repository (VADIR)	
1.2	Location Specific Deployment Exposures	Display deployment segment 1 to many relationship (multiple locations per deployment)

Question Number	Question / Section / Condition	Response
IF COND	Deployment Begin Date > 8/1/1990 and Deployment End Date <9/11/2001 AND GULF-WAR-VETERAN-FLAG=YES (SWA)	
1.2A	Were you exposed to soot, ash, smoke, or fumes from the Gulf War oil well fires?	One response allowed: YES NO I do not wish to answer Don't Know
1.2B	Where did you spend most of your time during these dates?	OTHER: (Freeform text box) Vet types in location info
1.2C	If you were at more than one base, where did you spend the second most amount of time during these dates?	OTHER: (Freeform text box)
ELSE		
1.2B	Where did you spend most of your time during these dates?	One response allowed: I do not wish to answer Don't Know OTHER: (Freeform text box) Select from <Form 10-10066 - Appendix A Location Table>
1.2C	If you were at more than one base, where did you spend the second most amount of time during these dates?	One response allowed: I do not wish to answer Don't Know OTHER: (Freeform text box) Select from <Form 10-10066 - Appendix A Location Table>
ENDIF		
1.2D	Were you near a burn pit during these dates (on the base or close enough to the base for you to see the smoke)?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	If response to 1.2D = YES	
1.2E	Who ran this burn pit Select all that apply)	Multiple responses allowed: US. forces or Contractor Coalition forces Host nation I do not wish to answer Don't Know

Question Number	Question / Section / Condition	Response
1.2F	Did your duties during these dates include the burn pit (examples include trash burning, hauling trash to the burn pit, burn pit security, trash sorting at the burn pit)?	One response allowed: YES NO I do not wish to answer Don't Know
1.2G	On a typical day, how often did smoke or fumes from the burn pit enter your work site or housing?	One response allowed: XX Hours between 1 and 24 I do not wish to answer Don't Know
1.2H	On a typical day, how often were you outside or in an open tent or shelter (for example a single wall tent with open seams or drafty "B" hut)?	One response allowed: XX Number between 1 and 24 I do not wish to answer Don't Know
1.2I	On a typical day, how often were you near (for example you could smell or see it) sewage ponds?	One response allowed: XX Number between 1 and 24 I do not wish to answer Don't Know
ENDIF		
1.3	General Military Occupational Exposures	
1.3	During any of your deployments:	
1.3A	Were you ever close enough to feel the blast from an IED (improvised explosive device) or other explosive device?	One response allowed: YES NO I do not wish to answer Don't Know
1.3B	In a typical month, how many days were you near heavy smoke from weapons, signal smoke, markers, or other combat items?	One response allowed: XX Number between 1 and 31 I do not wish to answer Don't Know
1.3C	In a typical month, how many days were you in convoy or other vehicle operations?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't Know
1.3D	In a typical month, how many days did you perform refueling operations?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't Know

Question Number	Question / Section / Condition	Response
1.3E	In a typical month, how many days did you perform aircraft, generator, or other large engine maintenance?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't Know
1.3F	In a typical month, how many days did you perform construction duties?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't Know
1.3G	In a typical month, how many days did you perform pesticide duties for your unit?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't Know
1.4	Environmental Exposures, Regional Air Pollution	
1.4A	Did you do anything differently during your deployment(s), when you thought or were informed air quality was bad (for example during dust storms or heavy pollution days)?	One response allowed: YES NO Never thought of this I was not informed or aware of bad air quality I do not wish to answer Don't Know
IF COND	Response to 1.4A = YES	
1.4B	What did you do differently (select all that apply)?	Multiple responses allowed: Wore a mask, cravat, or bandana over your mouth or nose Spent less time outdoors Did less strenuous activities (i.e. avoided physical training (PT)) Took medication Closed windows of your sleeping quarters Spent less time in convoy Canceled outdoor activities Exercised indoors instead of outdoors Used or changed air filter/air cleaner Other I did not do anything differently I do not wish to answer
ENDIF		



Question Number	Question / Section / Condition	Response
1.4C	In a typical month during your deployment(s), how many days did you experience dust storms?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't know
1.4D	During your deployment(s), did you experience wheezing, difficulty breathing, an itchy or irritated nose, eyes or throat that you thought was the result of poor air quality?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Response to 1.4D = YES	
1.4E	How many days in an average month did you experience wheezing, difficulty breathing, an itchy or irritated eyes, nose or throat that you thought was the result of poor air quality?	One response allowed: XX Number between 1 and 31 Never I do not wish to answer Don't know
ENDIF		
1.4F	During your deployment(s), did you seek medical care for wheezing, difficulty breathing, an itchy or irritated nose, eyes or throat that you thought was the result of poor air quality?	One response allowed: YES NO I do not wish to answer Don't Know
2	Symptoms and Medical History	
2.1	Functional Limitations and Reported Cause	
2.1A	How difficult is it to run or jog one mile on a level surface?	One response allowed: Not at all difficult Only a little difficult Somewhat difficult Very difficult Can't do it at all Do not do this activity I do not wish to answer Don't know
2.1B	How difficult is it to walk on a level surface for one mile?	One response allowed: Not at all difficult Only a little difficult Somewhat difficult Very difficult Can't do it at all Do not do this activity I do not wish to answer Don't know

Question Number	Question / Section / Condition	Response
2.1C	How difficult is it to walk a ¼ of a mile – about 3 city blocks?	One response allowed: Not at all difficult Only a little difficult Somewhat difficult Very difficult Can't do it at all Do not do this activity I do not wish to answer Don't know
2.1D	How difficult is it to walk up a hill or incline?	One response allowed: Not at all difficult Only a little difficult Somewhat difficult Very difficult Can't do it at all Do not do this activity I do not wish to answer Don't know
2.1E	How difficult is it to walk up 10 steps or climb a flight of stairs?	One response allowed: Not at all difficult Only a little difficult Somewhat difficult t Very difficult Can't do it at all Do not do this activity I do not wish to answer Don't know
IF COND	Response to any of the above 2.1 questions = "difficult" Only a little difficult Somewhat difficult Very difficult Can't do it at all	

2.1F	What condition or health problem causes you to have difficulty with these activities? (Check all that apply.)	<p>Multiple responses allowed:</p> <p>Vision/problem seeing</p> <p>Hearing problem</p> <p>Arthritis/rheumatism</p> <p>Back or neck problem</p> <p>Fracture, bone/joint injury</p> <p>Other injury</p> <p>Heart problem</p> <p>Stroke problem</p> <p>Hypertension/high blood pressure</p> <p>Diabetes</p> <p>Lung/breathing problem (for example, asthma and emphysema)</p> <p>Cancer</p> <p>Birth defect</p> <p>Brain injury, (for example, Traumatic Brain Injury/TBI, Intellectual disability)</p> <p>Other developmental problem (for example, cerebral palsy)</p> <p>Senility</p> <p>Depression/anxiety/emotional problem</p> <p>Weight problem</p> <p>Missing limbs (fingers, toes or digits), amputee</p> <p>Kidney, bladder or renal problems</p> <p>Circulation problems (including blood clots)</p> <p>Benign Tumors, Cysts</p> <p>Fibromyalgia, lupus</p> <p>Osteoporosis, tendinitis</p> <p>Epilepsy, seizures</p> <p>Multiple Sclerosis (MS), Muscular Dystrophy (MD)</p> <p>Polio(myelitis), paralysis, para/quadriplegia</p> <p>Parkinson's disease, other tremors</p> <p>Other nerve damage, including carpal tunnel syndrome</p> <p>Hernia</p> <p>Ulcer</p> <p>Varicose veins, hemorrhoids</p>
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Question Number	Question / Section / Condition	Response
		Thyroid problems, Grave's disease, gout Knee problems Migraine headaches (not just headaches) Other impairment/problem (Specify one) I do not wish to answer Don't know/Not sure
ENDIF		
2.2	Health Conditions	
2.2A	Have you ever been told by a doctor or other health professional that you had Hay fever or allergies to pollen, dust, or animals?	One response allowed: YES NO I do not wish to answer Don't Know
2.2B	Have you ever been told by a doctor or other health care professional that you had asthma?	One response allowed: YES NO I do not wish to answer Don't Know
2.2C	Have you ever been told by a doctor or other health care professional that you had emphysema?	One response allowed: YES NO I do not wish to answer Don't Know
2.2D	Have you ever been told by a doctor or other health care professional that you had chronic bronchitis?	One response allowed: YES NO I do not wish to answer Don't Know
2.2E	Have you ever been told by a doctor or other health care professional that you had chronic obstructive pulmonary disease also called COPD?	One response allowed: YES NO I do not wish to answer Don't Know
2.2F	Have you ever been told by a doctor or other health care professional that you had some lung disease or condition other than asthma, emphysema, chronic bronchitis or COPD?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Response to 2.2F =YES	

Question Number	Question / Section / Condition	Response
2.2G	Have you ever been told by a doctor or other health care professional that you had constrictive bronchiolitis (CB)?	One response allowed: YES NO I do not wish to answer Don't Know
2.2H	Have you ever been told by a doctor or other health care professional that you had pulmonary fibrosis or idiopathic pulmonary fibrosis (IPF)?	One response allowed: YES NO I do not wish to answer Don't Know
ENDIF		
IF COND	Any YES response to 2.2B through 2.2F	
2.2I	When you were told you had asthma, emphysema, chronic bronchitis, COPD or some other lung disease by a doctor or other health care professional, were you told before, during, or after deployment? (Select all that apply.)	Multiple responses allowed: Before deployment During deployment After deployment I do not wish to answer Don't know
IF COND	Response to 2.2I = "Before"	
2.2J	Did this lung disease get better, worse, or about the same during deployment?	One responses allowed: Better Worse About the same Not applicable I do not wish to answer Don't know
ENDIF		
ENDIF		
2.2K	Have you ever been told by a doctor or other health care professional that you had hypertension, also called high blood pressure?	One response allowed: YES NO I do not wish to answer Don't Know
2.2L	Have you ever been told by a doctor or other health care professional that you had coronary artery disease?	One response allowed: YES NO I do not wish to answer Don't Know

Question Number	Question / Section / Condition	Response
2.2M	Have you ever been told by a doctor or other health care professional that you had angina pectoris?	One response allowed: YES NO I do not wish to answer Don't Know
2.2N	Have you ever been told by a doctor or other health care professional that you had a heart attack, also called myocardial infarction?	One response allowed: YES NO I do not wish to answer Don't Know
2.2O	Have you ever been told by a doctor or other health care professional that you had a heart condition other than coronary artery disease or angina or myocardial infarction?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Any "YES" response to questions 2.2K through 2.2O	
2.2P	When you were told you had hypertension, coronary artery disease, angina pectoris, a heart attack, or some other heart condition by a doctor or other health care professional, were you told before, during, or after deployment? (check all that apply.)	Once responses allowed: Before deployment During deployment After deployment I do not wish to answer Don't know
ENDIF		
2.2Q	On average, how many hours of sleep do you get in a 24-hour period? (Round up 30 minutes or more to the next whole hour.)	One response allowed: Hours (Number between 1 and 24) I do not wish to answer Don't Know
2.2R	How often do you snore?	One response allowed: Never Rarely - less than one night a week Sometimes - 1 or 2 nights a week Frequently - 3 to 5 nights a week Always or almost always - 6 or 7 nights a week I do not wish to answer Don't know

Question Number	Question / Section / Condition	Response
2.2S	How often do you have times when you stop breathing during your sleep?	One response allowed: Never Rarely - less than one night a week Sometimes - 1 or 2 nights a week Frequently - 3 to 5 nights a week Always or almost always - 6 or 7 nights a week I do not wish to answer Don't know
2.2T	During the past 12 months, have you regularly had insomnia or trouble sleeping?	One response allowed: YES NO I do not wish to answer Don't Know
2.2U	During the past 12 months, have you had Neurological problems? (Some examples of neurological problems may include numbness, tingling, or weakness in your arms or legs or difficulties with thinking or memory.)	One response allowed: YES NO I do not wish to answer Don't Know
2.2V	During the past 12 months, have you had problems of the immune system?	One response allowed: YES NO I do not wish to answer Don't Know
2.2W	During the past 12 months, have you been told by a doctor or other health professional that you had any kind of liver condition?	One response allowed: YES NO I do not wish to answer Don't Know
2.2X	During the past 12 months, have you been told by a doctor or other health professional that you had any a chronic multi-symptom illness (examples include irritable bowel syndrome, chronic fatigue syndrome, and fibromyalgia)?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Any "YES" response to questions 2.2T through 2.2X	

Question Number	Question / Section / Condition	Response
2.2Y	Did your neurological or immune problems, chronic multi-symptom illness, or liver condition first occur before, during, or after deployment? (check all that apply.)	Multiple responses allowed: Before deployment During deployment After deployment I do not wish to answer Don't know
ENDIF		
2.2.3	Height and Weight	
2.3A	How tall are you without shoes?	Once responses allowed: X feet Y inches I do not wish to answer Don't know
2.3B	How much do you weigh without shoes?	Once responses allowed: X pounds I do not wish to answer Don't know
2.4	Cancer History	
2.4A	Have you ever been told by a doctor or other health professional that you had Cancer or a malignancy (tumor) of any kind?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Response to 2.4A = "YES"	



Question Number	Question / Section / Condition	Response
2.4B	What kind of cancer was it (check up to three)?	<p>Multiple responses allowed (maximum 3 responses):</p> <p>Bladder</p> <p>Blood</p> <p>Bone</p> <p>Brain</p> <p>Breast</p> <p>Cervix</p> <p>Colon</p> <p>Esophagus</p> <p>Gallbladder</p> <p>Kidney</p> <p>Larynx-windpipe</p> <p>Leukemia</p> <p>Liver</p> <p>Lung</p> <p>Lymphoma</p> <p>Melanoma</p> <p>Mouth/tongue/lip</p> <p>Ovary</p> <p>Pancreas</p> <p>Prostate</p> <p>Rectum</p> <p>Skin (non-melanoma)</p> <p>Skin</p> <p>Soft tissue (muscle or fat)</p> <p>Stomach</p> <p>Testis</p> <p>Throat - pharynx</p> <p>Thyroid</p> <p>Uterus</p> <p>Other</p> <p>I do not wish to answer</p> <p>Don't know</p>

Question Number	Question / Section / Condition	Response
2.4C	How old were you when this cancer was first diagnosed?	<p>Reference 2.4B Responses</p> <p>Response 1 &lt;Display&gt; XX 0-99 Years I do not wish to answer Don't know</p> <p>Response 2 &lt;Display&gt; XX 0-99 Years I do not wish to answer Don't know</p> <p>Response 3 &lt;Display&gt; XX 0-99 Years I do not wish to answer Don't know</p>
ENDIF		
2.4D	Do you currently have any of the following symptoms? (Check all that apply.)	<p>Multiple responses allowed:</p> <p>Cough for more than 3 weeks</p> <p>Sputum or phlegm production for more than 3 weeks</p> <p>Wheezing or whistling in the chest</p> <p>Shortness of breath; breathlessness</p> <p>Decreased ability to exercise</p> <p>Hay fever or other respiratory allergy</p> <p>Sore throat, hoarseness, or change in voice</p> <p>Chest pain, chest discomfort or chest tightness</p> <p>Chronic sinus infection/sinusitis</p> <p>I do not wish to answer</p>

Question Number	Question / Section / Condition	Response
2.4E	In the past 12 months did you have any of the following symptoms? (Check all that apply.)	<p>Multiple responses allowed:</p> <p>Cough for more than 3 weeks</p> <p>Sputum or phlegm production for more than 3 weeks</p> <p>Wheezing or whistling in the chest</p> <p>Shortness of breath; breathlessness</p> <p>Decreased ability to exercise</p> <p>Hay fever or other respiratory allergy</p> <p>Sore throat, hoarseness, or change in voice</p> <p>Chest pain, chest discomfort or chest tightness</p> <p>Chronic sinus infection/sinusitis</p> <p>I do not wish to answer</p>
IF COND	Answer to 2.4D = "04"	
2.4F	How would you rate your shortness of breath or breathlessness? (Check the description/grade that applies to you.) I'm:	<p>One response allowed:</p> <p>Not troubled by breathlessness except on strenuous exercise</p> <p>Short of breath when hurrying on the level or walking up a slight hill</p> <p>Walking slower than most people on level ground, stop after one mile, or stop after 15 minutes walking at my own pace</p> <p>Stopping for breath after walking about 100 yards or after a few minutes on level ground</p> <p>Too breathless to leave the house, or breathless when dressing or undressing</p> <p>I do not wish to answer</p>
ENDIF		
2.5	Tobacco Exposure	
2.5A	Have you smoked at least 100 cigarettes in your entire life?	<p>One response allowed:</p> <p>YES</p> <p>NO</p> <p>I do not wish to answer</p> <p>Don't Know</p>

Question Number	Question / Section / Condition	Response
IF COND	Response to 2.5A = “YES”	
2.5B	How old were you when you first started to smoke fairly regularly?	One response allowed: XX years in age Never smoked regularly I do not wish to answer Don’t know
2.5C	Do you now smoke cigarettes every day, some days or not at all?	One response allowed: Every day Some days Not at all I do not wish to answer Don’t know
IF COND	Response to 2.5C = “3. Not at all”	
2.5D	How long has it been since you quit smoking cigarettes?	One response allowed: XX years since quit I do not wish to answer Don’t know
IF COND	Response to 2.5C = “2. Some days”	
2.5E	On the average, how many cigarettes do you now smoke a day?	One response allowed: XX 0-99 Number of cigarettes per day I do not wish to answer Don’t know
ENDIF		
ENDIF		
ENDIF		
2.5F	Have you ever smoked tobacco products other than cigarettes even one time? (Such as cigars, pipes, water pipes or hookahs, small cigars that look like cigarettes, bidis, cigarillos, marijuana?)	One response allowed: YES NO 7. I do not wish to answer 9. Don’t know
IF COND	Response to 2.5F = “YES”	

Question Number	Question / Section / Condition	Response
2.5G	Do you now smoke tobacco products other than cigarettes every day, some days, rarely, or not at all?	One response allowed: Every day Some days Rarely Not at all I do not wish to answer Don't know
ENDIF		
2.5H	Have you ever used smokeless tobacco products even one time? (Such as chewing tobacco, snuff, dip, sinus, or dissolvable tobacco.)	One response allowed: Every day Some days Rarely Not at all I do not wish to answer Don't know
IF COND	Response to 2.5H = "YES"	
2.5I	Do you now use smokeless tobacco products every day, some days, rarely, or not at all?	One response allowed: Every day Some days Rarely Not at all I do not wish to answer Don't know
ENDIF		
2.5J	Are you exposed to second-hand smoke or environmental tobacco smoke every day, some days, rarely, or not at all?	One response allowed: Every day Some days Rarely Not at all I do not wish to answer Don't know
2.6	Deployment Smoking History	
IF COND	If 2.5A = YES	
2.6A	Did you start smoking for the first time while being deployed?	One response allowed: YES NO I do not wish to answer Don't Know
ENDIF		

Question Number	Question / Section / Condition	Response
IF COND	IF 2.6A = NO	
2.6B	How did deployment(s) change how much you smoked?	One response allowed: No change I smoked more while deployed I smoked less while deployed I do not wish to answer Don't know
ENDIF		
3	Health Concerns	
3A	Compared to pre-deployment, would you say your overall health is better, worse, or about the same?	One response allowed: Better Worse About the same I do not wish to answer Don't know
3B	During your deployment(s), do you believe you were sick because of something you breathed?	One response allowed: YES NO I do not wish to answer Don't Know
3C	Do you currently have a sickness or condition you think began or got worse because of something you breathed during deployment(s)?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Response 3C = "YES"	
3D	When did the problem start?	One response allowed: Before deployment During Deployment 6 months or less after deployment More than 6 months later after deployment Not sure I do not wish to answer
ENDIF		

Question Number	Question / Section / Condition	Response
3E	Please rate your concern that something you breathed during deployment has already affected your health.	One response allowed: Not at all concerned A little concerned Very concerned I do not wish to answer
IF COND	Response to 3E = “Concerned” (Verify concerned = A little concerned, Very concerned)	
3F	Please identify your biggest health concern that something you breathed during deployment has already affected your health.	One response allowed: Lung/Respiratory/Breathing problem Heart problem Skin problem Eye problem Gastrointestinal (GI) problem Neurological problem Immune problem Effect on children or ability to have children Cancer Other problem I do not wish to answer
3G	Have you discussed this concern with your health care provider, medical professional or team?	One response allowed: Yes No Not yet but I would like to talk with a medical professional
ENDIF		
3H	Are you concerned that in the future that your health will be affected by something you breathed during deployment(s)	One response allowed: YES NO I do not wish to answer Don’t Know
IF COND	Response 3H = “YES”	
3I	Please rate your concern that something you breathed during deployment will affect your future health.	One response allowed: Not at all concerned A little concerned Very concerned I do not wish to answer
IF COND	Response to 3I = “Concerned” (concerned = A little concerned, Very concerned)	

Question Number	Question / Section / Condition	Response
3J	Please identify your biggest health concern that something you breathed during deployment will affect your future health.	One response allowed: Lung/Respiratory/Breathing Heart Skin Eyes Effect on children or ability to have children Cancer Other I do not wish to answer
ENDIF		
ENDIF		
IFCOND	Response to 3E or 3H = "Concerned"  (concerned = A little concerned, Very concerned)	
3K	Which exposure do you think has the biggest overall effect on your health?	One response allowed: Off base air pollution during deployment (factories, cars, burning trash, dust) On base air pollution during deployment (burning fuel, burn pits) Hobbies and non-military jobs Military jobs while I'm not deployed Smoking (by you or those near you) Don't know I do not wish to answer
ENDIF		
4	Places You've Lived (Residential History)	
4A	What is your current address (if not shown above [from VADIR and VA BIRLS sources])? Please include the city, state, zip code, and country.	
4A.1	Country	One Selection allowed: <Display Country Lookup table>
IF COND	Response 4A.1 = "USA"	
4A.2	City Name	One Response allowed: <Text Box, Vet enters City>



Question Number	Question / Section / Condition	Response
4A.3	State	One Selection allowed: <Display STATE Lookup table>
4A.4	Zip Code	One Response allowed: <Text Box, Vet enters Zip> (5 digits)
ENDIF		
4A.5	How many years have you lived at your current address (listed above)?	One response allowed: X years
4A.6	Do you live nine or more months of the year at the address listed above?	One response allowed: YES NO
IF COND	Response 6 = "NO"	
4A.7	If not, indicate the other residence.	
4A.7a	Other City Name	One Response allowed: <Text Box, Vet enters City>
4A.7b	Other State	One Selection allowed: <Display STATE Lookup table>
4A.7c	Other Zip	One Response allowed: <Text Box, Vet enters Zip> (5 digits)
4A.7d	Other Country	One Response allowed: <Text Box, Vet enters Country>
ENDIF		
4B	Where have you lived the longest? Please include the city, state, zip code, and country.	
4B.1	The address where I lived the longest is the same as my current address.	One Response allowed: YES NO
IF COND	Response 4B.1 = "NO"	
4B.2	Country	One Selection allowed: <Display Country Lookup table>
IF COND	Response 4B.2 = "USA"	
4B.3	City Name	One Response allowed: <Text Box, Vet enters City>

Question Number	Question / Section / Condition	Response
4B.4	State	One Selection allowed: <Display STATE Lookup table>
4B.5	Zip Code	One Response allowed: <Text Box, Vet enters Zip> (5 digits)
ENDIF		
4.6	Indicate the approximate year you moved to this address:	One Response allowed: XXXX Year
4.7	Indicate the approximate year you moved out of this address:	One Response allowed: XXXX Year
4C	Please provide the address where you lived the longest before age 13. Please include the city, state, zip code, and country.	
4C.1	Country	One Selection allowed: <Display Country Lookup table>
IF COND	Response 4C.1 = "USA"	
4C.2	City Name	One Response allowed: <Text Box, Vet enters City>
4C.3	State	One Selection allowed: <Display STATE Lookup table>
4C.4	Zip Code	One Response allowed: <Text Box, Vet enters Zip> (5 digits)
ENDIF		
4C.5	Indicate the approximate age you moved to this address. _____ years (Enter "0" if you lived there before age 1)	One Response allowed: XX Age
4C.6	Indicate the approximate age you moved out of this address:	One Response allowed: XX Age
5	Non-Military Work History (Non-Military Occupational History)	
5.1	Current Occupational Status	

Question Number	Question / Section / Condition	Response
5.1A	Which of the following were you doing last week?	One Response allowed: Working for pay at a job or business Working without pay at a job or business Working, but not for pay, at a family-owned job or business Looking for work Not working at a job or business and not looking for work I do not wish to answer Don't know
IF COND	Response 5.1A = "3" or "5"	
5.1B	What is the main reason you did not work last week / have a job or business last week?	One Response allowed: Taking care of house or family Going to school Retired On a planned vacation from work On family or maternity leave Temporarily unable to work for health reasons Have job/contract and off-season On layoff/laid-off from a job Disabled Other I do not wish to answer Don't know
ENDIF		
5.2	Main Occupation	

Question Number	Question / Section / Condition	Response
5.2A	Select the occupational category that best describes your main occupation. Do not include your occupation during military service. If your occupation is not included, select “other occupation”:	One Response allowed: Artist or art related Building and grounds, cleaning and maintenance Construction and building trades Farming - animal, agriculture Firefighter Food preparation and serving Forestry Medical, dental and healthcare related Mining or drilling Police and correctional Production related - machine operator, manufacturing, assembling, or processing Professional, including business, financial, engineering, computer, science, media, education Sales, office, retail, and administrative Transportation - Bus, car, or van driver Transportation - Truck driver Other transportation related Vehicle, engine, or aircraft mechanic Welder Other: [Text Box, Veteran enters data] I do not wish to answer
5.2B	Total years in this non-military job {0...99} years (enter 0 if less than one year).	One Response allowed: XX Years I do not wish to answer Don't know
5.3	Dust Exposure	
5.3A	Have you ever worked for a year or more in any dusty job outside the military?	One response allowed: YES NO I do not wish to answer Don't Know
IF COND	Response to 5.3A = “YES”	

Question Number	Question / Section / Condition	Response
5.3B.1	Select the occupational category that best describes the job with the longest dust exposure. If your occupation is not included, select "other occupation":	<p>One Response allowed:</p> <p>Artist or art related</p> <p>Building and grounds, cleaning and maintenance</p> <p>Construction and building trades</p> <p>Farming - animal, agriculture</p> <p>Firefighter</p> <p>Food preparation and serving</p> <p>Forestry</p> <p>Medical, dental and healthcare related</p> <p>Mining or drilling</p> <p>Police and correctional</p> <p>Production related - machine operator, manufacturing, assembling, or processing</p> <p>Professional, including business, financial, engineering, computer, science, media, education</p> <p>Sales, office, retail, and administrative</p> <p>Transportation - Bus, car, or van driver</p> <p>Transportation - Truck driver</p> <p>Other transportation related</p> <p>Vehicle, engine, or aircraft mechanic</p> <p>Welder</p> <p>Other: [Text Box, Veteran enters data]</p> <p>I do not wish to answer</p>

Question Number	Question / Section / Condition	Response
5.3B.2	In this job, what were the most common kinds of dust to which you were exposed?	Multiple responses allowed: Animal dander Asbestos Cement Coal Cotton, wool, or other cloth or textile Fiberglass Flour Grain Granite or other rock Hay Lime Metal (aluminum, copper, iron, steel, or other types) Paper or cardboard Plaster Plastic or rubber Sand or silica Soil or dirt Talc Wood or sawdust Other: [Text Box, Veteran enters data] I do not wish to answer
5.3B.3	Total years in this job {0...99} years (enter 0 if less than one year).	One Response allowed: XX Years I do not wish to answer Don't know
5.3B.4	Are you working in this dusty job now?	One response allowed: YES NO I do not wish to answer Don't Know
ENDIF		
5.4	Gas, Smoke, Vapors or Fumes Exposures	
5.4A	Have you ever been exposed to gas, smoke, chemical vapors or fumes in your non-military work?	One response allowed: YES NO I do not wish to answer Don't Know

Question Number	Question / Section / Condition	Response
IF COND	5.4A Response = "YES"	
5.4B.1	Select the occupational category that best describes the job with the longest gas, smoke, chemical vapor, or fume exposures. If your occupation is not included, select "other occupation":	<p>One response allowed:</p> <p>Artist or art related</p> <p>Building and grounds, cleaning and maintenance</p> <p>Construction and building trades</p> <p>Farming - animal, agriculture</p> <p>Firefighter</p> <p>Food preparation and serving</p> <p>Forestry</p> <p>Medical, dental and healthcare related (not in selection criteria)</p> <p>Mining or drilling</p> <p>Police and correctional</p> <p>Production related - machine operator, manufacturing, assembling, or processing</p> <p>Professional, including business, financial, engineering, computer, science, media, education</p> <p>Sales, office, retail, and administrative</p> <p>Transportation - Bus, car, or van driver</p> <p>Transportation - Truck driver</p> <p>Other transportation related</p> <p>Vehicle, engine, or aircraft mechanic</p> <p>Welder</p> <p>Other: [Text Box, Veteran enters data]</p> <p>I do not wish to answer</p>

Question Number	Question / Section / Condition	Response
5.4B.2	In this job, what were the most common kinds of gas, smoke, or chemical vapors or fumes to which you were exposed? (Select all that apply)	<p>Multiple responses allowed:</p> <p>Cutting oils or mists</p> <p>Exhaust: primarily diesel engine</p> <p>Exhaust: primarily gasoline engine</p> <p>Exhaust: both diesel and gasoline engine</p> <p>Other gas, smoke, or chemical vapor or fume (indicate kind)_____</p> <p>Fumes from chemicals</p> <p>Gasoline or other fuel fumes</p> <p>Paint or lacquers</p> <p>Pesticides or insecticides</p> <p>Smoke from burning buildings, fuel oil, refuse, or wood</p> <p>Solvents</p> <p>Welding</p> <p>Other gas, smoke, or chemical vapor or fume (indicate kind): [Text Box, Veteran enters data]</p> <p>I do not wish to answer</p> <p>Don't know</p>
5.4B.3	Total years in this job {0...99} years (enter 0 if less than one year). {00-99} years	<p>One Response allowed:</p> <p>XX Years</p> <p>I do not wish to answer</p> <p>Don't know</p>
5.4B.4	Are you working in this job with gas, smoke, or chemical vapors or fumes now?	<p>One response allowed:</p> <p>YES</p> <p>NO</p> <p>I do not wish to answer</p> <p>Don't Know</p>
ENDIF		
5.5	Asbestos Exposure	
5.5A	Have you ever worked in a job with asbestos exposure, including military service?	<p>One response allowed:</p> <p>YES</p> <p>NO</p> <p>I do not wish to answer</p> <p>Don't Know</p>
IF COND	Response to 5.5A = "YES	



Question Number	Question / Section / Condition	Response
5.5B	Circle the type(s) of asbestos exposure that describe(s) how you were exposed	Multiple responses allowed I did not handle asbestos directly, but asbestos was present on overhead pipes or ceilings, flooring, brakes, or other materials. I did not handle asbestos directly, but I worked in area where asbestos dust was created by others. I handled asbestos or asbestos containing products directly and created asbestos dust. I do not wish to answer Don't know
5.5C	How many years did you work in a job with asbestos exposure (enter 0 if less than one year)?	One Response allowed: XX Years I do not wish to answer Don't know
5.5D	Are you working in a job with asbestos exposure now?	One response allowed: YES NO I do not wish to answer Don't Know
ENDIF		
6	Home Environment, Community, and Hobbies (Environmental Exposures)	
6A	Are there any traditional farm animals that live on your land or that you visit on a regular basis?	One response allowed: YES NO I do not wish to answer Don't Know
6B	Have you ever removed mold in your home because of its effect on your health?	One response allowed: YES NO I do not wish to answer Don't Know
6C	Have you ever lived in a home that had elevated radon levels?	One response allowed: YES NO I do not wish to answer Don't Know

Question Number	Question / Section / Condition	Response
6D	Please select from the list below any hobbies you participate in	<p>Multiple responses allowed</p> <p>Hobbies utilizing epoxy resin adhesives</p> <p>Indoor swimming and/or indoor ice-skating</p> <p>Metal working, including machining, grinding</p> <p>Pottery work, including glazing</p> <p>Stained glass work</p> <p>Welding, brazing or soldering</p> <p>Woodworking, including sanding</p> <p>None</p> <p>I do not wish to answer</p>
IF COND	<p>Response to 6D =</p> <p>Hobbies utilizing epoxy resin adhesives OR</p> <p>Indoor swimming and/or indoor ice-skating OR</p> <p>Metal working, including machining, grinding OR</p> <p>Pottery work, including glazing OR</p> <p>Stained glass work OR</p> <p>Welding, brazing or soldering OR</p> <p>Woodworking, including sanding</p>	
6E	How many total hours a week, on average, do you participate in all the above hobbies combined?	<p>One Response allowed:</p> <p>XX Hours</p> <p>(1,2,3,4,5,6,7,8,9,10, &gt;10)</p> <p>I do not wish to answer</p> <p>Don't know</p>
ENDIF		
7	Health Care Utilization	

Question Number	Question / Section / Condition	Response
7A	About how long has it been since you last saw or talked to a doctor or other health care professional about your own health? Include doctors seen while a patient in a hospital.	One Response allowed: Never 6 months or less More than 6 months, but not more than 1 year ago At least 1 year, but not more than 2 years ago At least 2 years, but not more than 5 years ago At least 5 years ago I do not wish to answer Don't know
7B	Do you wish to see a DoD or VA health care provider to discuss your health concerns related to airborne hazards during deployment?	One response allowed: Yes No Don't Know
8	Contact Preferences	
8A	How do you prefer to receive updated information on burn pits and other airborne exposures?	One response allowed: Email from VA VA Web site Through my health care provider Via social media (e.g., twitter, facebook) Letter/US. Mail Through the Department of Defense Through a Veterans Service Organization I do not wish to receive any updated information
8B	Do you use the Internet?	One response allowed: YES NO I do not wish to answer Don't Know
8C	Do you send or receive emails?	One response allowed: YES NO I do not wish to answer Don't Know

## A.6. Option Period 1 Requirements - Preliminary Designs

Requirements
<p>1) Questionnaire usability enhancements (such as decrease scrolling) (Option Period 1 – OWRN: 3.1.2A)</p> <p>The NODE.js/HTML5 based Registrant Portal will be enhanced to include few questions per page, including investigating providing a single question per page.</p>
<p>2) Provide the ability for VHA staff to supply subsets of eligible participants with online health risk communication and outreach information on an ongoing and recurring basis. (Option Period 1 – OWRN: 3.12,3.12.1). Provide ability for VHA staff to electronically request additional information from eligible participants on an ongoing and recurring basis. . (Option Period 1 – OWRN: 3.13, 3.13.1, 3.1.1A, 3.13.2, 3.13.3)</p> <p>We will use the VIERS user preferences service to determine the best means of communicating with the individuals. We will support email at a minimum and will investigate the availability and use of eBenefits communication mechanisms. eMails will include links to the online resources and forms.</p>

## A.7. Option Period 2 Requirements - Preliminary Designs

<p>1) The Bi-Directional DoD ILER interface (Option Period 2 – PWS 5.6). Automated data collection from external systems such as the Computerized Patient Record System (CPRS), the Corporate Data Warehouse (CDW), Medical Domain Web Services (MDWS), VistA, and the DoD (such as occupational exposure data, Individual Lifetime Exposure Record (ILER))</p> <p>We will engage in design discussions with the enterprise services support teams, including ILER, when the data to be collected is provided, the services are ready and the task is funded.</p>
<p>2) Provide the ability to electronically notify the appropriate health care facility's staff to schedule an in-person health concern and exposure evaluation. (Option Period 2 – OWRN: 3.9, 3.9.1, 3.9.2)</p> <p>We will work with the VA system architects to identify an enterprise service for notifying scheduling staff of the need for an evaluation appointment.</p>
<p>3) Provide the ability for a Veteran to request contact with a member of his/her assigned PACT via the web portal. (OWNR: 3.14)</p> <p>We will work with the VA system architects to identify an enterprise service for a participant to contact their assigned PACT.</p>
<p>1) Provide the ability to monitor Veterans requesting in person clinical appointments and those who were scheduled and those who had completed appointments. (Option Period2 - OWRN: 3.16.4)</p> <p>As part of base period, we will query CDW or use an as-yet-to-be-identified enterprise service to determine the dates of encounters with documentation created using the AHOBPR template. To meet the requirement to identify those requesting evaluations and those who have evaluations scheduled, we will work with the VA system architect to identify an enterprise service that will return this information. If such services are not available, we will allow authorized staff users of AHOBPR to record and track these events manually via online forms.</p>

- 2) Provide the ability for open burn pit exposure evaluation data to be integrated into the EHR. (Option Period 2 – BN 4, OWNER: 4.1, 4.1.1, 4.4, 4.4.1, 5.1.2). Update VistA health record via CRS integration (e.g., CPRS, MDWS, ETL)

We will make available the AHOBPR web services for calling from CPRS. We will coordinate with the CPRS developer the testing and certification of these calls.