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Studies and Analysis on ILER Capabilities Enhancement

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TABLE OF CONTENTS

SECTION	Page
LIST OF FIGURES	vi
LIST OF TABLES	vii
ACKNOWLEDGMENTS	viii
1.0 DISCOVERY PHASE SUMMARY	1
2.0 DISCOVERY PHASE BACKGROUND.....	1
3.0 DISCOVERY PHASE METHODS.....	1
4.0 DISCOVERY PHASE RESULTS.....	2
5.0 DISCOVERY PHASE CONCLUSION	7
6.0 INITIAL DEVELOPMENT PHASE SUMMARY	14
7.0 INITIAL DEVELOPMENT PHASE RESULTS	14
8.0 TECHNICAL UPDATES AND DASHBOARD MOCK-UPS.....	26
9.0 PRODUCT DELIVERY PHASE SUMMARY AND RESULTS	38
10.0 FINAL CONCLUSION AND COAs	42
11.0 REFERENCES	47
12.0 LIST OF ACRONYMS	48
APPENDIX A – List of Contacts and Contributors	50
APPENDIX B – How to Gain Access to MIP	51
APPENDIX C – MedCop Fact Sheets.....	53
APPENDIX D – AFCENT/SG Pre-Deployment Site Assessment (PDSS) Checklist	55

LIST OF FIGURES

	TITLE	Page
Figure 1.	Environmental Health (EH) Exposure Pathway Data for Individual.....	3
Figure 2.	EH Pathway Data by Location.....	4
Figure 3.	Periodic Occupational and Environmental Monitoring Summary (POEMS) Data	4
Figure 4.	Number of Individuals Deployed to a Specific Location	4
Figure 5.	GPS Coordinates	4
Figure 6.	Exported Industrial Hygiene (IH) Sampling Results Andersen AFB.....	5
Figure 7.	Cohort Example	5
Figure 8.	Command and Control Incident management Emergency Response Application (C2IMERA)	7
Figure 9.	Dashboard OEHSA CSM Pathways by Program Office” report in BCS	8
Figure 10.	Dashboard ILER Location Data Andersen AFB	9
Figure 11.	ILER Health Effects Capability Example.....	21
Figure 12.	Wright-Patterson, Lead, and Firing Range Dashboard	29
Figure 13.	Al Udeid, Explosive Ordinance Disposal (EOD) SEG Dashboard	30
Figure 14.	Real World Papua, New Guinea Dashboard.....	31
Figure 15.	Real World Heat Stress Dashboard.....	32
Figure 16.	Physical Hazards by Location Dashboard, First Page	32
Figure 17.	Physical Hazards by Location Dashboard, Second Page.....	33
Figure 18.	Physical Hazards by Location Dashboard with Tool Tip	34
Figure 19.	Physical Hazards by Location Dashboard (ASIMS), Third Page.....	34
Figure 20.	Physical Hazards by Location Dashboard (OEHSA), Fourth Page.....	35
Figure 21.	Physical Hazards by Location Dashboard (ILER), Fifth Page	35
Figure 22.	Physical Hazards by Location Dashboard, Sixth Page	36
Figure 23.	Physical Hazards by Location Dashboard, Sixth Page with Note	36
Figure 24.	Noise Reduction Dashboard, Green Light Choice Page.....	37
Figure 25.	Noise Reduction Dashboard, Red Light Choice Page	37
Figure 26.	Vector Severity by Location, Dashboard.....	38

Figure 27.	ILER Data Sources	39
Figure 28.	Physical Hazards by Location Dashboard, with Severity	40
Figure 29.	Physical Hazards by Location Dashboard Help Button.....	41
Figure 30.	Physical Hazards by Location Dashboard (Outcomes), Pie Charts	42
Figure 31.	ILER/Genesis Interface Interoperability.....	45
Figure 32.	ILER Africa Location Information	46

LIST OF TABLES

	TITLE	Page
Table 1.	ILER Capabilities.....	2
Table 2.	What ILER Cannot Do and Courses of Action (COA).....	5
Table 3.	Way Forward	9
Table 4.	Courses of Action (COA)	11
Table 5.	What ILER Cannot Do and COAs from Discovery Phase	14
Table 6.	Updates from Table 3 in Discovery Phase.....	15
Table 7.	Discovery Phase COA Updates	21
Table 8.	Final COA Listing.....	43

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1.0 DISCOVERY PHASE SUMMARY

The Individual Longitudinal Exposure Record (ILER) system itself can provide beneficial information to aid in mission accomplishment, operational decision making and risk reduction to personnel. However, in the operating state that the ILER is in, it lacks in what it can provide to users of the system. The systems that feed into ILER to provide this information are the Defense Occupational and Environmental Health Readiness System (DOEHRS), Armed Forces Health Surveillance Branch (AFHSB), Defense Manpower Data Center (DMDC), Military Data Repository (MDR), and Veterans Affairs Registry (VA Registry). However, these systems can only provide a certain amount of information. The exploration of the system has been conducted (what the ILER can and cannot provide), Dashboard mock-ups have been created and courses of action have been developed for a way forward to develop a useful health-based tool for mission planning. The project has been broken down into three different phases as various deadlines/deliverables were completed. They are the Discovery Phase, Initial Development Phase and Product Delivery Phase. There are significant updates and findings for each phase and are captured in their respected sections below.

2.0 DISCOVERY PHASE BACKGROUND

The ILER leverages the information available in the Defense Occupational and Environmental Health Readiness System Industrial Hygiene (DOEHRS-IH), MHS, MDR, DMDC, and VA Registry. These systems provide data to ILER providing a person-centric record that can be utilized by clinicians, claims/benefits processors, program and policy analysts, researchers, and informatics/analytics professionals to enhance medical care and perform comprehensive health surveillance. The ILER will provide a central hub of exposure-related data that will collate, present, and/or provide available occupational and environmental exposure information for individuals over the course of their careers to support the needs of the DoD and the VA. It will support complex analyses by medical providers, epidemiologists, and researchers to assess both individual and eventual population-level exposures and outcomes. The question is, can the ILER aid in mission planning on various fronts to help various beneficiaries (Air Staff, XP, Line Officers, etc.) make decisions?

3.0 DISCOVERY PHASE METHODS

Exploration of the capabilities and limitations of the ILER was conducted. Exploration of the relationship of DOEHRS and ILER was also conducted. These findings are described below, as well as, in the attached ILER Supporting Document. The DOEHRS, ILER and Aeromedical Services Information Management System (ASIMS) data dictionaries were provided to Full Time Employee (FTE) 2, to reference and research data pipelining avenues to construct health-based Dashboard mock-ups/health-based tools (prototypes). The data dictionary was not part of the initial proposal. After interviewing line officers and other units, ASIMS has been a topic of discussion to explore, see Table 2, for more information. Along, with exploration of the ILER system, various units were contacted, and research was conducted to identify what systems/tools mission planners use to plan their missions, and if any of these are health-based. The answer is that currently, there are no health-based systems/tools that mission planners utilize when planning missions. FTE 1 and 2, both have access to Tableau and FTE 2 has been working to gain access to the Military Health System Information Platform (MIP), to eventually pipeline

data from the various systems that were and will be explored in this study. This summary of actions was conducted over a 3–4-month period.

4.0 DISCOVERY PHASE RESULTS


Table 1. ILER Capabilities

What Can the ILER currently do? (Initial Operating Capability (IOC) to Final Operating Capability (FOC) will differ))	Enhance Decision Making
Pull EH Exposure pathway data and associate it to members deployed to or stationed at various locations (Figure 1). ILER will list EH data for various locations (Figure 2).	Provides decision makers an overall picture of potential exposures to various hazards and their exposure pathways (these are based off the Occupational and Environmental Health Site Assessment (OEHSA) data in DOEHRS as well as DOEHRS-IH data)). This data provides awareness to previously unknown risks. They could ensure proper controls are in place or accessible for members to decrease potential for exposures, not only for chemicals, physical hazards as well.
Pull vector data (included in Exposure Pathway data).	Provides awareness to previously unknown risks. They could ensure proper controls are in place or accessible for members to decrease vector borne diseases, illnesses, etc.
Provide GPS coordinates for various locations and sampling events (Figure 5). Pull health risk data from various locations to include installations, camps, buildings, and various other sites. These are not exclusive to the Air Force. See ILER Supporting Document, slide 15 for more details.	Provides exact location where operations were/are to be conducted and where sampling events took place, so decision makers are aware of location of such threats/health hazards at various locations.
Pull individual POEMS for various locations can be pulled from ILER (Figure 3). Display POEMS data associated with where members were deployed to or stationed at.	Provides awareness to known risks at various locations.
If EH samples that were taken during a specific period and the individual was at that location, the ILER will list the hazards that the individual was potentially exposed to. Ex. Member deployed to Kirkuk, Iraq in 2007. EH sampling data will be attached to that member's record if it was conducted during the timeframe they were there.	Provides awareness to known risks at various locations and to different personnel. This could provide decision makers with information that if members come back from specific location with medical conditions, decision makers could ensure proper logistical supplies, and additional medical support/hazard controls are incorporated in the next mission to that location.

Provide a listing of ALL members who have deployed to a specific location. As an example, Figure 4, ILER will pull a listing of all members who have deployed to all of the locations within ILER.	
Pull IH sampling results for various processes (Figure 6). It will show results for different shops, processes, Similar Exposure Groups (SEG), controls that are in place, etc. Reference ILER Supporting Document, slide 19 for more information. ILER will flag overexposures. ILER will pull a listing of members who are part of the SEG for sampling events (COHORT), see Figure 7.	Provide decision makers with health hazard assessment data for various operations and SEGs associated. Decision makers could ensure members are provided proper controls to mitigate potential exposures.

[OE MIS ILER Supporting Doc-PPT \(vbrick.com\)](#) View this introductory video content.

Bottom line is that based on the data in Table 1, decision makers will be able to make appropriate decisions from the information given to decrease risk to personnel and enhance mission success. However, the ILER itself needs supporting data aggregated from other systems to be truly affective for mission planning. This is explained more in detail in section 5.



EDIPI/DoD ID	Last Name	First Name	Middle Name	Last 4 SSN	Date of Birth	Gender
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↑ Back to top

▼ Exposure Pathways

[Count: 11]

Information from DOEHS-IH

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This information is based on population level assessments and does not represent an individual exposure

Potential Health Hazard / Exposure Route	Threat Source	Environmental Media	Priority	Exposure Pathway Start / End Date	Personnel Assigned To Exposure Pathway	Location	Samples / Attachments / Assessments
<div>--- ALL ---</div>	<div>--- ALL ---</div>	<div>--- ALL ---</div>	<div>--- ALL ---</div>				
> Bacteriological and Chemical Contamination	Bottled Water	Water	Low	01/01/2003 01/01/2016	No	AL UDEID	Environmental Health Samples: 2

Figure 1. EH Exposure Pathway Data for Individual

Potential Health Hazard / Exposure Route	Threat Source	Environmental Media	Priority	Exposure Pathway Start / End Date	Samples / Attachments / Assessments
Particulate Matter	Dust	Air	Low	01/01/1970 11/27/2014	
Fuel - VOCs	Bulk Refueling (Delivered via truck)	Soil	Low	01/01/1970 11/27/2014	

Figure 2. EH Pathway Data by Location

Location	Country	Date Start at Location	Date Stop at Location	Health Risks Summary/Estimates	POEMS File	POEMS Begin Date	POEMS End Date	Action
Base Camp SABALU-	Afghanistan	11/01/2011	11/03/2011	Health Risks and Medical Implications	u_afg_bagram update poems 2010-2013.pdf	08/23/2011	05/31/2013	

Figure 3. POEMS Data

Combatant Command (COCOM)	Location Type	Location Name	Country	State	Start Date	End Date
AFRICOM	Base Camp	GAROUA	Cameroon			

Figure 4. Number of Individuals Deployed to a Specific Location

Figure 4 is an example that displays the number of Service members deployed to Garoua, Cameroon.

City/Location	Base Camp	Distance	Bearing	Geocode
MANAS	Base Camp BISHKEK-MANAS	1 km	SW (208°)	

Figure 5. GPS Coordinates

UNCLASSIFIED (U)/ CONTROLLED UNCLASSIFIED INFORMATION (CUI)						
COCOM	Location Type	Location Name	Country	State	Exposure Start	Exposure End Date
NORTHCOM	Installation	ANDERSEN AFB GUAM	United States (NATO member)			
Industrial Hygiene	Count: 328	Information from Military Health Systems Data Repository (MDR)		**Epidemiology Correlation Required for Individual Exposure Levels**		
Potential Hazard/Exposure Route	Exposure Level/Occupational Exposure Limit Value	Additive Mixture Calculation	Assessment Start/End Date	Assessment Type	Potential Target Organs	Potential Symptoms
NOISE	102.9927 dBA OEL Value: 84 dBA		9/17/2017	Industrial Hygiene		
Processes(Shop)		Weapons Qualification(NSWUJ / ORDNANCE) Weapons qualifications(HSC-25 / OPERATIONS) Weapons Qualification and Cleaning(USS OKLAHOMA CITY/Torpedo Division) Weapons Firing Training(NMCR 133/Armory) Weapons Qualification(USS OKLAHOMA CITY/Culinary Division) Weapons Qualification(USS CHICAGO/Deck Division)		Assessment Status	Approved by QA	

UNCLASSIFIED (U)/ CONTROLLED UNCLASSIFIED INFORMATION (CUI)						
COCOM	Location Type	Location Name	Country	State	Exposure Start	Exposure End Date
NORTHCOM	Installation	ANDERSEN AFB GUAM	United States (NATO member)			
Industrial Hygiene	Count: 328	Information from Military Health Systems Data Repository (MDR)		**Epidemiology Correlation Required for Individual Exposure Levels**		
Potential Hazard/Exposure Route	Exposure Level/Occupational Exposure Limit Value	Additive Mixture Calculation	Assessment Start/End Date	Assessment Type	Potential Target Organs	Potential Symptoms
	OEL	Navy 8 hr TWA (NOISE)		Action Level	80 dBA	
	Similar Exposure Group (SEG)	Weapons qualifications				
	Hazard Controls	Double Protection, NOC Earplug Other				
SEG: Weapons qualifications						
Description						
SEG Personnel Count		32				

Figure 6. Exported IH Sampling Results Andersen, AFB

Note: This is an exported Location search for Andersen, AFB. The ILER pulls SEG data from DOEHRS.

Personnel Name	Location COCOM	Location Type	Location Name	Potential Hazard	Exposure Level	Processors/Shops/Locations	Hazard Controls	Potential Symptoms	Exhibit
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			
	PACOM	Installation	YOKOSUKA	CADMIUM	Inhalation	Burn-Off Oven (SRF C-910B X-57L Laggings/Ci Coveralls, Tyvek?, Air Purifying (APR))			

Figure 7. COHORT Example

Table 2. What ILER Cannot Do and COA

What ILER Cannot Do	What Can Perform Function or Where to Find Information?	COA (During This Project)
Generate metrics of any sort	DOEHRS Business Objects (BCS), ASIMS	Utilize BCS to pull applicable metrics
Generate any medical readiness stats/metrics	ASIMS	Gain access to ASIMS or utilize ASIMS data dictionary to pull metrics. The ASIMS data dictionary is available for this project.
Pull all OEHS data	DOEHRS	Gain access to applicable IHPO in DOEHS to access OEHS data.
Data not readily available and inconsistencies when running various searches (ILER)	DOEHRS-IH, OEHS, ILER Exposure/Location Searches (the data is there, just need to find it). Reference ILER Supporting Document (above), slides 27-28.	Utilize DOEHS and ILER systems to access applicable data that is not readily available. Perform searches until applicable data is located. Utilize DOEHS and ILER data dictionaries to figure out data misconnects. These are available for this project.

Look up exposures by Shop or Process	DOEHRS (Shop/SEG), BCS	Run applicable BCS report and/or gain access to specific DOEHRs Industrial Hygiene Program Office (IHPO).
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NOTEWORTHY ILER/DOEHRS DATA ISSUES/NEED FOR PLANNING TOOL

Some of these issues directly correlate with what the ILER cannot do. However, the fix is out of the scope of this S&A Project. Certain Incident Data from DOEHRs cannot be pulled by ILER due to user entry errors in DOEHRs. ILER cannot provide Incident reports from all of the IHPOs due to lack of information or data not being entered correctly. It was verified that various IHPOs are not utilizing DOEHRs DERGs when entering this data. An example of this is a B-52 crash at Andersen AFB, Guam. **(DERGs must be followed for information to be populated into the ILER system)**. Also, the ILER Program cannot provide DOEHRs data from every IHPO.

When searching the ILER Exposure Search, the exposure data pulls differently, depending on how it is entered into DOEHRs, (ex. PFOS/PFOA vs PFOS + PFOA). This is a DOEHRs data entry issue.

There is data missing from individuals personal record to include deployment history and incident data. The incident data is from DOEHRs data entry errors. The deployment history is out of the scope of this project, but some deployments are only considered TDY and do not get documented as deployments. The result of this is missing data in an individual's record and **potential undocumented exposures**.

The individual's exposure record is based on that person being physically at a location when an event occurred. However, there are issues with unit's capability to properly document short term deployments. These issues often occur with Contingency Response Groups (CRG), and other specialized units. Thus, potential exposure data is not linked to the member and there are undocumented exposures for individuals. CRG units often do not have any annotations in DOEHRs or rights to add information from their missions into DOEHRs.

After speaking with the USAFE CRG mission planners, it was determined that consolidating a data pipeline from DOEHRs, ASIMS, etc. into a **"one stop shop"** would be beneficial as they may have as few as 72 hours to get ready for a mission. That means, deciding on a bed down location, packing their gear, all logistics must be ready to go. After speaking with the 36th CRG, it was determined that they would also find a **"one stop shop"** data pipeline for information.

This paragraph is out of the scope of the project and but is noteworthy. The 36th CRG does not use any specific systems or tools for mission planning. They do not have DOEHRs access to be able to look up existing data (if it is in DOEHRs), for locations that they deploy to. Their deployments do not get entered into ASIMS, often due to the length of the deployment and they are overlooked. These are often considered TDYs and their movement to another location does not get tracked, which will not reflect in the member's ILER. There is missing exposure data for these members. Their ADVON team's findings are not tracked in DOEHRs, they have no end product to document data. They do not have access to DOEHRs to enter data because it will throw off metrics. While on deployment, they have no way to document medical incidents, specifically,

Anomaly's Health Incidents (AHI). (These incidents are related to when something happens to a member on these deployments, and they eventually get medically retired or a member develops a serious health condition). They will have to hand write information and it will be transcribed into the member's record upon return from deployment. They also do not have access to Healthcare Artifacts and Image Management Solution (HAIMS) data while on deployment, they have no access to labs (and other medical data) for members. This is an issue because these issues are low priority. This is part of what this S&A project would be beneficial to prevent.

After interviewing various medical and emergency management personnel, it was discovered that a health-based tool would have been useful when the COVID-19 pandemic started. A tool could have aided in planning for the following: if installations had to sequester essential personnel to base, logistics (food, medical supplies, equipment), impact on daily ops that needed to continue amidst the contingency plans, information flow, length of potential staff impact (how many days members were out of work 1 day or 21 days), isolation/quarantine requirements, increased/ new security needs, facility needs (i.e. where would people sleep and shower if sequesters to a certain location), etc. Some installations utilized the Command and Control Incident management Emergency Response Application (C2IMERA) system (Figure 8), during COVID to help track status of units and personnel, etc. C2IMERA can provide planners with an overall snapshot of asset readiness, see Figure 8.

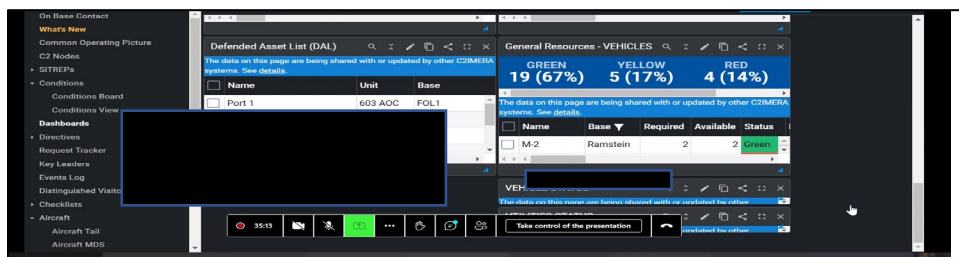


Figure 8. C2IMERA

ILER cannot provide an overall readiness status of units. However, the data could be pipelined from ASIMS and other medical systems. Data that could potentially be pulled is (but not limited to) vaccine status of members and units, medical coding on members of the unit (unfit for mission), etc. PII could be a concern.

5.0 DISCOVERY PHASE CONCLUSION

The overall conclusion is that yes, the ILER data can be utilized to create a useful Dashboard/tool for mission planners, and enhance decision making, see Figures 9 and 10 for examples. However, for it to be effective (limit risk and increase mission success), the ILER should not be used by itself due to its limitations (as stated in Table 1). The bottom line is that data would need to be aggregated from other medical health system databases; see Table 3 for way forward and potential outcomes.

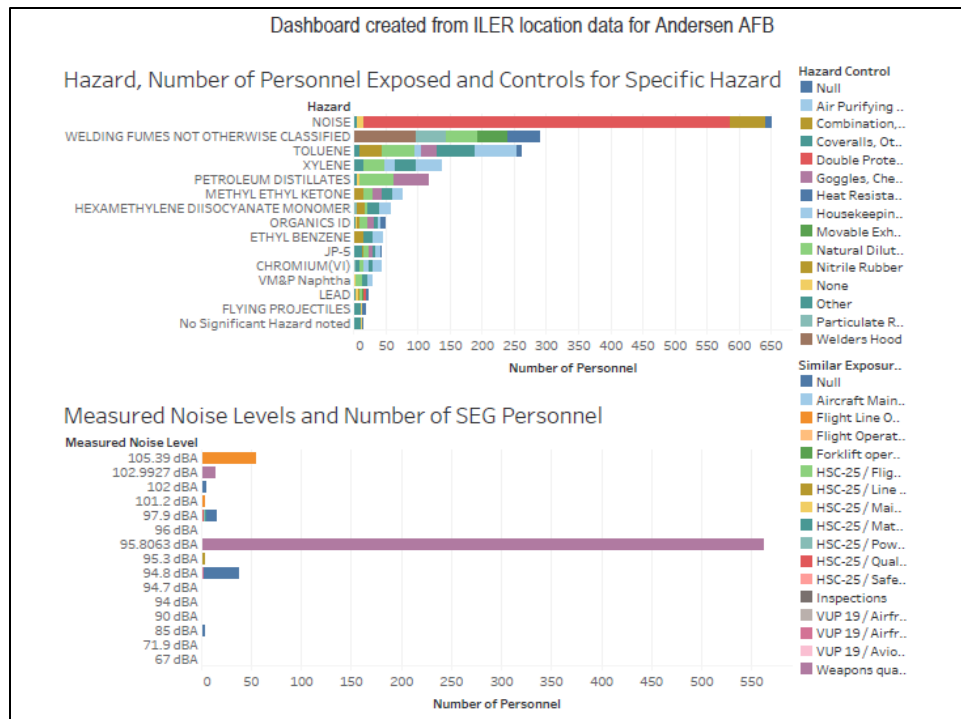


Figure 9. Dashboard ILER Location Data Andersen AFB

This Dashboard was created in Tableau, from an “ILER location search for Andersen AFB” (see attached ILER Supporting Document, slides 17-20 for other information). This is the IH data pulled from the ILER system. In creating this Dashboard from the data, assumptions can be made on mission impacts and predictions can be made for mission success. For this specific example, anticipating that noise, is the #1 Hazard (which coincidentally impacts mission accomplishment), and the exposure level is 105.39 dBA, appropriate COAs can be selected to mitigate the potential hearing loss associated with mission accomplishment for that SEG. Note: the report contains more data to include hazard controls, other exposure routes and levels, etc. This Dashboard has interactive functions but cannot be used to predict mission outcomes and that is one function we would like to make capable to intended users/beneficiaries.

Dashboard created from the “OEHSA CSM Pathways by Program Office” report in BCS

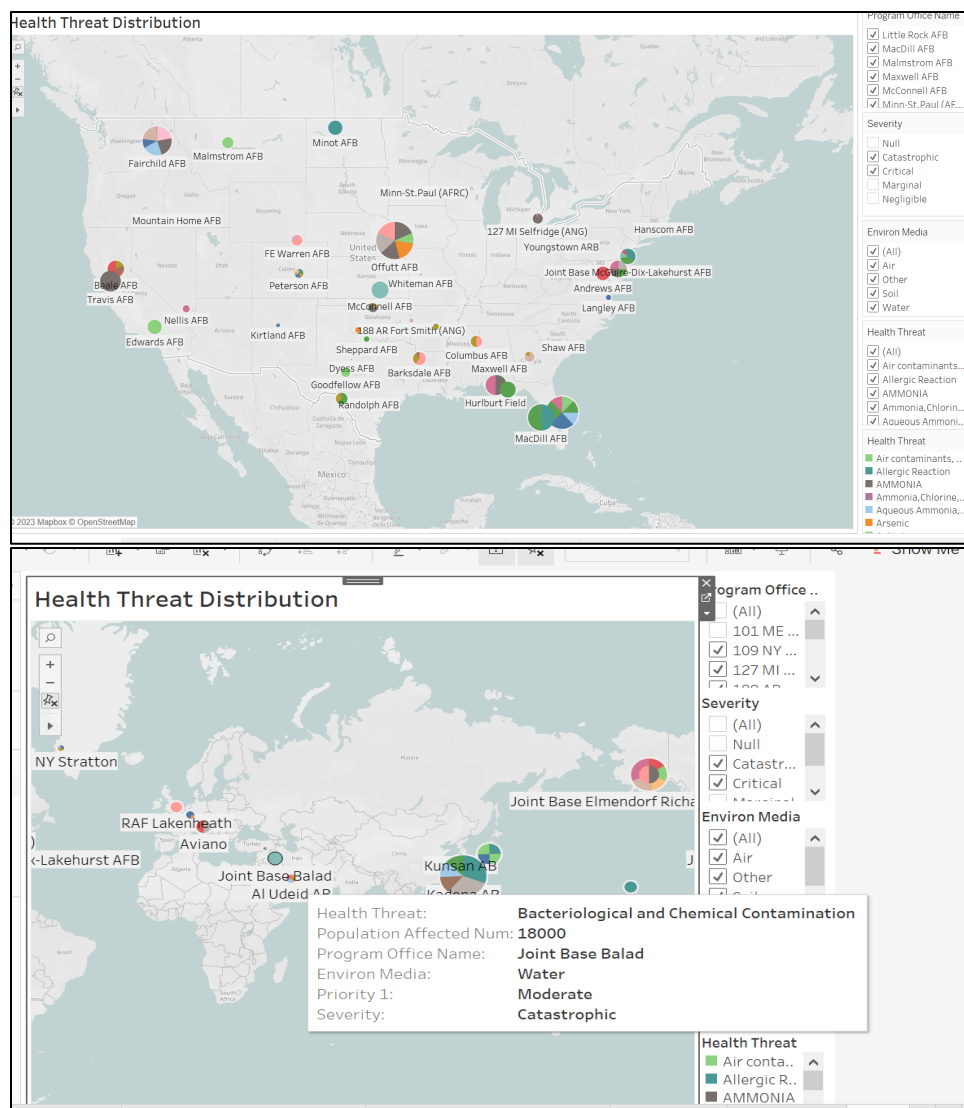


Figure 10. Dashboard “OEHSA CSM Pathways by Program Office” report in BCS

This is a Dashboard mock-up created in Tableau, using the “OEHSA CSM Pathways by Program Office” report in BCS. This Dashboard would give decision makers a snapshot of health threats at a specific location, the number of personnel affected, and the severity of the health threat. This Dashboard has interactive functions but cannot be used to predict mission outcomes and that is one function we would like to make capable to intended users/beneficiaries.

Table 3. Way Forward

Way Forward	Projected Outcome
Continue to explore ILER capabilities as they are changing and have changed since the beginning of this study.	Bridge data gaps by pipelining applicable data from DOEHSR/ILER/BCS/ASIMS to provide useful information for mission planning and to create mock-up Dashboards. (One of the goals of the dashboard/tool is for it to be used in a
Research/explore items from Table 1	
Explore ASIMS data (occupational health stats, vaccine stats, medical codes	

on unit members, etc.)), various BCS Reports, DOEHRs-IS and EH data.	predictive manner to create worst/best case scenarios and have appropriate COAs).
Explore the Medical Protection System (MEDPROS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups and gain access to system	Bridge data gaps/needs of these units and create Dashboard mock-ups.
Explore the Enterprise Safety Application Management System (ESAMS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups. Gain access to system.	
Explore the Physical Readiness Information Management System (PRIMS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups. Gain access to system.	
Conduct follow up interviews with CRG and Mission Sustainment Teams (MST), specialized units to gauge what their needs are as far as what information they would find useful for planning.	
Continue to develop mock-up Dashboards. Use standard reports generated from the ILER and other systems. As the dashboards become more sophisticated, other means of drawing data from these systems could be developed. The plan is to create dashboards with combined ILER and DOERS data sets, and then create mock-ups using data sets from ILER, DOEHRs and ASIMS...and so forth.	
Gain access to the Military Health System Information Platform (MIP) and explore its capabilities.	The MIP provides a potential solution for collecting and aggregating data for this project. The MIP houses ASIMS and DOEHRs many other data sources. The MIP Data Catalog will be used to explore its data sources. Within MIP, AVHE provides a production system and a pre-production system. AVHE offers Anaconda, RStudio, PyCharm, Tableau, and many other applications for development work. (At this stage

	(discovery phase), FTE 2 could perform work in the pre-production area. As dashboards are developed and deployed, FTE 2 would move the work to the staging area in production to eventually be in the "full" production side. MIP provides two platforms for production: AWS and .com. Applications and dashboards can be deployed to either).
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Table 4. Courses of Action COAs

COA	Comments/Within Project Scope/Included in Proposal?	Outcomes/Explore within the timeframe of this project?
Explore the Defense Medical Logistics Standard Support (DMLSS) system.	Discovery - after interviewing various units and personnel, that medical logistics was a common limitation to mission planning. This is out of the project scope and was not included in the proposal.	Determine if data from the system is beneficial to for mission planning purposes and incorporate into a mission planning tool/Dashboard mock-up. Obtain the data dictionary.
Explore the Air Force Safety Center (AFSAS)/DOEHRS Risk Assessment Code (RAC) data.	AFSAS can provide various reports from safety issues, RAC occupational health illnesses, etc. It can provide metrics on these items as well and provide overall unit stats/issues that could be detrimental in decision making and can provide risk management information, stats, and COAs. (DOEHRS and AFSAS provide different types of RAC data). This is out of the scope of the project and was not included in the proposal.	Pipeline data from AFSAS into Dashboard mock-ups. Obtain the data dictionary.
Explore utilizing Toxic Industrial Chemicals/Toxic Industrial Materials (TIC/TIM) assessments for some Locations.	TIC/TIM data can be useful in mission planning and ADVON actions. This is out of the scope of this project.	Determine the best way forward to obtain TIC/TIM assessment data. (Bioenvironmental Engineering (BE) offices, DOEHRS, Medical Readiness Office and Anti-terrorism

		Officer (ATO).BE office.) If SIPR version of TIC/TIM needed, appropriate security clearance is needed and will have to be coordinated with Medical Readiness Office and/or ATO.
Explore working with the DAF Unit Suicide Risk Analysis Modeling project	<p>Discovery - Mental health concerns identified as potentially affecting mission success. This is out of the scope of the project and not included in the proposal. There is a good working relationship with the POC for the DAF project and they are aware of our intent (in the future) to utilize MH indicators to include in Dashboard mock-ups.</p> <p>This is inside project scope.</p>	<p>Pipeline mental health indicator data from ASIMS for various locations into Dashboard mock-ups.</p> <p>Obtain the data dictionary.</p>
Explore C2IEMRA capabilities and correlate them into health-data.	<p>Met C2IMERA system developers. They shared a great interest in this project and potentially incorporating what is created into their system. Users of the C2IMERA system have addressed that having health data incorporated into this system would be beneficial and drastically increase oversight of unit readiness and barriers to mission success. It has been identified that the operational status of the clinic functions (what is fully operational, limited operations, and nonoperational), a hazard tracking and better patient tracking system then what is currently built into C2IMERA, would be needs. Note: HIPPA would be a concern.</p> <p>This is outside project scope.</p>	<p>Create stand-alone Dashboard mock-ups to mimic C2IMERA.</p> <p>Incorporate a health-based tool into the C2IMERA.</p>

Explore Battlefield Assisted Trauma Distributed Observation Kit (BATDOK)	<p>The TAK (Tactical Assault Kit or Tactical Awareness Kit), part of which is ATAK (Android-based TAK), is a tactical command and control common operating procedure (COP), developed by AFRL/RI in Rome, NY.</p> <p>There is currently an interface between TAK and BATDOK to transfer medical information.</p> <p>This is outside project scope.</p>	<p>Determine if the development of a mission planning tool similar to BATDOK could be developed.</p> <p>This will not be fully explored within the timeframe of this project.</p>
Fix data issues/content within the ILER and DOEHRS.	<p>Discovery - See “noteworthy” section for more information. The example given from Andersen AFB, has been identified and discussed with USAFSAM members that focus on “Incident” data.</p> <p>This is outside project scope.</p>	<p>Ensure DOEHRS DERGs are followed to ensure accurate data is feeding into ILER.</p> <p>This will not be explored within the timeframe of this project.</p>
Explore other tools/applications/handbooks/references/websites that could support a health-based planning tool.	<p>Applications such as WISER, the Emergency Response Guide (ERG), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide, various references, and websites like the Environmental Safety and Occupational Health (ESOH) Service Center could provide useful data.</p> <p>This is outside project scope.</p>	<p>Determine if utilizing these or any data from these sources would be beneficial to incorporate data into the mission planning tool.</p> <p>This will not be explored within the timeframe of this project.</p>
Create a way for specialized units to document short term deployments. Create section within DOEHRS specifically for this?	<p>Discovery - See “noteworthy” section for more information.</p> <p>Data is missing from ILER and DOEHRS for various members.</p> <p>This is outside project scope.</p>	<p>Ensure potential exposures are documented appropriately, along with other medical information.</p> <p>This will not be explored within the timeframe of this project.</p>

6.0 INITIAL DEVELOPMENT PHASE SUMMARY

This phase was a technical ‘Dashboard’ mockup(s) report: Orienting on ‘What ILER enhancement may provide that’s supportive of line AF and Air Staff needs?’ The ‘Dashboard’ mockups are supportive and demonstrate value to mission planners on multi-tiered levels: Enterprise, MAJCOM, & IHPO. Also, the COA list from the Discovery Phase was updated. The COA list has been cross referenced with proposed mockups. for ‘roll-up’ metrics, reports, and management tools necessary to convey value and bridge gaps.

We have been successful in this phase of the project. During this phase of the project, we have been able to leverage ILER data to create various Dashboards that will support Air Force line and Air Force Staff needs. We have also been able to incorporate other MHS data to aid with mission planning needs and potential outcomes. The information below will support this objective.

7.0 INITIAL DEVELOPMENT PHASE RESULTS

Major progress has been made in this project and the majority of the COAs from the Discovery Phase have been completed, along with line items listed in Table 2. See comments below Table 5, for more information.

Table 5. What ILER Cannot Do and COAs from Discovery Phase

What ILER Cannot Do	What Can Perform Function or Where to Find Information?	COA (During This Project)
Generate metrics of any sort	DOEHRS Business Objects (BCS), ASIMS	1. Utilize BCS to pull applicable metrics
Generate any medical readiness stats/metrics	ASIMS	2. Gain access to ASIMS or utilize ASIMS data dictionary to pull metrics. The ASIMS data dictionary is available for this project.
Pull all OEHS data	DOEHRS/BCS	3. Gain access to applicable IHPO in DOEHRS to access OEHS data.
Data not readily available and inconsistencies when running various searches (ILER)	DOEHRS-IH, OEHS, ILER Exposure/Location Searches (the data is there, just need to find it).	4. Utilize DOEHRS and ILER systems to access applicable data that is not readily available. Perform searches until applicable data is located. Utilize DOEHRS and ILER data dictionaries to figure out data misconnects. These are available for this project.
Look up exposures by Shop or Process	DOEHRS (Shop/SEG), BCS	5. Run applicable BCS report and/or gain access to specific DOEHRS Industrial Hygiene Program Office (IHPO).

Updates on COAs above

1. We have utilized BCS to pull metrics for this project. However, metrics from DOEHRS are not applicable at this time (i.e. Enterprise, MAJCOM metrics for compliance, etc.).

2. We have gained access to ASIMS via, the training website, we have explored the possibility of accessing information through the Military Information Platform (MIP). This is not possible at this time. This will be explained in more detail in the Dashboard Mock-ups.
https://asimstraining.health.mil/webapp/USG_Notice_Consent.aspx?NextForm=LoginSelectRole.aspx We have incorporated ASIMS data into our Dashboard mock-ups. Please see, Figure 5.
3. We have gained access to applicable IHPO in DOEHRs to access OEHSa data. However, to utilize full capability of these reports, the data would need to be pulled directly out of the respected system. For example, ILER itself does not pull all of the (full) OEHSa information out of DOEHRs; this is a known issue and ILER contacts have identified this as a limitation. This issue is not something that we can correct as it directly correlates with the ILER and DOEHRs offices, it is also out of the scope of this project. DOEHRs data is sometimes hard to come by because the services don't want to present that data. (IH data, IC, OEHSa, etc). This will be tracked until completion of this project.
4. This is an ongoing issue within ILER and DOEHRs. This cannot be corrected by FTE 1 & 2 of this project, and it is out of our scope. This is an issue within the ILER data application managers and DOEHRs system managers.

UPDATE: After speaking with an ILER contact, they stated that the number one thing is to enter valid and complete location information. The ILER team has a number of subroutines that can work through misspellings. It is the missing information that prevents us from making use of the IH reports. There are 101,363 work products that we tap into DOEHRs-IH but between 30-50% are currently unusable because they only have a building number assigned for the Location (i.e., Bldg. 8110). The ILER team has added several subroutines that scan the description but that only catches ~20% more. We tried incorporating the Real Property Database to try and match but there are too many duplicates to work.

Why is it important? In the current sprint we are working to incorporate work products associated with deployment and garrison locations to the individual exposure summaries.

5. We've gained access to applicable IHPO and have been able to run appropriate BCS reports to gather SEG exposures. We have used these reports in, Figure 13. The SEG information IS located within the ILER system but is in a different format/layout and it is not easily accessible.

Table 6. Updates from Table 3 in the Discovery Phase

Way Forward	Projected Outcome	Updates Line Items/Overall
Continue to explore ILER capabilities as they are changing and have changed since the beginning of this study.	Bridge data gaps by pipelining applicable data from DOEHRs/ILER/BCS/ASIMS to provide useful information for mission planning and to create mock-up Dashboards. (One of the goals of the Dashboard/tool is for it to be used in a predictive manner to	<p>Line Item: This is still being explored. Please see paragraph below for more information. This will be an ongoing effort for the remaining portion of this project.</p> <p>Overall: The projected outcome goal has been</p>

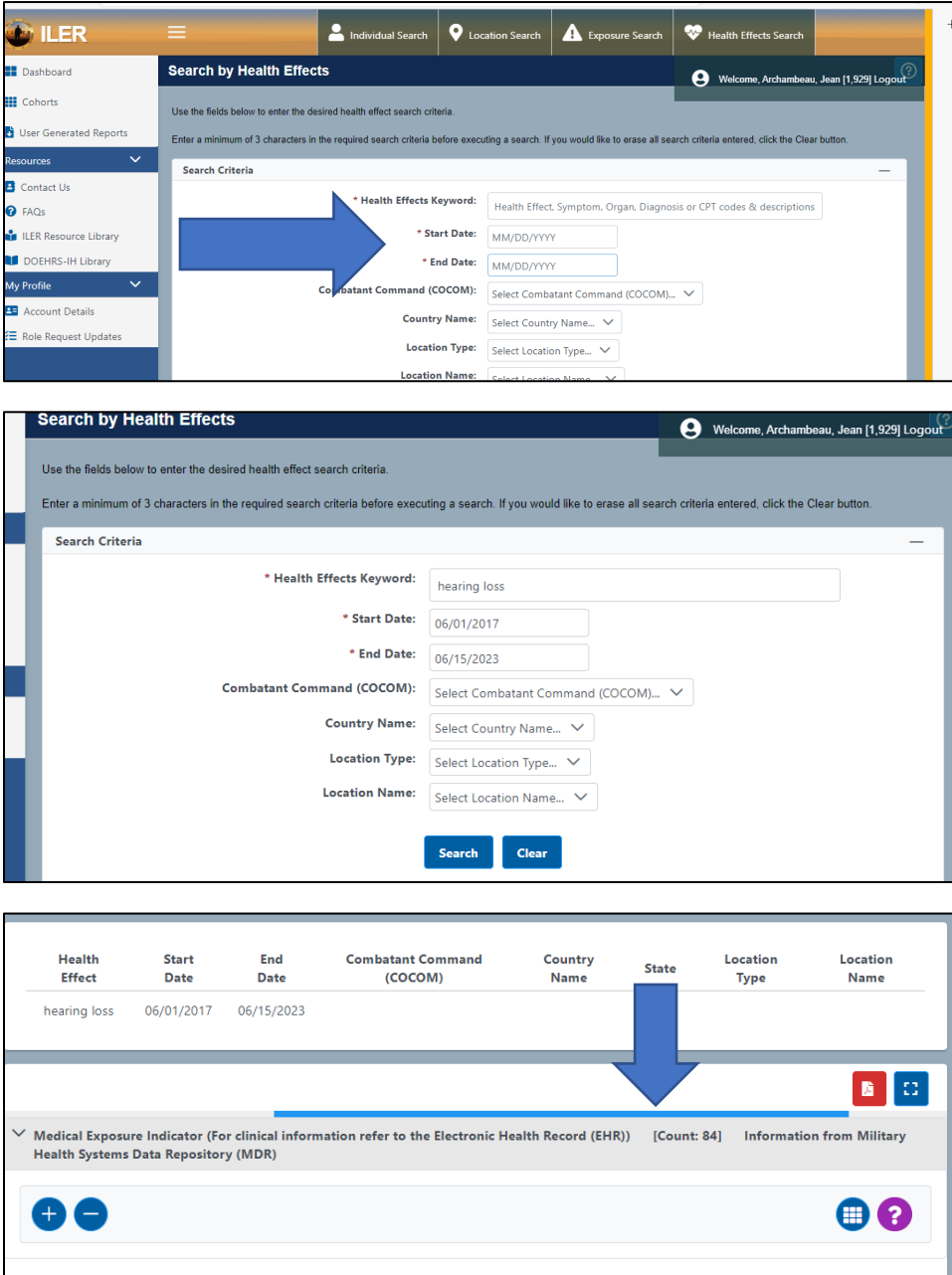
	create worst/best case scenarios and have appropriate COAs).	accomplished through creation of various Dashboards. Please reference Dashboard Mock-ups below.
Research/explore items from Table 1	Bridge data gaps/needs of these units and create Dashboard mock-ups.	<p>Line Item: Complete.</p> <p>Overall: Complete, no further updates.</p>
Explore the Medical Protection System (MEDPROS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups and gain access to system		<p>Line Item: Complete. ‘</p> <p>Background information: The Medical Protection System (MEDPROS) was developed by the AMEDD to track all immunization, medical readiness, and deploy ability data for all Active and Reserve components of the Army as well as DA Civilians, contractors and others. It is a powerful tool allowing the chain of command to determine the medical and dental readiness of individuals, units, and task forces. Commanders and Medical leaders at various echelons are responsible for the use and implementation of MEDPROS to measure their unit/individual medical readiness status.</p> <p>The comprehensive Medical Readiness data includes all medical and dental readiness requirements IAW AR 600-8-101. They include immunizations, permanent physical profiles/duty limitations, eyeglasses/inserts, blood type, medical warning tags, personal deployment meds, pregnancy screening, DNA, HIV and dental status among other data elements. Some</p>

		<p>data is automatically captured from central Army source systems such as TAPDB or medical systems such as the Armed Forces Institute of Pathology (AFIP), the Armed Forces Health Surveillance Center (AFHSC), the Corporate Dental Application (CDA) and the Defense Eligibility and Enrollment Reporting System (DEERS). This data may also be posted into the new MEDPROS Web Data Entry (MWDE) module at some Power Projection Platforms (PPPs) and Power Support Platforms (PSPs).</p> <p>Gaining access to this system will not be applicable for this stage of the project.</p> <p>Overall: Complete, no further updates.</p>
Explore ASIMS data (occupational health stats, vaccine stats, medical codes on unit members, etc.)), various BCS Reports, DOEHRS-IS and EH data.		<p>Line Item: Complete for this portion of the project. We have utilized the ASIMS training website to visually demonstrate capabilities. See Figure 19. The website link can be found on page 42.</p> <p>Note: Pipelining data from ASIMS is going to need coordination and approval through various channels. These efforts will need funding outside of this project's budget. This will not be accomplished during this project.</p> <p>Various BCS reports DOEHRS-IH and EH data have been included in the development of Dashboard</p>

		<p>Mock-ups. See Dashboard Mock-ups and comments for lists the specific reports.</p> <p>Overall: Complete, no further updates.</p>
Explore the Enterprise Safety Application Management System (ESAMS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups. Gain access to system.		<p>Line Item: Complete.</p> <p>Background information: ESAMS is a system similar to AFSAS and is utilized by other branches, not the Air Force. Gaining access to this system was not attempted.</p> <p>This is not applicable for this stage of the project.</p> <p>Overall: Complete, no further updates.</p>
Explore the Physical Readiness Information Management System (PRIMS), to see if data from the system is beneficial for a mission planning tool, mission planning purposes and Dashboard mock-ups. Gain access to system.		<p>Line Item: Complete.</p> <p>Background information: PRIMS is the fitness tracking system that the Navy uses. This is similar to the Air Force Fitness Management System.</p> <p>This is not applicable for this stage of the project.</p> <p>Overall: Complete, not further update.</p>
Conduct follow up interviews with CRG and Mission Sustainment Teams (MST), specialized units to gauge what their needs are as far as what information they would find useful for planning.		<p>Line Item: Complete through Dashboard design. See Figure 14, Papua New Guinea Dashboard.</p> <p>Note: Follow up interviews were not able to be conducted due to mission tempo increasing and natural disaster (typhoon) in Guam.</p> <p>Overall: Follow up interviews can be conducted</p>

		between now and the end of this project.
Continue to develop mock-up Dashboards. Use standard reports generated from the ILER and other systems. As the Dashboards become more sophisticated, other means of drawing data from these systems could be developed. The plan is to create Dashboards with combined ILER and DOERS data sets, and then create mock-ups using data sets from ILER, DOEHRS and ASIMS...and so forth.		<p>Line Item: Complete. See Figure 21, for examples.</p> <p>Overall: Complete, no further updates.</p>
Gain access to the Military Health System Information Platform (MIP) and explore its capabilities.	The MIP provides a potential solution for collecting and aggregating data for this project. The MIP houses ASIMS many other data sources. The MIP Data Catalog will be used to explore its data sources. Within MIP, AVHE provides a production system and a pre-production system. AVHE offers Anaconda, RStudio, PyCharm, Tableau, and many other applications for development work. (At this stage (discovery phase), FTE 2 could perform work in the pre-production area. As Dashboards are developed and deployed, FTE 2 would move the work to the staging area in production to eventually be in the "full" production side. MIP provides two platforms for production: AWS and .com. Applications and Dashboards can be deployed to either).	<p>Line Item: Complete: See Technical Updates and Dashboard Mock-ups, for more information.</p> <p>Overall: Complete, no further updates.</p>

ILER has a “Health Effects Search” and this information could be aggregated to tie health effects to certain locations. This information can be used to create a confidence indicator for decision makers or to have historical health outcome/effects from member’s being at a certain location. The example/figures below visualize this feature for an example of hearing loss, from a specific time period. These records will indicate location, diagnosis, etc. The mission planner could use this data to determine where members could potentially develop hearing loss based on historical data. This capability within ILER is under construction. This example is referenced in, Figure 21, ILER Tableau screenshot (blue and gray box examples).



The screenshot displays the ILER Health Effects Search interface. The top navigation bar includes links for Individual Search, Location Search, Exposure Search, and Health Effects Search. The left sidebar contains various navigation options like Dashboard, Cohorts, User Generated Reports, Resources, Contact Us, FAQs, ILER Resource Library, DOEHS-IH Library, My Profile, Account Details, and Role Request Updates.

The main section is titled "Search by Health Effects" and contains a search criteria form. A blue arrow points to the "Health Effects Keyword" field, which is highlighted with a blue box. The form includes fields for Start Date, End Date, Combatant Command (COCOM), Country Name, Location Type, and Location Name. Below the form are "Search" and "Clear" buttons.

The results section shows a table with the following columns: Health Effect, Start Date, End Date, Combatant Command (COCOM), Country Name, State, Location Type, and Location Name. A blue arrow points to the "State" column header, which is highlighted with a blue box. Below the table, there is a section for "Medical Exposure Indicator (For clinical information refer to the Electronic Health Record (EHR))" with a count of 84 and a link to "Information from Military Health Systems Data Repository (MDR)".

Health Effect	Start Date	End Date	Combatant Command (COCOM)	Country Name	State	Location Type	Location Name
hearing loss	06/01/2017	06/15/2023					

Medical Exposure Indicator (For clinical information refer to the Electronic Health Record (EHR)) [Count: 84] Information from Military Health Systems Data Repository (MDR)

Figure 11. ILER Health Effects Capability Example

Key Update: ILER is building an interface with MHS Genesis for exposure data. This will be available in December 2023. They are also working with building legacy data within the MIP. These two items are important because they will increase the ILER inputs/capabilities of data that can be used in the tool that is being developed. Several development groups have commented about their interest in this project to help guide what should be in ILER and the MIP.

ILER uses the Informatica Data Integration Solutions software for integrating data from various systems. <https://www.informatica.com/>.

An identified issue ILER is working to correct, is the barrier of not having post separation health info from the VA, CPRS system, and gaining access to legacy data. Once they have this, they can close the loop of an individual's ILER, as some member's records are incomplete without this data. This is important because this data ties into the example above for hearing loss data and its use as well as providing more accurate information for the development of the tool.

A discovery has been made about a medical tool that is being utilized Air Force wide called the Joint Operational Medicine Information Systems (JOMIS) Medical Common Operating Picture (MedCop) and this system incorporates the some of the COA line items listed below. Please see Appendix A, MedCop Factsheet, for more information on its capabilities. Please note that not all of the capabilities are stated on the factsheet.

Table 7. Discovery Phase COA Updates

COA	Comments/Within Project Scope/Included in Proposal? Outcomes/Explore within the timeframe of this project?	Updates
Explore the Defense Medical Logistics Standard Support (DMLSS) system.	<p>Discovery - after interviewing various units and personnel, that medical logistics was a common limitation to mission planning.</p> <p>This is out of the project scope and was not included in the proposal.</p> <p>Determine if data from the system is beneficial to for mission planning purposes and incorporate into a mission planning tool/Dashboard mock-up.</p> <p>Obtain the data dictionary.</p>	Applicable logistical information in another application, MedCop.

Explore the Air Force Safety Center (AFSAS)/DOEHRS Risk Assessment Code (RAC) data.	<p>AFSAS can provide various reports from safety issues, RAC occupational health illnesses, etc. It can provide metrics on these items as well and provide overall unit stats/issues that could be detrimental in decision making and can provide risk management information, stats, and COAs. (DOEHRS and AFSAS provide different types of RAC data).</p> <p>This is out of the scope of the project and was not included in the proposal. Pipeline data from AFSAS into Dashboard mock-ups.</p> <p>Obtain the data dictionary.</p>	AFSAS and DOEHRS RAC data not explored at this time.
Explore utilizing Toxic Industrial Chemicals/Toxic Industrial Materials (TIC/TIM) assessments for some Locations.	<p>TIC/TIM data can be useful in mission planning and ADVON actions.</p> <p>This is out of the scope of this project. Determine the best way forward to obtain TIC/TIM assessment data. (Bioenvironmental Engineering (BE) offices, DOEHRS, Medical Readiness Office and Anti-terrorism Officer (ATO).BE office.) If SIPR version of TIC/TIM needed, appropriate security clearance is needed and will have to be coordinated with Medical Readiness Office and/or ATO.</p>	<p>This has not been fully explored. However, pieces of these assessments are identified in ILER location data.</p> <p>This data would be helpful for mission planners. This could be incorporated in the future.</p>
Explore working with the DAF Unit Suicide Risk Analysis Modeling project	Discovery - Mental health concerns identified as potentially affecting mission success. This is out of the scope of the project and not included in the proposal.	ASIMS this information would need to be approved by the appropriate authorities, to include SG. Funding would also need to be available.

	<p>There is a good working relationship with the POC for the DAF project and they are aware of our intent (in the future) to utilize MH indicators to include in Dashboard mock-ups.</p> <p>This is inside the scope of the project. Pipeline mental health indicator data from ASIMS for various locations into Dashboard mock-ups.</p> <p>Obtain the data dictionary.</p>	<p>This information may or may not be incorporated in the future.</p>
<p>Explore C2IEMRA capabilities and correlate them into health-data.</p>	<p>Met with the developers of the C2IMERA system and they have shared a great interest in this project and potentially incorporating what is created into their system.</p> <p>Users of the C2IMERA system have addressed that having health data incorporated into this system would be beneficial and drastically increase oversight of unit readiness and barriers to mission success. It has been identified that the operational status of the clinic functions (what is fully operational, limited operations, and nonoperational), a hazard tracking and better patient tracking system then what is currently built into C2IMERA, would be needs.</p> <p>Note: HIPPA would be a concern.</p> <p>This is out of the scope of the project and not included in the proposal.</p>	<p>A partnership with JOMIS MedCop would be a more appropriate place to incorporate our health-based decision-making tool.</p> <p>MedCop has different capabilities based on the platform it is being utilized (NIPR/SIPR). MedCop is currently being phased into daily operations throughout the Air Force. This will eventually be mandatory for bases to utilize.</p> <p>See Appendix C for more information.</p>

	<p>Create stand-alone Dashboard mock-ups to mimic C2IMERA.</p> <p>Incorporate a health-based tool into the C2IMERA.</p>	
Explore Battlefield Assisted Trauma Distributed Observation Kit (BATDOK)	<p>The TAK (Tactical Assault Kit or Tactical Awareness Kit), part of which is ATAK (Android-based TAK), is a tactical command and control common operating procedure (COP), developed by AFRL/RI in Rome, NY.</p> <p>There is currently an interface between TAK and BATDOK to transfer medical information.</p> <p>This is out of the scope of the project. Determine if the development of a mission planning tool similar to BATDOK could be developed.</p> <p>This will not be fully explored within the timeframe of this project.</p>	Not explored. This might be Incorporated into MedCop, if it is not already.
Fix data issues/content within the ILER and DOEHRS.	<p>Discovery - See “noteworthy” section for more information. The example given from Andersen AFB, has been identified and discussed with USAFSAM members that focus on “Incident” data.</p> <p>This is out of the scope of this project and not included in the proposal. Ensure DOEHRS DERGs are followed to ensure accurate data is feeding into ILER.</p> <p>This will not be explored within the timeframe of this project.</p>	<p>Not explored, out of the scope.</p> <p>We have spoken to ILER members and they are working to correct these disconnects.</p>

<p>Explore other tools/applications/handbooks/references/websites that could support a health-based planning tool.</p>	<p>Applications such as WISER, the Emergency Response Guide (ERG), National Institute for Occupational Safety and Health (NIOSH) Pocket Guide, various references, and websites like the Environmental Safety and Occupational Health (ESOH) Service Center could provide useful data.</p> <p>This is out of the scope of this project and was not in the proposal. Determine if utilizing these or any data from these sources would be beneficial to incorporate data into the mission planning tool.</p> <p>This will not be explored within the timeframe of this project.</p>	<p>Various references have been linked into the Dashboard mock-ups. This capability will enhance mission planning by giving planners easy access to understandable information and health effects of various hazards.</p>
<p>Create a way for specialized units to document short term deployments. Create section within DOEHRS specifically for this?</p>	<p>Discovery - See “noteworthy” section for more information.</p> <p>Data is missing from ILER and DOEHRS for various members.</p> <p>This is out of the scope of this project and was not in the proposal. Ensure potential exposures are documented appropriately, along with other medical information.</p> <p>This will not be explored within the timeframe of this project.</p>	<p>This is not needed at this time and not explored because we have created Dashboard mock-ups that would suffice.</p>

8.0 TECHNICAL UPDATES AND DASHBOARD MOCK-UPS

Individual Longitudinal Exposure Record (ILER)

Reasons for Wanting Access – ILER contains information on occupational and environmental exposures over a service member's career. ILER chiefly draws this information from DOEHRS-IH and personal medical records. By gaining access to this data and analyzing it in terms of locations, missions, durations, and other factors, mission planners can make more informed decisions regarding mission preparedness, execution, and outcomes.

How to Gain Access – Users need a Common Access Card (CAC). First time use, users must request an ILER account, which requires additional information before access is granted.

Tools to Use – ILER is a web-based tool designed for many different users. The web interface, ILER Web App, is the chief means for querying the data. Data can be downloaded for further analysis using other tools. Informatica PowerCenter could potentially be used for advanced data integration. As ILER grows in capabilities and technologies, so will this project.

Potential Specific Actions to Take – ILER provides information on exposure assessments, hazards, exposure pathways, health assessments, incident reports, and many other subjects. ILER also contains data from Periodic Occupational Environmental Monitoring Summaries (POEMS). The data from POEMS can potentially be combined with other data. For example, exposure assessments, exposure pathways, incident reports, personnel, and POEMS all use location and depending on the information needs, can be combined to create new insight and inform decision-makers. The ILER team is working to either connect with the MIP (see next section) or be hosted [Enterprise Cloud Data Management | Informatica](#) on the MIP. This effort could be completed as early as December 2023.

Military Health System Information Platform (MIP)

Reasons for Wanting Access – The Military Health System Information Platform (MIP) provides a potential solution for collecting and aggregating data for this project. MIP has ASIMS, DOEHRS, and many other data sources. The MIP Data Catalog will be used to explore its data sources. Within MIP, AVHE provides a production system and a pre-production system. AVHE offers Anaconda, RStudio, PyCharm, Tableau, and many other applications for development work. At this stage (discovery phase), the developer on this project could perform work in the pre-production area. As Dashboards are developed and deployed, the developer would move the work to the staging area in production to eventually be in the "full" production side. MIP provides two platforms for production: AWS and .com. Applications and Dashboards can be deployed to either. **See Appendix B for MIP application/access instructions.**

Potential Specific Actions to Take – One source of data on the MIP that will be of use on this project is ASIMS. However, accessing ASIMS is complex, and obstacles exist. Dr. Rebecca Hall is our ASIMS point of contact. At this point in this project, we cannot access ASIMS from the MIP platform. Dr. Hall explained that funding is needed for to set up the tools and documentation specific to our needs. We also need a sharing agreement with DHA. Authorization is doable, but complicated. Such authorization will need to go through various channels and must be approved by the SG. Eventually, AFMERA would prioritize our need for

certain data pulls. ASIMS personnel would then prioritize our requests into their existing workload, and they would be able to offer us a view, or something equivalent, within the MIP for us to access data.

DEVELOPER'S TOOLS

The data used in developing the Dashboards, shown in other sections in this document, was obtained using several tools. Choice of tools depended on what is available given access rights. Also, some data sets downloaded as very large files. We used various tools at different stages of obtaining the data, rearranging the data, displaying the data, and interacting with data. Microsoft (MS) Access was used in rearranging some of the data obtained for these Dashboard. Tableau was the only tool used to display the data and create the interactivity. All other tools mentioned below could be used to create more advanced Dashboards with more functionality.

The data sets used to produce these Dashboards are not included in this document, but instructions of obtaining the data are included. Below is a list of technologies/tools used in creating these Dashboards for demonstration.

Tableau – Used to Create Dashboards Throughout the Course of This Project

How this Tool Helps – Tableau provided a means for quickly creating charts and Dashboards. For this project, we downloaded data sets as local files, such as a downloaded from ILER, or connecting directly to a database. Either way, Tableau was quick in terms of development time.

Specific Potential Uses for this Tool – As ideas were generated from meetings with potential users or from conversations within the team, charts and Dashboards were developed. All of these examples are prototypes of future, more refined Dashboards. Interactivity can be created through navigation buttons and Dashboard actions. These interactive Dashboards should demonstrate utility through use cases that align with mission planning activities.

The current implementation uses data sets consisting of vector data or environment data and have a series of charts that work through a decision process for mission planners using that data.

A barrier for the use of this tool is that a member would need to gain a license. There are contacts within FESS and AFRL that can help with this.

Microsoft Access – Not Used During This Project

How this Tool Helps – MS Access provided a means for organizing data sets on a local machine. This fields were rearranged using both SQL and VBScript. While MS Access should not be the tool of choice for a production system due to various reasons, this tool has many features that can be utilized in order to create prototypes that demonstrate capabilities of interactive Dashboards. Tableau has some capability in connecting multiple data sets, but it limited in performing complex rearrangements on large data sets. MS Access can meet that need during the development stage. Eventually, any code and logic written MS Access would need to be moved to more powerful systems such as DB Visualizer on the AVHE.

Specific Potential Uses for this Tool – This tool has already been used in rearranging data set downloaded from ILER. Some data sets use different formats for rows in one data set. This

creates an inconsistent format throughout the data. Sub-rows need to be moved to the end of parent rows and somehow aggregated up. It is possible to separate the sub-rows from the parent rows using VBScript and creating new data sets for Tableau ingestion.

Python – Not Used During This Project

How this Tool Helps – Once prototypes are developed using Tableau, a decision will be made on which tools to use for production, which could be either Python and Jupyter, or R, and RStudio. None of the Dashboards in this document were produced using Python. If Python is chosen as the tool of choice going forward, Jupyter plus various graphics packages could be used to develop the highly interactive Dashboards described in another section in this document. Thus, these Dashboards, which were developed in Tableau, would be replaced and the programming of the objects (filters, selectors, navigation buttons) would be more controlled through python code.

Another alternative much like python, would be R and RStudio. Shiny, a package in R, could be used to create highly interactive Dashboards as well. These could be HTML based.

Specific Potential Uses for this Tool – Depending on the interactive functionality and depending on the need to rearrange and reformat the data outside of the chosen front-end tool, python fulfills many functional requirements, as do other tools.

DB Visualizer – Used During this Project

How this Tool Helps – This tool is required to access data on the MIP. ASIMS is the chief data source of interest at this time of all databases available. DB Visualizer comes with the AVHE, which is a platform of tools used for data capture, organization, and analysis. AVHE requires users to run Citrix Workspace in admin mode, which is not an option for the members of this project. Therefore, we run a desktop app on the AVHE, which then runs DB Visualizer. Even though gaining access to the MIP and AVHE is possible, further effort is required to gain access to specific databases and schemas within the MIP, such as Redshift databases.

Specific Potential Uses for this Tool – This has yet to be tried, but if access to ASIMS is approved, the members of this team could run DB Visualizer to execute queries against any views provided by the ASIMS team. Then the data could be downloaded periodically and made available to any tools we develop. Exact details on how to automate such a process has not been discussed, designed, or developed. Alternative approaches would be to ally with another existing team or project, such as ILER or MedCOP, and collaborate with them on adding new data to existing data flows.

NOTE: MIPs licensing may have expired, and the user will need to be converted to using DBEAVER. User will have to request to be added to the "MIPS_AWS_AVHE_DBEAVER" user group to gain access to DBEAVER. Ensure you state "ROUTE to MIP". This notice came from the MIP site.

REAL WORLD SCENARIOS AND DASHBOARD CREATION THROUGH COAS

Wright Patterson AFB, Lead, and Firing Range Dashboard

The following Dashboard illustrates an incident that occurred at Wright-Patterson AFB related to occupational health. This example demonstrates how actual events can be displayed in Dashboard format to inform mission planners with a historical perspective. Many years ago, the firing range at Wright-Patterson AFB used lead rounds, which built up excessive lead content in the range. When tested, personnel that worked at the range had very high levels of lead in their blood. Because of the assumed link between high levels of lead in the range and in the blood, professionals identified a risk to family members from workers bringing home contaminated clothing. The results of these findings were drastic in terms of mission impacts from deployment, base, group, unit and member impacts. New controls were implemented, including shutting down the range and opening a new one.

The Dashboard below, Figure 12, gives the location, background, communication requirements, implemented controls, and the impact on the mission on various levels. Information presented in this way could assist mission planners in assessing risks, controls, potential outcomes, and impact on the mission.

Location

Base Shop

Wright Patterson AFB, OH/CATM

Risk Communication

Hazard

Lead Dust

Controls

Enrollment in Occupational Health Program (blood tests for lead)
Housekeeping Plan (cleaning of admin building, cleaning of range)
Lead Training
Natural Ventilation
Personal Hygiene
Showers
Sticky Mats (at entrances/exits of admin building)
Washing Machines (for uniforms during instruction)

Communicated Requirements

Blood tests, frequency requirements based off OSHA requirements.
Must follow approved housekeeping plan IAW recommendations from appropriate personnel.
Training needs to be documented and conducted annually
Null
Wash hands before eating, drinking.
Shower as needed. Or after daily range instruction.
Change out mats on a quarterly basis, dispose of them in approved accumulation container.
Members should change into clean uniform.

BACKGROUND: Information Taken From CATM Member's IIR

The following is an actual event. In the early 2000s, CATM was using lead rounds for weapons qualification. It was discovered through CATM being enrolled in the Occupational Health Program, that members had elevated blood levels of lead. These levels were over six times the limit. An investigation occurred to include taking swab samples throughout the CATM admin building (classroom, from sticky mats, break room, locker room, etc.). It was discovered that the housekeeping plan was not being followed, sticky mats were not being replaced within the required timeframe. There was lead contamination throughout the building. Personal air sampling for lead was also conducted. It was discovered that SFS members were "dragging" lead contamination from their work center to their homes, potentially exposing their family members, to include children, to lead contamination. This is a breakdown for mission planning and outcomes based on this scenario. Estimated costs range from \$10k to \$100k. "Some of the actual outcomes of this scenario were that the range was shut down, a new range was built, lead free rounds were used for weapons qualification, and member(s) with elevated blood levels were moved to admin positions."

Short/Long Term Impacts

Controls

Enrollment in Occupational Health Program (blood tests for lead)
Housekeeping Plan (cleaning of admin building, cleaning of range)
Lead Training
Natural Ventilation
Personal Hygiene
Showers
Sticky Mats (at entrances/exits of admin building)
Washing Machines (for uniforms during instruction)

Outcomes (if controls/communicated requirements not followed)

Elevated blood lead levels
Cross contamination, ingestion of lead dust, inhalation of lead dust
Members unaware of characteristics of lead dust and health effects
Null
Ingestion of lead dust
Cross contamination, ingestion of lead dust, inhalation of lead dust
Cross contamination into "clean areas" (other buildings, etc.)
Cross contamination.

Worst Case Outcomes

include OSHA violations, fines, the range being shut down, environmental clean-up of lead dust, and potential for individuals getting cancer or other adverse medical conditions. Other outcomes not mentioned here are possible.

Mission Planning Impacts

Hazard

Lead Dust

Mission Impacts

Secondary "backup" range location needed for members to qualify, interfering with other base's/location's mission ops.
Deployment impacts - Members cannot qualify, members might deploy without qualifying, deployment tasking could be cancelled and given to other units.
Base impacts - Base security limitation. SFS members not qualified to arm up while performing duties, qualified members being tasked to work in areas where they are not qualified.
Unit impacts - If member(s) get adverse health effects, they may be moved to an administrative position. This would require the member(s) to be reassigned.
Member impacts - qualified members working at posts they normally do not, working longer hours to bridge gaps for number of personnel to be replaced.

Figure 12. Wright-Patterson, Lead, and Firing Range Dashboard

Figures 13 and 14 present similar scenarios using the same Dashboard format. These two additional Dashboards show the flexibility of presenting information in a top-down, easy-to-follow manner. These occupational health scenarios are complex in terms of assessing risks and selecting controls to mitigate those risks. The mission planner must consider the peculiarities of the mission that make that mission unique and combinations of controls, which lead to mitigation of different outcomes. Having a top-down view of these details can help walk the mission planner through different considerations leading to a decision.

Multiple goals exist in this paper with multiple Dashboards. The first goal is to demonstrate the utility of presenting this information to mission planners. The second goal is to demonstrate multiple ways of presenting this information to match the steps a mission planner goes through when making decisions. The third and final goal is to collect feedback on these ideas and make improvements when implementing these Dashboards.

The next Dashboard, Figure 13, is for the EOD shop at Al Udeid. The data is located in the ILER application, but the data is not readily available. The BCS report “5. OEH Process Hazard Evaluation” from the DOEHS-IH, Shop Deliverables was used to produce this Dashboard. All of the information below came from that specific report, mission impacts were based off of professional expertise and could be populated with more relevant historical data in the future. The mission impacts are based on worst-case outcomes and big picture scope of those outcomes.

Location

Location
Al Udeid

Risk Communication

Hazards	Controls	Hazard/Control Rationale Comments
FLAMMABLE/EXPLOSIVE	Bomb Suit EOD-10	Personnel may be exposed to explosive hazards from their IEDs...
Hazards - RPP Emergency ..	Level A Suit..	During emergency response, personnel have the potential to un...
HEAT STRESS	Thermal Stress Training	Personnel may be exposed to heat stress from their bomb suit/S...
IONIZING RADIATION	ALARA Training	Personnel are exposed to radiation from their X-Ray equipment...
LASER, CLASS 3R	Laser Awareness Training..	Personnel use Laser class 3R on their bore-sights. Personnel are ..
NOISE	3M EAR Classic Ear Plugs..	Shop is exposed to hazardous noise during detonations and eme...

Short/Long Term Impacts

Hazards	Outcomes (if controls are not used)
FLAMMABLE/EXPLOSIVE	Members have the potential for serious injury, or even death if these procedures are not followed.
Hazards - RPP Emergency Responders Only	Members can be exposed to various CBRN/TIC/TIM if PPE is not utilized and maintained properly. If members are not fit tested and trained on the use of PPE, other members of th...
HEAT STRESS	Heat exhaustion, heat stroke, dehydration, hyponatremia, etc.

Mission Planning Impacts

Hazards	Mission Impacts
FLAMMABLE/EXPLOSIVE	Manning issues Mission operations impacted Workload increase MOA/MOU between other services might need to be used to complete mis...
Hazards - RPP Emergency Responders Only	Manning issues Mission operations impacted Workload increase MOA/MOU between other services might need to be used to complete mis...
HEAT STRESS	Manning issues Mission operations impacted Workload increase MOA/MOU between other services might need to be used to complete mis...

Figure 13. Al Udeid, EOD SEG Dashboard

The next Dashboard, Figure 14, below is another real-world scenario. This scenario is directly related to the 36th CRG issues mentioned in the Discovery Phase. A 36th CRG member deploys to Papua New Guinea and develops a health condition. He comes back and the health condition becomes severe enough to render a MEB. The cause of this health condition is unknown, but symptoms start when he is deployed to this location. ILER Location data for Papua New Guinea LAE supports this example, specifically OEHS Exposure Pathway data. Also, member's ILER would support this, we do not have his information. If planners had access to this data, this scenario may have been averted.

Physical Hazards by Location Dashboard

The purpose of this Dashboard is to assist mission planners by providing easy-to-access and easy-to-understand information regarding various hazards associated with the mission's chief locations. The Dashboard is designed so that as mission planners execute their unique decision-making processes, the Dashboard provides more details in an interactive and synergistic manner. Multiple worksheets in the Dashboard give more elaborate information appropriate for each decision-making step the mission planners execute in their responsibilities.

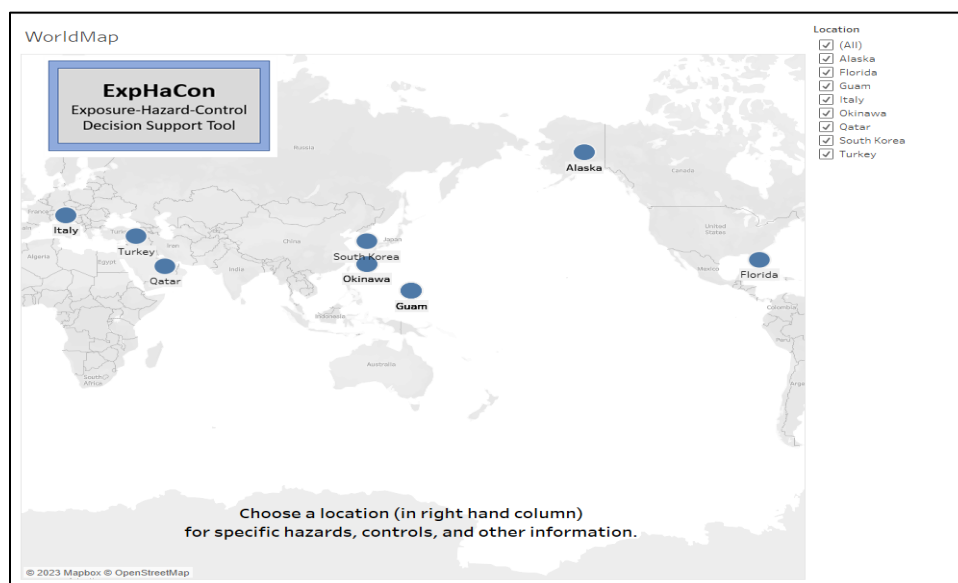


Figure 16. Physical Hazards by Location Dashboard, First Page

Walkthrough of the ExHazCon Dashboard – Our main dashboard, with the working title ExHazCon, has six pages. See Figure 16 above for the starting page. This starting page is a World Map showing many locations that have data from the ILER system. While it is possible, the mission planners could have a location not listed on the map as a point of interest, ILER contains many locations with associated bio-hazard data. The mission planner selects a location using the filter on the right-hand side, then clicks on that single location on the map. Clicking on the map takes the user to the Physical Hazards by Location page, see Figure 17.

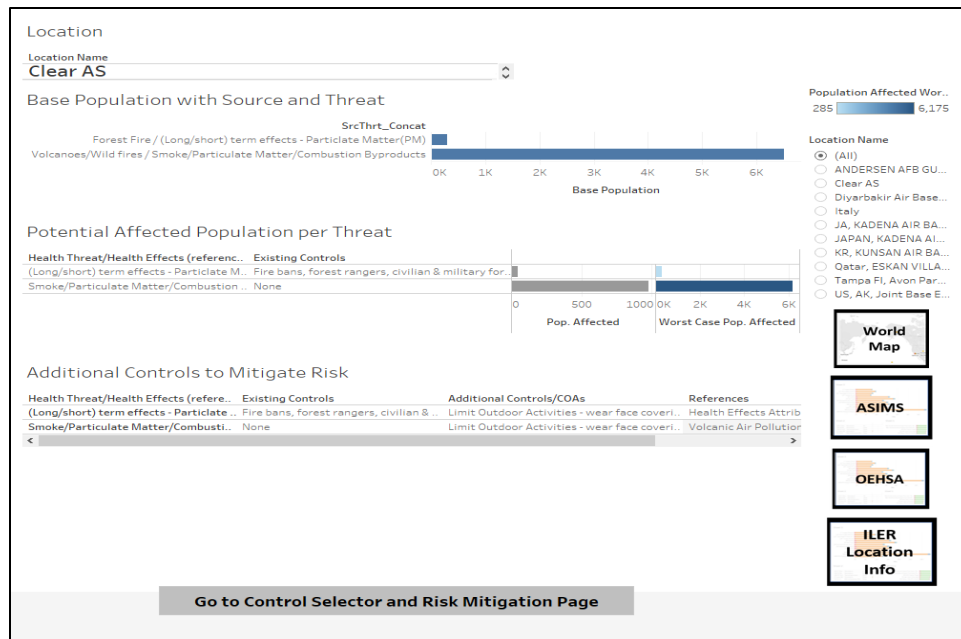


Figure 17. Physical Hazards by Location Dashboard, Second Page

The Single Site Hazards provides three distinct bar charts with a logical progression from more general to more specific. The top bar chart gives previous health threats and the base population. This population could be the population of the Air Force Base, or a more specific base population to the health threat, which could include the civilian population living or working near the base. The second chart breaks down this population to show specific Potential Affected Population per Threat. Some threats are job-specific, some are area specific, and so on. The third bar chart, at the bottom of the page, shows Additional Controls to Mitigate Risk. Existing Controls are controls that have data in ILER. Additional Controls are controls that could be implemented. The additional controls have a variety of sources, such as a professional opinion. This last bar chart is meant to give the mission planners ideas of how to assess and lower the risk associated with a variety of health threats.

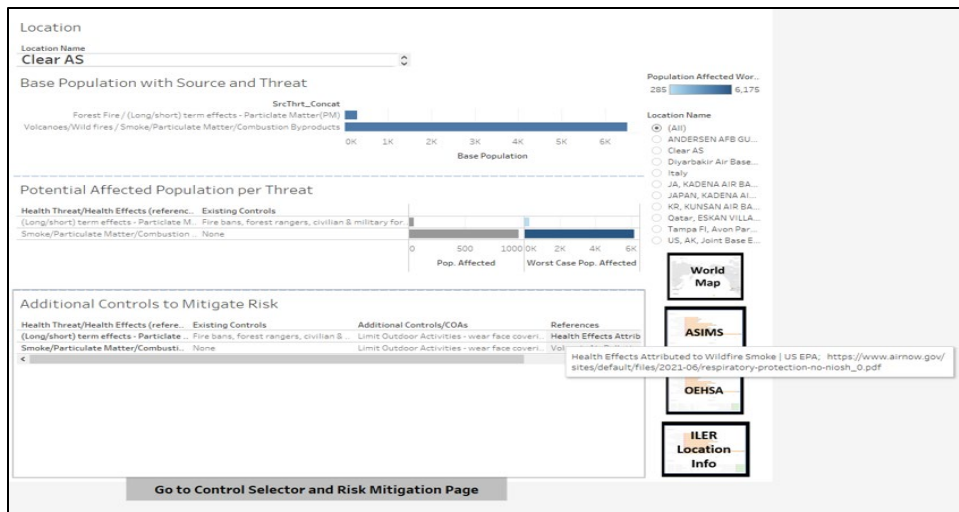


Figure 18. Physical Hazards by Location Dashboard with Tool Tip

Navigation buttons on the right-hand side of these charts allow the user to explore more information from several specific sources. Clicking on the navigation button ASIMS will take the user to a page dedicated to data concerning ASIMS deployment requirements, see Figure 19. Training for ASIMS is available at https://asimstraining.health.mil/webapp/USG_Notice_Consent.aspx?NextForm=LoginSelectRole.aspx. Clicking on the navigation button OEHS will take the user to a page dedicated to data concerning OEHS, see Figure 20. Clicking on the navigation button ILER Location will take the user to a page dedicated to data concerning ILER information, see Figure 21. Further explanations of these figures are described below.

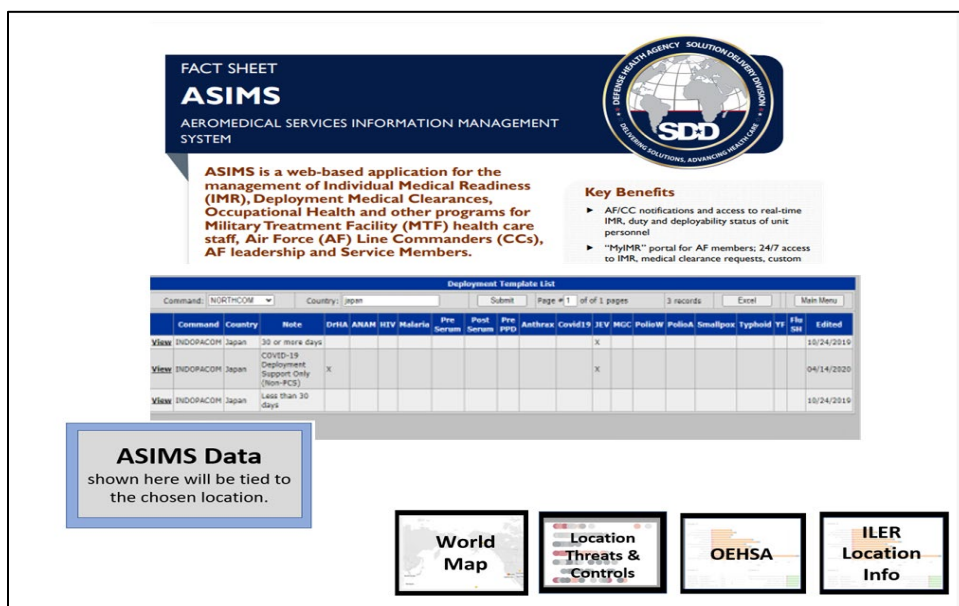


Figure 19. Physical Hazards by Location Dashboard (ASIMS), Third Page

Including ASIMS deployment medical requirements gives planners a visual to see what other controls (requirements) are implemented for the specific location. Other metrics/reports could be added as well.

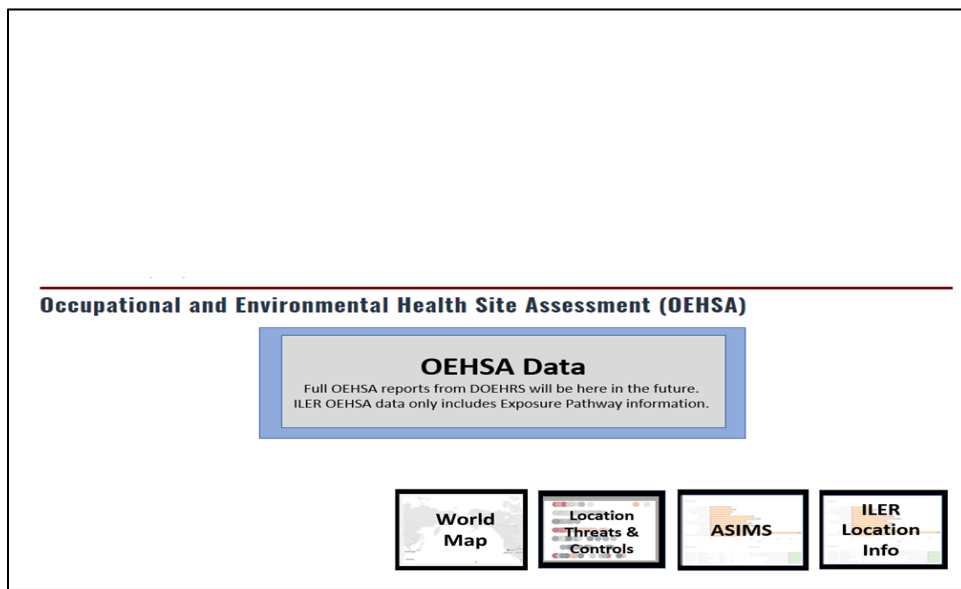


Figure 20. Physical Hazards by Location Dashboard (OEHS), Fourth Page

Adding a link to the full OEHS report would be beneficial for a mission planner. Currently, ILER and DOEHS reports only provide a limited scope of the OEHS and not the full picture (this has been identified and is being worked). Having access to the full OEHS can help planners get a better idea of the hazards, layout of the location, population, mission operations, environmental factors, etc.

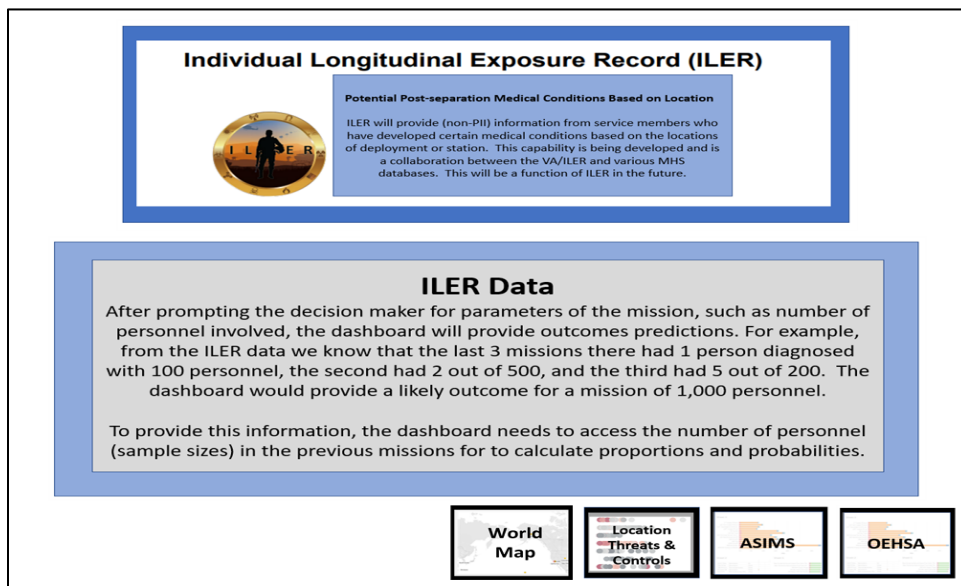


Figure 21. Physical Hazards by Location Dashboard (ILER), Fifth Page

The last page in the Dashboard is shown in Figures 22 and 23 below. These pages are the most interactive charts of the Dashboard. Users will select a source on the right. The sources are limited to the location chosen on the opening (first) page of the Dashboard, the World Map, Figure 16 above. Once a source is chosen on this page, the user will select a health threat and a control, in that order. Once all three are selected via drop down lists, the “Potential Outcomes Dashboard” will show the average expected number of personnel affected (15% of the population), the number of expected personnel affected in a worst-case scenario (95% of the population affected), and the expected cost in dollars (factors to consider are medical costs, training costs for replacing a member, updating controls, etc.). The expected cost is determined via long term effects. This page should assist decision makers in making the most informed decisions in mission planning. It also allows the decision maker to focus on one threat at a time and review a list of potential controls. Additional information is sometimes made available concerning the chosen source and health threat. When available space is provided on this page in the Dashboard to display a note, a chart, a table, or image that could further provide information or insight to the decision maker. See Figure 23 for such an example.

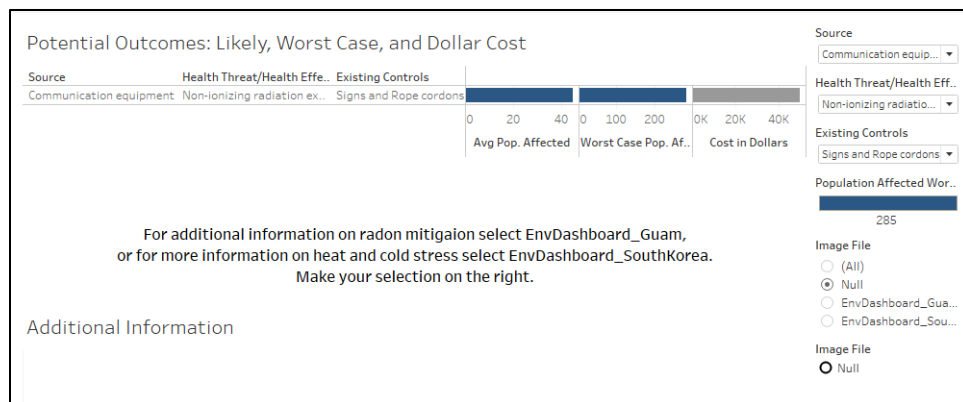


Figure 22. Physical Hazards by Location Dashboard (Outcomes), Sixth Page

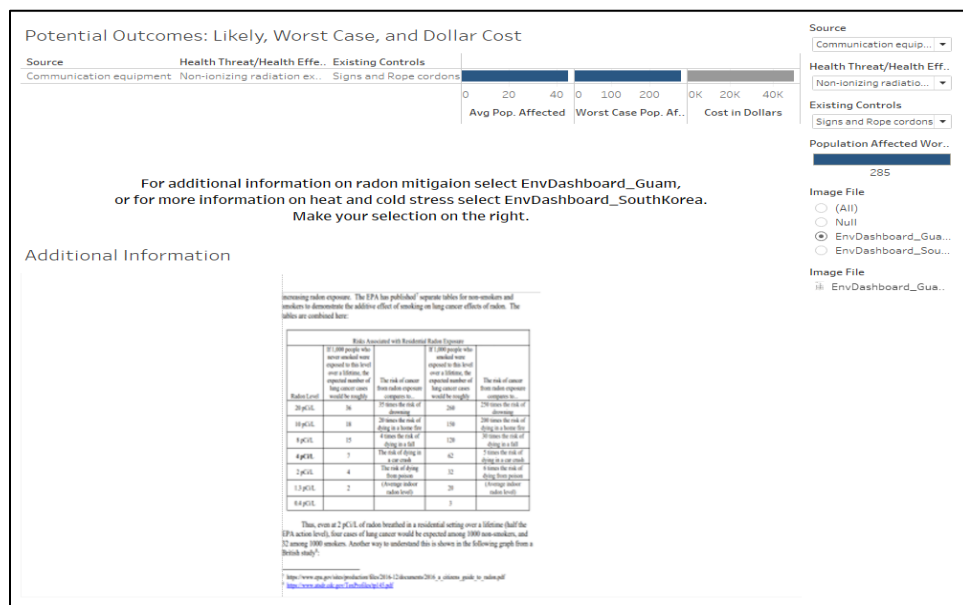


Figure 23. Physical Hazards by Location Dashboard, Sixth Page with Note

This Dashboard is still in the development stage. It currently utilizes data downloaded from the BCS DOEHRS-EH, 07A – Corporate reports OEHSA CSM “2. OEHSA CSM by Program Office”. This information is located within the ILER Location but is not easily accessible.

Plans for further development include data from ASIMS and OEHSA. Automated means of accessing data and providing information are being documented for future development effort. The actual files we used to create these Dashboards were very large, over 5,000 rows. Therefore, only instructions on how we obtained these files are included here.

Some of the data, particularly the Additional Controls and the estimates of outcomes, were not pulled directly from the data sources. These fields are based on expectations of being able to obtain the data in the future. Expectations are based on current documentation and conversations with various team members of working on the data sources. Again, the pages in this Dashboard, are for demonstration purposes and should form a basis for planning future direction.

Noise Reduction Dashboard

The Noise Reduction Dashboard, Figure 24, is another example of where the mission planner can interact with the Dashboard to select the most appropriate control to reduce any noise hazard to acceptable levels as determined by expert organizations. This page works much like Figure 23 above. The user selects a Noise Source, then select Hearing Protection. The Max dBA, determined by existing data, is displayed along with the Noise Reduction Rating of the chosen control, and the expected results, which is the Attenuated Level dBA. When the Attenuated dBA is below an acceptable level (85 dBA), the bar is rendered green. See Figure 24. When the Attenuated Level dBA is above the acceptable level, the bar is rendered red. See Figure 25. This Dashboard was created utilizing the DOEHRS OEH Noise Assessment Report from BCS. This information is in ILER but not easily accessible.

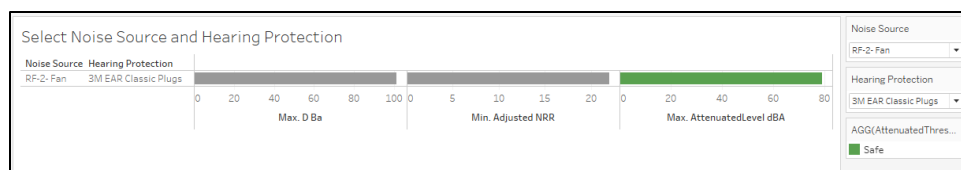


Figure 24. Noise Reduction Dashboard, Green Light Choice Page

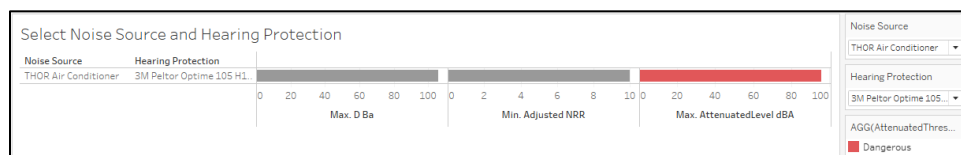


Figure 25. Noise Reduction Dashboard, Red Light Choice Page

A Dashboard for other environmental hazards has been created. The Dashboard below, Figure 26, indicates vector data by location and the severity of the hazard from a particular vector. It also contains control measures to help mitigate the hazard. For example, an operation is happening in Kunsan, South Korea, the vectors are mosquitos, and they may carry Japanese Encephalitis. A mission planner can see that to help mitigate the potential for members to

contract this disease, they would get vaccinated, wear their OCP sleeves down, wear bug spray and keep their skin covered. It will also state whether this hazard is a mission stoppage or affect the manning if someone were to get exposed to the vector borne disease, Japanese Encephalitis.

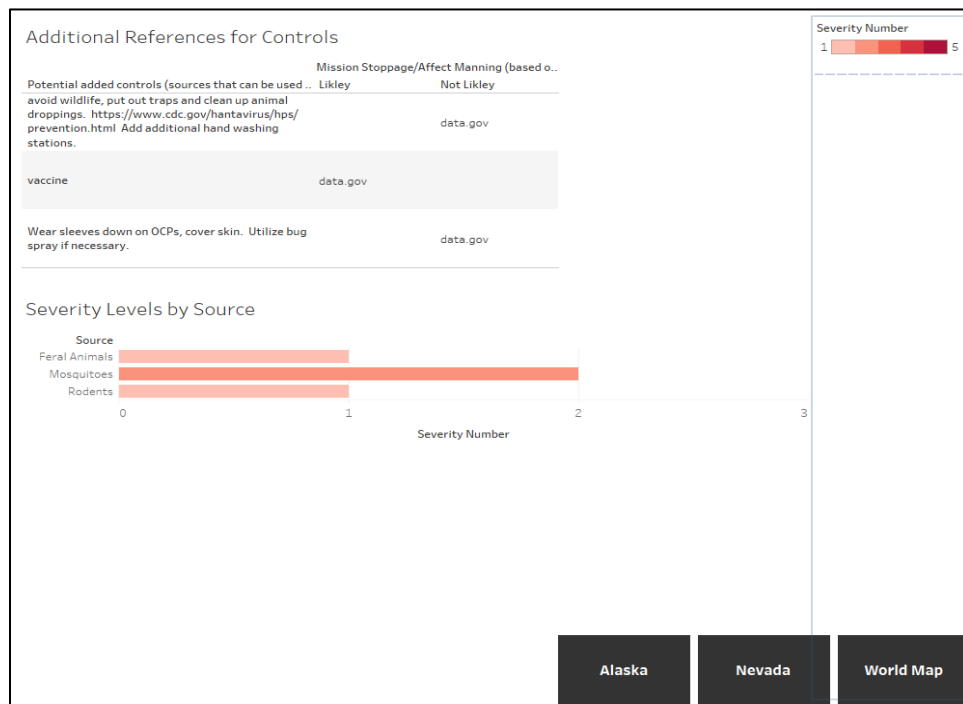


Figure 26. Vector Severity by Location, Dashboard

The information in Figure 26 is from BCS DOEHRS-EH 07A – Corporate reports OEHS CSM “2. OESHA CSM by Program Office.” This information is available from two sources, one of which is ILER. However, that information is not easily accessible. The alternative source, BCS, was chosen. The dashboard above can be used to determine hazard severity to certain vectors by location. The severity outcome number is determined within DOEHRS when members complete the risk probability and likelihood based on existing controls and other factors.

9.0 PRODUCT DELIVERY PHASE SUMMARY AND RESULTS

During this phase, we have collaborated with the ILER team and have made some major discoveries. **The ILER is now in FOC, and they have been utilizing our studies and analysis information (from deliverables throughout this project) to shape the ILERs future functions.** Another new piece that will be added to ILER is an ADHOC report and that will be a function to users. The report will be accessed through ILER then BCS (making it as transparent as possible).

ILER has more information capabilities. **It now pulls information from, see Figure 27.**

Source ↑↓	Date Range	Last Transfer	Next Transfer
DOEHRS-IH	01/01/2006 to current	08/22/2023 03:37:14	08/23/2023 03:37:14
AFHSB	09/01/2012 to 05/31/2022	08/08/2022 19:40:38	N/A
MDR	10/01/2012 to current	07/20/2023 13:00:01	08/19/2023 13:00:01 (Overdue)
VA Registries : GWR	08/01/1990 to 01/23/2023	02/26/2023 16:00:00	N/A
DOEHRS-HC	08/13/2023 to 08/20/2023	08/20/2023 17:38:22	N/A
DMDC	08/03/1999 to 12/31/9999	07/22/2023 08:01:24	N/A
VA Registries : AHOBP	01/01/1990 to current	11/10/2022 22:30:00	N/A

Figure 27. ILER Data Sources

The Dashboard mockups from the initial development phase have been revamped and new capabilities have been added, see Figures 28 - 30, below. The predictability/outcome capability has been added to showcase severity outcomes, threat risk of the hazard and population threat risk. These increase/decrease as identified controls are selected, unselected. A video walkthrough of these Dashboards can be viewed by clicking on the video below. This video will walkthrough the concepts from Dashboard screen shot Figures 16-30. The walkthrough has also been uploaded to [ILERDashboardWalkThru_20230918.mp4 \(dps.mil\)](https://dps.mil/ILERDashboardWalkThru_20230918.mp4)

and, [OE MIS ILERDashboardWalkThru_20230918 \(vbrick.com\)](https://vbrick.com/ILERDashboardWalkThru_20230918).

To explore the functionality all of the various Dashboards that have been created, the Tableau files for the Dashboards can be found at these links:

<https://dataviz.ebs.afrl.af.mil/#/workbooks/541/views>,
<https://dataviz.ebs.afrl.af.mil/#/workbooks/674?:origin=card> share link,
<https://dataviz.ebs.afrl.af.mil/#/workbooks/676/views>,
<https://dataviz.ebs.afrl.af.mil/#/workbooks/594?:origin=card> share link,
<https://dataviz.ebs.afrl.af.mil/#/workbooks/631?:origin=card> share link,
<https://dataviz.ebs.afrl.af.mil/#/workbooks/615/views>.

The real world Dashboards can be found at: Papua New Guinea -

<https://dataviz.ebs.afrl.af.mil/#/workbooks/690?:origin=card> share link,

AI Udeid - <https://dataviz.ebs.afrl.af.mil/#/workbooks/691?:origin=card> share link,

Wright Patterson - <https://dataviz.ebs.afrl.af.mil/#/workbooks/692?:origin=card> share link

Note: Tableau access is required to access them.

These files can also be found on the CarePoint site,

https://carepoint.health.mil/sites/AF_OEH/beta/Pages/default.aspx. A video walkthrough of Dashboard Figures 14 (Papa New Guinea) and 32 (ILER Africa Location Information) have also been created. They can be viewed by clicking the videos below. The videos have also been uploaded to https://carepoint.health.mil/sites/AF_OEH/beta/Pages/default.aspx.

As well as, [E MIS PapauNewGuineaWalkThru_20230928 \(vbrick.com\)](https://vbrick.com/PapauNewGuineaWalkThru_20230928) and [OE MIS ILERData_20230928 \(vbrick.com\)](https://vbrick.com/ILERData_20230928)

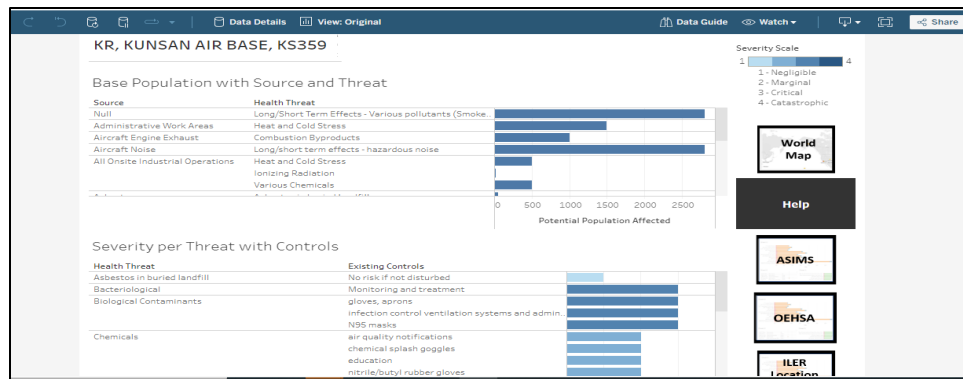


Figure 28. Physical Hazards by Location Dashboard, with Severity

Figure 28 above, has a more accurate population affected and severity number has been added. This dashboard provides two distinct bar charts with a logical progression from more source and threat to existing controls. The top bar chart gives health threats and the number of people affected historically. This population could be the population of the Air Force Base, or a more specific base population to the health threat, which could include the civilian population living or working near the base. Some threats are job-specific, some are area specific, and so on. The second bar chart, at the bottom of the page, shows both Existing Controls and Additional Controls with the Severity of the Risk. Existing Controls are controls that have data in ILER. Additional Controls are controls that could be implemented. The additional controls have a variety of sources, such a professional opinion. This last bar chart is meant to give the mission planners ideas of how to assess and lower the risk associated with a variety of health threats.

On the right-hand side of this screen are several buttons. Most of these buttons are links to other screens in this multi-screen dashboard. The second button, Help, leads to another screen that explains a general description of the Physical Hazards by Location. This Help screen explains the layout and how to interpret the bar charts. It also explains the Severity Codes and how we assigned a numeric rating to these Severities in order to show rankings in other screens.



Figure 29. Physical Hazards by Location Dashboard Help Button

Besides Help, the other navigation buttons on the right-hand side of these charts allow the user to explore more information from several specific sources. These have been explained in the walkthrough video, as well as in the Figure 18 description in the Initial Development Phase above.

The last page in the Dashboard is shown in Figure 30 below. This page is the most interactive chart of the Dashboard. Users will select a source on the right. The sources are limited to the location chosen on the opening (first) page of the Dashboard, the World Map, Figure 16 above. Once a source is chosen on this page, Figure 22, the user will select a health threat and a control, in that order. Once all three are selected via drop down lists, the “Potential Outcomes Dashboard” will show the average expected number of personnel affected (15% of the population), the number of expected personnel affected in a worst-case scenario (95% of the population affected), and the expected cost in dollars (factors to consider are medical costs, training costs for replacing a member, updating controls, etc.). The expected cost is determined via long term effects.

Figure 28 contains two lists of Existing Controls. One list in the middle of the screen and is based on historical information in ILER, which is a list of controls that have been used for this specific combination of Source and Health Threat. These are the Controls that the Mission Planner should be restricted to. The list of Controls on the right-hand side is a longer list and represents all Controls that have been used at this location. However, many of those do not apply to the chosen Source and Threat. This unrestricted list is due to Tableau’s method of creating selection lists. With more logic built into the dashboard, the middle list would be selectable. The goal here is to present the Mission Planner with all potentially relevant Controls.

Furthermore, one or more Controls could be selected. In other words, not all Controls are mutually exclusive. As Controls are selected on the right by adding checkmarks, the pie charts at the bottom of the screen will change. Again, with more programming logic written in code, the two pie charts would change independently. One control might affect the potential population

while another control could affect the severity. For example, with no Controls selected both pie charts are completely gray. As Controls are selected, a portion of the pie charts, small slices, will turn blue meaning that a portion of the population will likely not be affected or affects in a less severe way.

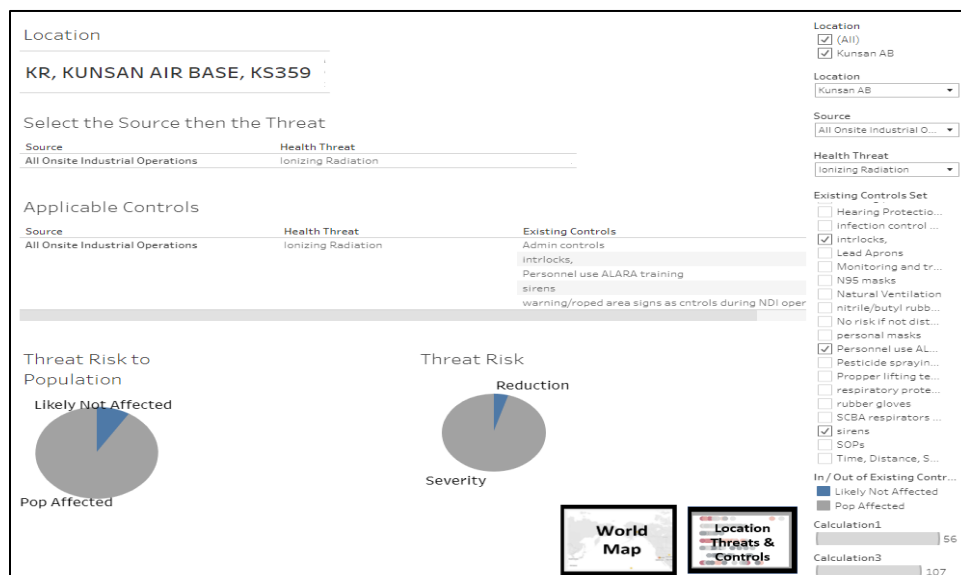


Figure 30. Physical Hazards by Location Dashboard (Outcomes), Pie Charts

This page should assist decision makers in making the most informed decisions in mission planning. It also allows the decision maker to focus on one threat at a time and review a list of potential controls. Additional information is sometimes made available concerning the chosen source and health threat. When available space is provided on this page in the Dashboard to display a note, a chart, a table, or image that could further provide information or insight to the decision maker.

Data Sources – This Dashboard is still in the development stage. It currently utilizes data downloaded from the BCS DOEHRs-EH, 07A – Corporate reports OEHS CSM “2. OEHS CSM by Program Office”. This information is located within the ILER Location but is not easily accessible.

We had lot of interaction with members from AFCENT and they shared their SG Pre-Deployment Site Survey checklist with us (please see Appendix D). This checklist came out in the June-July 2023 timeline and our dashboard mock-ups had already been designed. Our initial and final dashboard designs are in line with what their mission planners are looking at before they plan their operations over in that AOR. The ILER application has some of this information (via OEHS CSM from DOEHRs) but not for all locations.

10.0 FINAL CONCLUSION AND COAS

This project has been a success. The ILER itself can be useful for mission planners (at all levels) to enhance decision making. However, the use of ILER along with other MHS data would be more beneficial. In the future, further exploratory measures are necessary. The table below is a

listing of COAs, we have identified and are **in addition to COAs in the Discovery Phase and Initial Development Phase.**

Table 8. Final COA Listing

Issue/COA
Conduct a new Studies and Analysis Project with an expanded Scope that will include the following (see below).
COAs from Tables 6 and 7 need to be explored further.
Digital pipeline between DOEHRS and ILER is not specified and difficult to tap into. This issue was not able to be fully explored during the duration of this project. When POCs are identified, link up digital pipelines so information will flow.
Dashboard developers should acquire access to Informatica so that informed decision making options can be incorporated into the Mission Planning Application software as new warfighter outcomes and option choices become available. Informatica is the tool of choice by the ILER development team to perform extract, transfer, load operations on DOERHS data.
Sift through the data and correlate diagnosis with locations. There is an increased interest for the potential to create Health of the Force reports. ILER does not have trends for certain conditions at various locations. Information pieces in ILER have not been explored, i.e., how many people experience this health effect from being at location X...i.e., hearing loss, cancer, mental health issues, etc.
Create user prompts for tool user, so inputs can affect outcomes. Cannot input mission parameters for decision makers to enter applicable data.
Other MHS info has not been integrated into the ILER digital pipeline. In the future, ILER will have a pipeline with MHS Genesis and that will help fill in some of the data gaps.
Determine what program would be compatible with ILER if we did add this tool as a USER function. Python, rStudio, Java, etc? The ILER team is looking into this and there could be an AtHOC or BCS type platform created.
Create ILER User role in ILER for planners since the data pipeline already exists. This will be TBD by ILER team.
Determine if the tool work if no network/internet available (will planner be able to aggregate data)? This is out of the scope of this project.
In Location dashboard, when certain controls are selected, one could click on them to take you to a more in-depth screen for control breakdown and which work best for the hazard. For example, noise dashboard PPE selection. This could be explored in the future.
In dashboards, controls need to be separated to ensure information is accurate and realistic. For example, in the noise dashboard (Figures 24 and 25), if ear plugs are selected and noise attenuation of the plugs is not sufficient, a decision maker cannot select double hearing protection devices if needed (ear plugs and muffs are not separated). This also applies to the example Kunsan AB Dashboard (Figure 30). It is not realistic to select two sets of earplugs to

attenuate noise levels below 85 dBA. This issue will also pertain to other hazards/controls to include chemicals, radiation, etc.
Utilize/aggregate AFCENT Pre-Deployment Site Assessment Checklist information for locations that do not have data and incorporate that into a tool. This is out of the scope of this project.
Tableau has limited functionality. Other software options need to be explored for dashboard layouts (Oracle, Java, etc.), Tableau is not the intended platform.
More interactive functions need to be created and added to predict mission outcomes.
SEG/Shop breakdowns need to be further developed for planning purposes on different mission levels. Much like the EOD dashboard, see Figure 13 for example.
Dashboards created with minimal rows of data from various systems, for demonstration purposes. Create dashboards with full data sets, to showcase full potential.
Images and reference figures will need to be updated. Ensure links are current and still applicable as regulations change. This is out of the scope of this project.
DOEHRS IH will be cleaned up to reflect ILER. This effort is on the BEE flights. This is out of the scope of this project.
Data estimations for population risk and risk pie charts, confidence intervals could be added but this depends on data. This could be explored in the future. This is out of the scope of this project.
Exploration of the various MAJCOM operations has not been identified to full potential. There are measures that need to be incorporated into a tool for future planning and planning for more of a wartime tempo operation. We need more feedback from MAJCOMs with a wartime/faster operation tempo, especially USAFE. This is out of the scope of this project.
Explore MHS information planners have access to for locations that are not in the ILER. ILER does have location information for various geospatial locations that the military services have been to. For example, the Army, Navy, etc. have info for locations that the air force might be going to and that might not have information. If there is an operation being conducted in Africa and the Air Force cannot find information on that particular location, there is most likely something in the ILER. See Figure 32 below.
Explore the BLADE application used in USAFE. Not all location(s) OEHSAs, site assessment information is located within the ILER. If there is a quick mission to base x, and members will no longer go there, it is not documented and the loop is not closed as far as member's ILER. This type of information (for these missions) might be entered into a system called BLADE (it is in IOP and used by A14 and Security Forces). The collaboration with the ILER and this application could be linked in the future. This is out of the scope of the project.
Outcomes and severity can be based off historical outcomes (i.e. hearing loss, member's get certain conditions, etc.) all can be pulled from ILER and other MHS applications. This could be explored in the future. DOEHRs EAPs could be factored into these outcomes as well. This is out of the scope of this project.
ILER does not catch all member's exposures (i.e. Bio member's air sampling for Lead or CrVI, etc). This is a base level DOEHRs entry issue, but it is a missing piece to "close the loop" on member's ILER. This is out of the scope of this project.
Identify the full extent of what the stressors a planner has before the mission happens and what decisions can be made ahead of time. The need for more feedback is essential. This is out of the scope of this project.
Form a working group to complete legacy exposure pathway information to make it 100% useful.

Explore adding location-based hospital capabilities from external MHS sources. - Identify what the risks are from sourcing at various locations as far as what local hospitals may be treating their patients for (i.e. infectious diseases, vector borne diseases, etc.). Some of these are identified within the ILER and the OEHS information. Note: This COA was **out of the scope of this project however**, the MEDCOP tool appeared to address this issue.

Explore the functionality of the MHS Genesis/ILER interface. In the Initial Development Phase, it was stated that the ILER is building an interface with MHS Genesis for exposure data. Medical providers will be able to view “critical exposures” that will be flagged, via ILER. These critical exposures summary by SEG or location could be useful in the tool for planners to be able to see a potential for these types of exposures. See Figure 31 below, for a better visualization and information.

Form a Data Quality Initiative Work Group to address the validity of MHS data and data links between systems. The validity of the data may be a concern and making sure data is important.

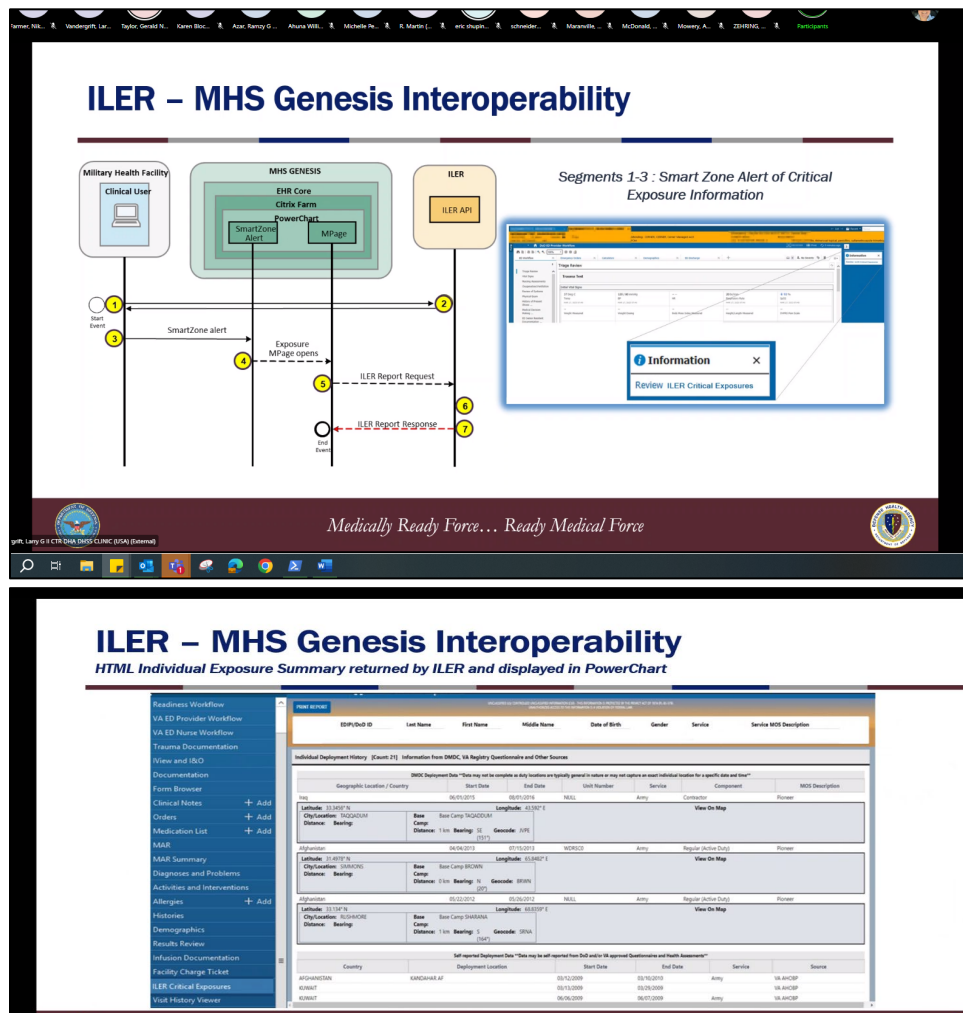


Figure 31. ILER/Genesis Interface Interoperability

Combatant Command (COCOM) ↑↓	Location Type ↑↓	Location Name ↑↓	Country ↑↓	State ↑↓
AFRICOM	Base Camp	TADJOURA	Djibouti	
AFRICOM	Base Camp	SIMBA	Kenya	
AFRICOM	Base Camp	DAKAR AIRFIELD CAMP	Senegal	
AFRICOM	Installation	DJ, Camp Lemonnier	Djibouti	
AFRICOM	Base Camp	UNKNOWN	Djibouti	
AFRICOM	Base Camp	MONROVIA	Liberia	
AFRICOM	Base Camp	ROBERTSON IAP	Liberia	
AFRICOM	Base Camp	AGADIR	Morocco	
AFRICOM	Base Camp	NIAMEY	Niger	
AFRICOM	Base Camp	TAHOUA	Niger	
AFRICOM	Base Camp	LAGOS	Nigeria	
AFRICOM	Base Camp	AES HOUSE (Bamako)	Mali	
AFRICOM	Base Camp	SOFLE TEAM HOUSE OUAGADOUGOU	Burkina Faso	
AFRICOM	Base Camp	ATAR	Mauritania	
AFRICOM	Base Camp	NOUAKCHOTT	Mauritania	
AFRICOM	Base Camp	ENTEBBE		
AFRICOM	Base Camp	TAMALE	Ghana	
AFRICOM	Base Camp	BARCLAY TRAINING CENTER (BTC)	Liberia	
AFRICOM	Base Camp	NEMA	Mauritania	
AFRICOM	Base Camp	AGADEZ	Niger	
AFRICOM	Base Camp	AGUELAL	Niger	
AFRICOM	Base Camp	DIFFA	Niger	
AFRICOM	Base Camp	DIRKOU	Niger	
AFRICOM	Base Camp	LILONGWE	Malawi	
AFRICOM	Base Camp	ARBA MINCH AIRPORT	Ethiopia	
AFRICOM	Base Camp	SEYCHELLES AIRPORT	Seychelles	
AFRICOM	Base Camp	NZARA	Sudan	
AFRICOM	Base Camp	ZAGRE	Burkina Faso	
AFRICOM	Base Camp	GBEDIAH ETU	Liberia	

Displaying 1 - 30 of 85, Page: 1/3 << < 1 2 3 > >> Rows per page: 30 Go to page: 1

Figure 32. ILER Africa Location Information

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12.0 LIST OF ACRONYMS

AFHSB – Armed Forces Health Surveillance Branch

AHI – Anomaly’s Health Incidents

AFSAS – Air Force Safety Center

AOR – Area of Operations

ASIMS – Aeromedical Services Information Management System

ATAK – Android-Based Tactical Assault Kit or Tactical Awareness Kit

BATDOK – Battlefield Assisted Trauma Distributed Observation Kit

BCS – Business Objects

C2IMERA – Command and Control Incident management Emergency Response Application

CRG – Contingency Response Groups

COA – Course of Action

DMDC – Defense Manpower Data Center

DMLSS – Defense Medical Logistics Standard Support

DOEHRS – Defense Occupational and Environmental Health Readiness System

EH – Environmental Health

ESAMS – Enterprise Safety Application Management System

ESOH –Environmental Safety and Occupational Health

EOD – Explosive Ordinance Disposal

FTE – Full Time Employee

FOC – Final Operating Capability

HAIMS – Healthcare Artifacts and Image Management Solution

IH – Industrial Hygiene

ILER – Individual Longitudinal Exposure Record

IOC – Initial Operating Capability (IOC)

MDR – Military Data Repository

MEDPROS – Medical Protection System

MIP – Military Health System Information Platform

MST – Mission Sustainment Team

OEHSA – Occupational and Environmental Health Site Assessment

POEMS – Periodic Occupational and Environmental Monitoring Summary

PRIMS – Physical Readiness Information Management System

RAC – Risk Assessment Code

SAAR – System Authorization Access Request

SEG – Similar Exposure Groups

SQL – Structured Query Language

TAK – Tactical Assault Kit or Tactical Awareness Kit

TIC/TIM – Toxic Industrial Chemicals/Toxic Industrial Materials

VA – Veterans Affairs

APPENDIX A - List of Contacts and Contributors

21 MDS Sq CC (ret.) - Jana Weiner initial planning, need for tool concept.	36 CRG (Bio, PH, IDMT, Flt Doc)
325 MDG/CC	88 ORMS/SGPB MAJCOM Functional Manager
DHA Facilities Enterprise	2 CES Unit Deployment Manager
Deputy Chief, Facility Operations Branch	
Interim Chief, Sustainment, Restoration & Modernization	
75 MDG Dental Flight Commander	15 SOS Ariel Port
AFMC AFLCMC/XA Configuration and Data Management	435 CRG Planning Superintendent & OIC
Architecture and Integration Directorate	
86 AES Flight Nurse	USAFE A4/A4CX
AETC AFRS/SE Occupational Safety Manager	C2IMERA Project Managers
21 ORMS/SGPB Deputy Flight Commander	AFSOC SG/SGPB
17 TRW/XPO	AFSOC A4/A4RX
AFMS SFIMSC Det 4/PSE	51 CES/CEX
17 CES/RSC (Radar Spark Cell) Emergency Management POC	8 CES/CEX
87 CES/CEX Flight Chief	87 ABW/XP
60 SFS/S30 SEL	USAFE/SG Medical Counter CBRN Operations
88 XP	375 AMW/IGI former Red Horse
88 XPX	1 SOCES/SEL
21 MDS/SGPM NCOIC	354 FW/ADA prior POL
56 MXG/CCR prior Plans Scheduling and Documentation	23 STS/CMS
Bioenvironmental Engineering members	788 CES/CEXX
673 ORMS/SGPM Public Health Flight Chief	USAFSAM DAF Unit Suicide Risk Analysis Modeling
Medical Logistics POCs	711 HPW/RHBAP BATDOK POC
USAFE SG/SGP	USAFE SG
ILER Team	Joint Surveillance Assessment & Techniques Subgroup
USAFE SG/SGR	

APPENDIX B – How to Gain Access to MIP

How to Gain Access – Complete and submit a SAAR application. This can take a few weeks to a few months. The best approach is to complete the form and then join the Wednesday and Thursday meetings to make sure the application goes smoothly. Here is a webpage for links to the meetings - <https://carepoint.health.mil/sites/MIP/mugteam/SitePages/EIDS%20SAAR.aspx>.

The steps for gaining access is to submit a SAAR, and attend the Thursday meetings to make sure there are no holdups. The meetings are great for resolving issues quickly. Once the SAAR is approved, access to one or more databases is also required. I got access as EIDS DA/DS. Below is additional information to help in completing a new MIP access request using eSAAR.

- I. REQUEST TYPE
 - a. Type of Access: Authorized
 - b. System Name: MIP POR AWS Enclave
 - c. System Location: AWS GovCloud
 - d. Type of Request: Initial
- II. ORGANIZATION INFORMATION
 - a. Organization: Air Force
 - b. Mailing Address: 2510 5th Street Dayton, Ohio 45433 United States
 - c. Department: US Air Force School of Aerospace Medicine
- III. ADDITIONAL WORK INFORMATION
 - a. Phone (DSN or Commercial):
 - b. Citizenship: United States
 - c. Designation of Person: Contractor
 - d. Job Title: Data Scientist
 - e. Company Name: Innovative Element
 - f. Secondary Email: youremail@yourcompany.com
 - g. Contract Number: your contract number
 - h. DSA Number: FA-2396
- IV. ACCESS DETAILS
 - a. PIV Number: 1519888269157005
 - b. Access Level: Unclassified
 - c. Remote Access Type: AVHE Pre PROD
 - d. Project(s) - Role(s):
 - e. MIP SF | Data Analyst/Data Scientist
 - f. Do you know anyone with similar access on your team? Yes
 - g. Team member name: Jean Archambeau
 - h. Supervisor Email: christopher.edwards.58@us.af.mil
 - i. FSO Email: michael.zetts@us.af.mil
 - j. Additional Notes (Optional): N/A

Tools to Use – AVHE provides a production system and a pre-production system. Most developers do their work in pre-production. When ready, the developers move their work to the staging area in production to eventually be in the "full" production side. AVHE has Anaconda, RStudio, PyCharm, Tableau, and many other apps. MIP provides two platforms for production: AWS and .com. Apps can be deployed to either.

The MIP New User Guide requires user to run Citrix Workspace in admin mode. However, our own IT Support won't approve running anything in admin mode, especially with remote employees, we have to use the Desktop App.

1. Use Chrome to connect to avhe.health.mil, use my CAC card to logon
2. Click on Desktop at the top
3. Click on DHA Desktop – MIP AWS, download the startup file, and open it
4. Click on Permit Use and Read/Write Access options
5. The desktop shows up as a screen and I double click the Db Visualizer app
6. Within Db Visualizer, I click on Create Database Connection
7. I click on Start Connection Wizard
8. Follow the details in the pdf Set Up Redshift Connection using Active Directory Authentication_AWS_STGProd.

Appendix C - MedCop Fact Sheets



DATA SOURCES

- Global Control and Command System-Joint
- Joint Medical Asset Repository
- Health Surveillance Explorer
- CarePoint
- Travax[®]
- Air Force Weather System

COVID vaccine distribution and administrative tracking tool

System functionality is designed around stakeholder user personas for optimal usability

Learn more about your specific Command's MedCOP POCs, access points, and training resources at www.milsuite.mil/book/community/spaces/jomis/medcop. (CAC restricted)

DHMS JOINT OPERATIONAL MEDICINE INFORMATION SYSTEMS
PROGRAM MANAGEMENT OFFICE

1700 N. MOORE ST., 23RD FLOOR
ARLINGTON, VA 22209

DEFENSE HEALTHCARE MANAGEMENT SYSTEMS www.health.mil/dhms
DEFENSE HEALTHCARE MANAGEMENT SYSTEMS AS OF MARCH 2023
DISTRIBUTION A: APPROVED FOR PUBLIC RELEASE

Management Office, facilitates near real-time operational medicine information sharing and collaboration inside and outside the medical community. MedCOP consolidates data from multiple trusted data sources and supports data synchronization across multiple network domains to provide a universally accessible, situationally relevant and globally integrated medical common operating picture.

MedCOP is deployed to combatant command and service medical command, control, communications, computers, and intelligence users at multiple echelons.



Leverages secure continuous update pipeline to rapidly add new and emerging capabilities

Supports health services synchronization through an intuitive user interface for near real-time medical operational readiness information sharing and global visibility

Replicates global data across combatant commands (CCMDs), providing access closer to the tactical edge

Allows for Annex Q reporting (beds, equipment, supplies, personnel and labs), facility management and global awareness, providing enhanced situational awareness across the Department of Defense

Provides fully accredited integration with joint command and control mission systems, including Army and CCMD service staff, operations and intelligence systems

Automates data entry



JOINT OPERATIONAL MEDICINE INFORMATION SYSTEMS MEDICAL COMMON OPERATING PICTURE (MedCOP)

MedCOP is an interactive decision-support platform arming command surgeons and medical commanders with near real-time health surveillance and medical operations visibility to enable well-informed decisions.

PRODUCT OVERVIEW



MedCOP is the Joint Health Services' mission command platform, providing near real-time visibility of unit health, equipment and supplies to enable informed decisions. The web-based capability, managed by the Joint Operational Medicine Information Systems (JOMIS) Program

CAPABILITIES

- Provides intuitive, customizable and shareable dashboards for strategic, operational and tactical level operations
- Enables collaboration across domains and enclaves through chat, file sharing and other tools

information is displayed and how those different elements are arranged.

3. What are the different features/tools of MedCOP?

- a. MedReports: enables AnnexQ reporting by units; reportable areas include bed equipment, supplies, personnel, vaccines, special surveillance and labs
- b. Health Services Placemat: the Annex Q reporting visualization tool; provides trend analysis of all data points within Med Reports
- c. Patient Movement: allows users to C2 and maintain Situational Awareness (SA) of patient injury and movement status across their Area of Responsibility (AOR)
- d. Blood Reports: tracks and filters blood products across Combatant Commands, facilities, units, and Service Components
- e. Health Surveillance Explorer: allows Combatant Commands to identify global health threats and disease outbreaks in near real-time

4. What are Automated Information Discovery Environment (AIDE) applications and how do they differ from MedCOP tools?

- a. MedCOP is hosted on the AIDE server and is considered an AIDE Application. The applications applicable to MedCOP are listed below.
- b. Additional AIDE Applications:
 - i. Chat: communication tool that enables users to collaborate and share information
 - ii. AIDE Drive: file management system for viewing, storing, and handling files shared across the AIDE architecture
 - iii. CEREBRO: interactive suite that allows for coordination and communication between users to accomplish mission goals

- iv. ARES: live entity visualization tool that possesses thousands of moving tracks while simultaneously providing web-enabled, 2D/3D geospatial situational awareness
- v. CONOPS: streamlines the process of creating an operation from initial conception to execution through enhanced collaboration
- vi. Dashboard: provides users with a personalized, custom-created view of key information

5. How do I access MedCOP?

- a. MedCOP is a web-based capability that requires users to have a SIPR Token and be established in the Active Directory in order to access the MedCOP production environment. The MedCOP training tier is accessible on NIPR as well as any personal computer browser since it is an unclassified instance hosted on a cloud environment. All personnel can request an account to practice MedCOP use without accessing sensitive data sets.

6. Where does MedCOP pull data from?

- a. MedCOP receives data from various systems identified by Services and JOMIS. Using Agile engineering methodology, MedCOP is able to constantly expand capabilities to receive data from newly identified systems.

7. How will I know about updates to MedCOP?

- a. Each time an update is made to MedCOP, the enhancements are included in the "What's New in MedCOP?" document located in the AIDE Drive

APPENDIX D – AFCENT Pre-Deployment Site Assessment (PDSS) Checklist

AFCENT/SG Pre-Deployment Site Survey (PDSS) Checklist				Page 1 of 17
Part A. Purpose				
<p>Medical personnel who perform pre-deployment site surveys (PDSS) in support of Agile Combat Employment (ACE) for 9 AF (AFCENT) use this checklist to summarize observations, with recurring surveys over time. The observations are used to monitor activities and to assist AFCENT planners. The checklist does not supersede authoritative standards.</p>				
Part B. Administrative Information				
1. Surveyor's Name		3. Checklist Completion Date		
2. Surveyor's Unit				
4. Country		6. Previous Checklist Date		
5. Installation				
6. Units at Installation		7. Installation Personnel No.		
8. Geo-Coordinates				
Part C. Overall Assessment				
Green (All applicable sections Green)	Amber (Other combinations)		Red (1 or more Red)	
Section Scoring Summary				
Section	Not Applicable	Green/Meets	Amber	Red/Fails
1. Water				
2. Food Sanitation				
3. Noise Hazards				
4. Waste Management				
5. Soil Contamination				
6. Hazardous Materials				
7. Pest Management				
8. Radiation Hazards				
9. Air Quality				
10. General Sanitation				
11. OEH Site Surveillance				
12. Airfield Factors				
13. Medical Transportation				
14. On-Base Medical Capabilities				
15. Medical Logistics & Supply				
Overall Remarks				

Part D. Checklist Elements

SCORING INSTRUCTIONS. Score elements in terms of if Meets (**GREEN**), Partially Meets (**AMBER**), or Fails (**RED**) the written standard. These standards are reflections of key elements within the authoritative sources that are listed on the last page. The checklist does not supersede the authoritative standards.

1. WATER

Key references at back

1A. Water Classes/Quality and Acceptable Activities. Water is only used for approved activities based on its water quality level (TB MED 577 Table 2-12). If applicable, Preventive Medicine (PVNTMED)3 assets have conducted a risk assessment and secured command approval for use of Lesser quality water for non-routine activities (e.g., Class II / III / IV water used for a Class I purpose, such as showering). Score as **AMBER** if approvals are in-process, but not yet achieved. Otherwise, score as **RED**.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

1B. Bottled Water & Packaged Water. This water meets requirements in TB MED 577 Section 2.2. Bottled water is approved by veterinary service personnel and listed in the *Worldwide Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement*. Score as **AMBER** if potable water standards are met, but source not yet approved by veterinary service personnel. Score as **RED** if standards are not met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

1C. Potable Water Quality. Field-measured free available chlorine (FAC) residual throughout the potable water systems meets recommended concentrations (TB MED 577 Table 2-6). Drinking water meets Short Term Potability (STP), microbiological, and Long Term Potability (LTP) Standards in TB MED 577 Tables 4-2, 4-3, and 4-4. Score as **AMBER** if STP standards are met and LTP standards evaluation is on-going. Score as **RED** if STP or LTP standards are not met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

1D. Potable Water Testing and Inspection Frequencies. PVNTMED personnel periodically test potable water in accordance with TB MED 577 Table 4-6 frequencies. PVNTMED personnel periodically inspect each potable water system component in accordance with TB MED 577 Table 16-1 frequencies. Score as **AMBER** if frequencies are almost meeting expectations. Score as **RED** if any system is not receiving recurring inspections.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

1E. Non-Potable Water. Untreated natural/municipal water sources are known and secured. Such water used for any non-potable activity meets basic quality requirements (TB MED 577 Table 4-5). Non-potable activities are summarized in TB MED 577 Table 2-12. If used for showering, personal hygiene, and /or other human contact uses, disinfected fresh water has a 1 mg/L FAC residual, is negative for total coliform and E. coli., and meets the basic quality requirements in TB MED 577 Table 4-5. Score as **AMBER** if all but one of the basic quality requirements does not meet standards. Otherwise, score as **RED**.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section

Status Score **

5 Green

Green

Other combinations

Amber

Whole section not applicable

1 or more Red

Red

Water Notes

Part D. Checklist Elements (continued)

2. FOOD SANITATION

Key references at back

2A. Food Service Facility Health Standards. Food service operations comply with provisions of the Tri-Service Food Code and facilities are fully or substantially compliant with military public health standards, as determined by PVNTMED personnel. Score as **RED** if one or more facilities are 'noncompliant.' Otherwise, score as **AMBER** if one or more facilities are only substantially compliant.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

2B. Food Service Facility Inspection Frequencies. Each food service facility has received a recent Food Facility Risk Assessment Survey (DD Form 2972) and is being inspected according to its required minimum risk-based inspection frequency, per the Tri-Service Food Code Table 8-2. Score as **RED** if one or more facilities do not have a recently completed DD Form 2972. Otherwise, score as **AMBER** if one or more facilities are not meeting their minimum inspection frequency requirements.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section Status Score **	2 Green	Green		Other combinations	Amber	
	Whole section not applicable			1 or more Red	Red	

Food Sanitation Notes

3. NOISE HAZARDS

Key references at back

3A. Potentially Hazardous Noise Areas. Areas with occupational noise hazards are clearly designated using signs such as "Hazardous Noise" or "Hearing Protection Required." Within the constraints of maintaining mission readiness, personnel are protected from hazardous noise levels (i.e., steady state noise greater than or equal to 85 dBA TWA and impulse noise levels greater than or equal to 140 dBP). Engineering controls are applied in order to reduce noise to below hazardous levels. Extra hearing protection equipment is on hand. Score as **AMBER** if most requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

3B. Noise-Sensitive Land Uses. Operational noise levels in sensitive areas (e.g., billeting areas, medical facilities, places of worship) are lower than that considered to be nuisance and do not exceed hazardous levels (see **9A**). It is a best management practice to locate noise-sensitive land uses as far away from noise sources as possible. Score as **AMBER** if noise reaches annoyance levels. Score as **RED** if it reaches hazardous levels.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section Status Score **	2 Green	Green		Other combinations	Amber	
	Whole section not applicable			1 or more Red	Red	

Noise Hazards Notes

Part D. Checklist Elements (continued)

4. WASTE MANAGEMENT

Key references at back

4A. Food and Organic Waste. All wastes generated at food facilities are stored in covered, leak-proof, waterproof, vermin-proof containers with functioning lids. Containers with food are emptied no less than weekly and have no visible signs of vector infestation. Other organic wastes, such as yard wastes, are segregated, emptied regularly, and not overfilled. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

4B. Nonhazardous Solid Waste Disposal. Nonhazardous solid waste is properly segregated from other waste streams; managed to protect public health and the environment from hazards; and recycled or disposed of in a landfill, incinerator, or burn pit in accordance with applicable standards. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

4C. Hazardous Waste (HW) and Regulated Medical Waste (RMW). All HW and RMW has proper oversight, containment, segregation, labeling, storage, transportation, treatment, and disposal. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

4D. Wastewater. Wastewater is collected in holding tanks or directed to properly operated septic tanks or wastewater treatment plants. This includes industrial waste water, black water trenches, and gray water retaining/evaporation ponds. Hauled or trucked wastewater is transported in dedicated, marked vehicles to locations specified by the treatment system operator. Reuse of treated grey water is conducted only with approval by preventive medicine. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section

Status Score **

4 Green

Green

Other combinations

Amber

Whole section not applicable

1 or more Red

Red

Waste Management Notes

5. SOIL CONTAMINATION

Key references at back

Any known or suspected soil contamination due to previous uses of the land or due to current activities are limited to areas away from personnel and that do not pose a dust resuspension problem. Score as **AMBER** if soil contamination concerns exist but are not considered high or urgent priorities based on best practice guidance for soil exposure pathways in OEH site surveillance doctrine. Score as **RED** if there are areas with such concerns and are considered high or urgent priorities.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Soil Contamination Notes

Part D. Checklist Elements (continued)

6. HAZARDOUS MATERIALS (HAZMAT)

Key references at back

6A. Hazardous Materials Storage. HAZMAT is segregated, labeled, and stored correctly at safe distances from billeting, ammunition supply points, and sources of ignition/reaction. Secondary containment with sufficient capacity is provided for containers and tanks. Inventories are accurately maintained and secured. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

6B. Hazardous Materials Logistics and Inspections. HAZMAT is properly labeled, containerized, transported, manifested, scheduled, and received per requirements in DTR 4500.9-R. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

6C. Spill Prevention and Response. Plans for spill prevention and response are current and posted for each type and location of HAZMAT. HAZMAT areas are routinely inspected, and secondary containment and physical access controls are in use. Safety Data Sheets (SDS) are available for each HAZMAT. Spill kits are available for the type and quantity of stored HAZMAT. Appropriate PPE is available and used by HAZMAT workers and spill responders. Score as **RED** if half or more requirements are not met. Score as **AMBER** if most but not all the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section

3 Green

Green

Other combinations

Amber

Status Score **

Whole section not applicable

1 or more Red

Red

HAZMAT Notes

7. PEST MANAGEMENT

Key references at back

7A. Standing Water. No standing water or artificial containers (e.g., tires, barrels, etc.) in troop living and work areas. Score as **AMBER** if standing water and containers are present but standing water is treated and containers are emptied frequently. Score as **RED** if containers and untreated standing water are present.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7B. Vegetation and Debris. Vegetation is less than 6 inches high around troop living/ working areas. All unnecessary debris (building materials, trash, pallets, etc.) around buildings is removed to eliminate harborage for snakes, rodents, and feral animals. Score as **AMBER** if vegetation is 6 inches or higher and/or debris is present in living/working areas. Score as **RED** if area and vegetation are unmaintained and pests are presence as a result.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7C. Filth Flies. Filth flies are controlled around dining/living areas. Fly traps and fly exclusion measures are in place if flies are present. Good sanitation practices are employed on the camp to prevent breeding. Waste receptacles are covered, emptied frequently, and cleaned on a recurring basis. Score as **AMBER** if sanitation practices and/or pest management practices are only partially practiced. Score as **RED** if there are non-existent/completely unsuccessful sanitation and pest management practices.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets PDSS-Checklist-v0.15-Ready

Part D. Checklist Elements (continued)

7. PEST MANAGEMENT (continued)

7D. Mosquitoes and Sand Flies. Standing water is monitored weekly for mosquito larvae/pupae and is treated to prevent mosquito development. Routine surveillance conducted for mosquitoes and sand flies. Mosquitoes and sand flies are identified and submitted for pathogen detection. Score as **AMBER** if water is monitored weekly and larvae are managed, but no adult monitoring or management is occurring. Score as **RED** if mosquito and/or sand fly pest management is non-existent in all development stages.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7E. Ticks and Mites. Ticks and mites are not present around working/living areas. If present, chemical treatment should not be used unless other habitat modification measures have already been taken (as per 9B). Score as **AMBER** if ticks/mites are not present and vegetation not managed as per 9B. Score as **RED** if ticks/mites are present.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7F. Biting and Stinging Insects (wasps, scorpions, etc.) Biting and stinging insects/arthropods are controlled on the camp. If present, population numbers are maintained below an established threshold that prevents illness, injury, or significantly decreased morale among troops. Score as **AMBER** if population numbers are only slightly above the desired threshold and no control measures are in place. Score as **RED** if populations are present in large, harmful above threshold numbers.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7G. Rodents. No significant rodent infestation is present in or around buildings. No sign of rodent damage or infestation is present in food service facilities. Trash is managed as per 9C and harborage around living/working areas is eliminated as per 9B. Appropriate monitoring tools available. Score as **AMBER** if trash/refuse found within troop living/working areas, but no rodents have been observed or trapped. Score as **RED** if rodent infestation is present.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7H. Stray Animals. Camp is free of wild and feral animals, and no animals are kept as mascots. Personnel do not provide food, water, or shelter to strays. If required, personnel have a plan in place to remove stray animals that enter the basecamp. Score as **AMBER** if stray animals are occasionally present but immediately removed. Score as **RED** if stray animals and/or mascots are present.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

7I. DoD Insect Repellent System. Service Members have access to all components of the DoD Insect Repellent System, including properly worn permethrin-treated uniforms, DoD-approved insect repellents for exposed skin, bed nets if sleeping in an austere environment, and appropriate chemoprophylaxis. Command policies known and followed for proper use of the System. Score as **AMBER** if not all personnel wear treated uniforms to standard and limited supplies are available. Score as **RED** if all personnel do not wear treated uniforms to standard.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section Status Score **

8 or 9 Green	Green
Whole section not applicable	

Other combinations	Amber
3 or more Red	Red

Pest Management Notes

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets PDSS - Checklist-v0.15-Testing

Part D. Checklist Elements (continued)

8. RADIATION (IONIZING AND NON-IONIZING)

Key references at back

8A. Non-Ionizing Radiation Sources Inventory & Maintenance. Sources of non-ionizing radiation are identified. Sources may include lasers, high intensity lights, radars, vehicular radios, tactical satellite communication terminals, and electronic countermeasures). Electronic maintenance activities adhere to the radiation safety requirements for electronic equipment. Score as **AMBER** if some but not all of the requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

8B. Non-Ionizing Radiation Areas. Areas with non-ionizing radiation hazards are controlled using administrative controls (such as posting of warning signs) and/or engineering controls (such as interlocks and barriers). If exposure to the laser beam from a class 3B or 4 laser cannot be prevented by administrative and engineering controls, then provide appropriate PPE (laser eye protection). Administrative and engineering requirements are published in the operational doctrine for the source of non-ionizing radiation. Score as **AMBER** if some but not all the requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

8D. Radiation Safety Program. The Radiation Safety Officer has been designated in writing by the Commander. The radiation safety program is adequate in scope and is commensurate with the hazards present. Score as **AMBER** if some but not all the requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

8C. Ionizing Radiation Source Inventory and Storage. Radioactive material and x-ray producing devices are identified (such as self-luminesce targeting devices; chemical agent monitors; medical and EOD x-ray systems; and vehicle and cargo screening systems). An inventory of radioactive material and x-ray producing devices is maintained. Radioactive material is properly stored in segregated, secure areas when not used. Proper warning signs such as "Caution Radioactive Materials" and "Caution: X-rays" are present. Score as **AMBER** if some of the requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

8E. Force Health Protection and Emergency Response. Users of radioactive material and x-ray producing devices are aware of the hazards, trained in the proper use of the items, and aware of actions to take in an emergency such as radiation source damage and possible over exposure. Personnel monitoring devices (dosimetry) are provided for individuals occupationally exposed to ionizing radiation as determined by the Radiation Safety Officer and applicable regulations. Personnel express little or no concern about possible radiation exposure in the local area. Score as **AMBER** if some but not all the requirements are met. Score as **RED** if none of the requirements are met.

Meets	Green	
Partial	Amber	
Fail	Red	
Not applicable		

Section

Status Score **

5 Green

Green

Other combinations

Amber

Whole section not applicable

1 or more Red

Red

Radiation Notes

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Testing

PDSS-

Part D. Checklist Elements (continued)

9. AIR QUALITY					Key references at back	
9A. Local Air Quality. Air quality is not impaired by chronic haze, reduced visibility (less than 5 miles), or persistent odor due to air pollution. Personnel express little or no concern about local air quality. Score as AMBER if only some requirements are met. Score as RED if none of the requirements are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9B. Local Air Pollution Sources. No local sources (e.g., power plants, factories, burn pits) of air pollution are within 2 miles of camp. If local sources are present, air pollution from these sources does not degrade air quality within the camp. Personnel express little or no concern about air emissions produced by local air pollution sources. Score as AMBER if only some requirements are met. Score as RED if none of the requirements are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9C. Local Monitoring and Control of Air Quality. Host nation monitors local air quality and publishes air quality conditions. Host nation regulates air pollution sources. Local sources comply with host nation regulations. Score as AMBER if only some requirements are met. Score as RED if none of the requirements are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9D. Generators. There are no generators within the camp or they are positioned downwind of the camp population. Personnel express little or no concern with air emissions produced by generators. Score as AMBER if only some requirements are met. Score as RED if none of the requirements are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9E. Thermal Destruction of Waste. There are no burn barrels, burn pits, or incinerators within the camp, or they are positioned downwind of the camp population. Personnel express little or no concern with air emissions produced by open burning or waste incineration. Score as AMBER if only some requirements are met. Score as RED if none are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9F. Vehicular Road Dust/Combustion Exhaust. There is no road dust and/or combustion exhaust created by military vehicular activity, or it nearly always occurs downwind of the camp population. Personnel express little or no concern with air emissions related to military mobile sources (e.g., wheeled/tracked vehicles, rotary/fixed wing aircraft). Score as AMBER if only some requirements are met. Score as RED if none of the requirements are met.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
9G. Indoor Air Quality. No indoor air quality complaints are present and/or recent corrective actions were successful. Score as AMBER if there are complaints about indoor air quality and/or corrective actions are partially effective. Score as RED if a recent investigation indicates poor indoor air quality and/or corrective actions are absent or ineffective.					Meets	Green
					Partial	Amber
					Fail	Red
					Not applicable	
Section Status Score **	6 to 7 Green	Green		Other combinations	Amber	
	Whole section not applicable			2 or more Red	Red	
Air Quality Notes						

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Testing

Part D. Checklist Elements (continued)

10. GENERAL SANITATION				Key references at back	
10A. Troop Housing Space. Personnel living areas provide adequate space based on Service-specific standards. During emergencies and temporary peak billeting loads adequate space may be reduced for temporary periods of time. In those situations, commanders should acknowledge and accept the greater risk of respiratory disease. Score as AMBER if most but not all the requirements are met. Score as RED if none of the requirements are met.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
10B. Troop Housing Hygiene. Troop living areas should be kept clean, free of trash, and provide adequate ventilation exchange. Ventilation is adequate if there are (a) no objectionable odors, (b) no excessive condensation on walls and ceilings, (c) no musty odors or evidence of mold or mildew accumulation, and (d) there is adequate temperature and humidity controls. Score as AMBER if most but not all the requirements are met. Score as RED if none of the requirements are met.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
10C. Latrines, Showers, & Hand Washing Stations. There should be an adequate number of latrines. Under optimal conditions personnel should have access to a shower every day, or at least once every week to maintain good personal hygiene. Showers/latrines are cleaned daily or as necessary. Working hand-washing stations must be present near latrines and dining areas and consistently stocked. Score as AMBER if most but not all the requirements are met. Score as RED if none of the requirements are met.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
10D. Laundry & MWR Facilities, Gyms, & Barber/Beauty Shops. Facilities should meet sanitary health standards and comply with provisions in Service-specific doctrine and/or guidance. Score as AMBER if most but not all the requirements are met. Score as RED if none of the requirements are met.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
Section	3 or 4 Green	Green		Other combinations	Amber
Status Score **	Whole section not applicable			1 or more Red	Red
General Sanitation Notes					

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

PDSS-

Part D. Checklist Elements (continued)

11. OCCUPATIONAL AND ENVIRONMENTAL (OEHS) SITE SURVEILLANCE				Key references at back	
11A. Background Knowledge. The most recent Engineers' Environmental Baseline Survey (EBS) has been obtained or, for new locations only, a Preliminary Hazard Assessment (PLHA) is available. Score as AMBER if only one is available. Score as RED if both are unavailable.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
11B. Initial OEHS Survey. The Initial OEHS Site Assessment (OEHS) Survey has been completed for this location. A completed survey is one that has been marked 'QA Approved' within DOEHS. Score as AMBER if there is a current OEHS Survey underway, but not yet marked as 'QA Approved.' Score as RED if there is no OEHS Survey started yet.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
11D. Recurring OEHS Survey. The most recently completed OEHS Survey was 'QA Approved' less than 12 months ago. Score as AMBER if it has been longer than 12 months and score as RED if there is no OEHS survey or it has been more than 24 months. <i>Note:</i> Typically, an annual OEHS Survey will be required by HQ; however, assess this element using your HQ timing expectations.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
11E. Sampling Activities. The most recent set of air, water, and soil samples collected from the location were collected as part of a written, site-specific Sampling and Analysis Plan (SAP). Sampling activities at the location are proceeding according to plan, without major alterations or difficulties. Identify any major alterations and difficulties in the notes below. Score as AMBER if some requirements are met and only minor difficulties exist. Score as RED if none of the requirements are met.	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
11F. Health Risk Assessments. For each sampling activity, health risk assessments have been completed within 60 days of OEHS sample collection. If there are known sampling and/or sample delivery problems, then mark as AMBER . If there are health risk assessment delays beyond 120 days, then mark as RED .	Meets	Green			
	Partial	Amber			
	Fail	Red			
	Not applicable				
Section	4 or 5 Green	Green		Other combinations	Amber
Status Score **	Whole section not applicable			2 or more Red	Red
OEHS Site Surveillance Notes					

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
 Checklist-v0.15-Ready

Part D. Checklist Elements (continued)

12. AIRFIELD FACTORS				Key references at back			
12A. Are there limits operating hours of the airfield?	Available 24 hours	Green					
	Limited Availability	Amber					
	Not available	Red					
	Not applicable						
12B. Can the airfield support MEDEVAC or AE platforms (i.e. C-130, C-17, KC-135, etc.)?	All	Green					
	Limited	Amber					
	None	Red					
	Not applicable						
12C. If the Airfield cannot support MEDEVAC or AE platforms, how far is the nearest supportable airfield?	Non-limited airfield available	Green					
	Drivable	Amber					
	Not available	Red					
	Not applicable						
Section Status Score **	3 Green	Green		Other combinations	Amber		
	Whole section not applicable			1 or more Red	Red		
Airfield Factors Notes							
13. MEDICAL TRANSPORTATION				Key references at back			
13A. Are there host nation ambulance services available on base?	Available 24 hours	Green					
	Limited Availability	Amber					
	Not available	Red					
	Not applicable						
13B. Are the medical crews for those ambulances ATLS, STEMI certified?	Yes	Green					
	BLS only	Amber					
	No	Red					
	Not applicable						

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

Part D. Checklist Elements (continued)

13. MEDICAL TRANSPORTATION (continued)	Key references at back		
13C. What are the hours of coverage?	24 hours	Green	
	Availability	Amber	
	Not available	Red	
	Not applicable		
13D. How are ambulances dispatched to an incident or accident site?	Comm w/o limitation	Green	
	Limitations in comm	Amber	
	Inability to contact off-base support	Red	
	Not applicable		
13E. Can on-base ambulances transport patients off-base?	Yes	Green	
	Only a specified population or time	Amber	
	No	Red	
	Not applicable		
13F. What ground transportation is available from host nation facilities to the base?	No limitation	Green	
	Limited capacity	Amber	
	Not available	Red	
	Not applicable		
13G. Distance from facility to the base?	No care limitation to distance	Green	
	Limitation to care due to distance	Amber	
	No local facilities	Red	
	Not applicable		
13H. How are air ambulances dispatched to the base?	Comm w/o limitation	Green	
	Limitations in comm	Amber	
	Inability to contact off-base	Red	
	Not applicable		

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

PDSS-

Part D. Checklist Elements (continued)

13. MEDICAL TRANSPORTATION (continued)				Key references at back			
13I. Are the ambulances available on base for U.S. medical personnel to use?	Yes, w/o limitations	Green					
	Yes, w/ limitations	Amber					
	No	Red					
	Not applicable						
13J. What medical equipment is available on the ambulance?	Fully operational f/ATLS	Green					
	Missing critical care equipment	Amber					
	No available ambulances	Red					
	Not applicable						
13K. Who has custody of the U.S. ambulances?	Non-WRM ambulances available	Green					
	WRM ambulances available	Amber					
	No available ambulances	Red					
	Not applicable						
13L. Can the ambulances be driven off-base by U.S. personnel?	Yes, w/o limitations	Green					
	Yes, w/ limitations	Amber					
	No available ambulances	Red					
	Not applicable						
Section Status Score **	9-12 Green	Green		Other combinations	Amber		
	Whole section not applicable			4 or more Red	Red		
Medical Transportation Notes							

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

PDSS-

Part D. Checklist Elements (continued)

14. ON-BASE MEDICAL CAPABILITIES		Key references at back	
14A. Is there a host-nation medical facility on base that will provide care for U.S. personnel?	Yes	Green	
	Yes, but will prioritize host nation population first	Amber	
	No	Red	
	Not applicable		
14B. What capabilities are available?	Role 3 equivalent	Green	
	Role 2/Role 2 Plus equivalent	Amber	
	Role 1/Medic Care equivalent	Red	
	Not applicable		
14C. What are the hours of coverage?	24 hours	Green	
	Limited availability	Amber	
	Not available	Red	
	Not applicable		
14D. Is there a translator available?	24 hours	Green	
	Limited availability	Amber	
	Not available	Red	
	Not applicable		
14E. Is there a building available for U.S. medical personnel to establish a facility?	Hardened facility	Green	
	EMEDS tent	Amber	
	No facility or tent	Red	
	Not applicable		
14F. What medical equipment is available on site?	All equipment available	Green	
	Limited or WRM equipment available	Amber	
	Required equipment not available	Red	
	Not applicable		

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

PDSS-

Part D. Checklist Elements (continued)

14. ON-BASE MEDICAL CAPABILITIES (continued)						Key references at back		
14G. Are physical security measures present?						Yes	Green	
						Limited	Amber	
						None available	Red	
						Not applicable		
Section Status Score **	6-7 Green	Green		Other combinations	Amber			
	Whole section not applicable			2 or more Red	Red			
On-Base Medical Capabilities Notes								
15. MEDICAL LOGISTICS AND SUPPLY						Key references at back		
15A. Is there a host-nation medical facility on base that will provide care for U.S. personnel?						Yes	Green	
						Yes, with limitations	Amber	
						No	Red	
						Not applicable		
Section Status Score **	1 Green	Green		Other combinations	Amber			
	Whole section not applicable			1 Red	Red			
Medical Logistics and Supply Notes								
What medical equipment and supplies are available (not including WRM)? What is the electrical power availability/type on base?								
What medical supply is being transported to site by medical personnel?								
Where are controlled items or high-value equipment going to be stored/secured during non-operational periods?								

** Section status scoring should treat 'not applicable' elements as if they were Green/Meets.
Checklist-v0.15-Ready

PDSS-

AFCENT/SG Pre-Deployment Site Survey (PDSS) Checklist

Page 16 of 17

Part D. Checklist Elements (continued)**16. HEALTH SERVICES SUPPORT (HSS) Planning Factors**

Key references at back

HSS Notes

Supported population at risk (PAR)? Is U.S. medical personnel on site or moving to site with ACE team?

KEY REFERENCES

1	WATER	<ul style="list-style-type: none"> • TB MED 577 / NAVMED P-5010-10 / AFMAN 48-138_IP, Sanitary Control and Surveillance of Field Water Supplies.
2	FOOD SANITATION	<ul style="list-style-type: none"> • TB MED 530 / NAVMED P-5010-1 / AFMAN 48-147_IP, Tri-Service Food Code.
3	NOISE HAZARDS	<ul style="list-style-type: none"> • DODI 4715.13, DOD Noise Program • DODI 6055.12, Hearing Conservation Program • ATP 3-34.5 / MCRP 3-40B.2, Environmental Considerations
4	WASTE MANAGEMENT	<ul style="list-style-type: none"> • DoDM 4715.05, Overseas Environmental Baseline Guidance Document, Volume 3, Water. • DoDM 4715.05, Overseas Environmental Baseline Guidance Document, Volume 5, Waste. • DoDI 4715.19, Use of Open-Air Burn Pits in Contingency Operations • DoDI 4715.22, Environmental Management Policy for Contingency Locations • TM 3-34.56, Waste Management for Deployed Forces
5	SOIL CONTAMINATION	<ul style="list-style-type: none"> • NTRP 4-02.8 / AFTTP 3-2.82_IP / ATP 4-02.82, Occupational and Environmental Health Site Surveillance.
6	HAZARDOUS MATERIALS	<ul style="list-style-type: none"> • DoDM 4715.05, Overseas Environmental Baseline Guidance Document, Volume 4, Hazardous Materials, Storage Tanks, Spills, and Pesticides. • Defense Transportation Regulation (DTR) 4500.9-R, Parts I – IV. • ATP 3-34.5 / MCRP 3-40B.2, Environmental Considerations. • TM 3-34.56, Waste Management for Deployed Forces.
7	PEST MANAGEMENT	<ul style="list-style-type: none"> • AFPMB TG 48, Contingency Pest and Vector Surveillance • TB MED 561, Occupational and Environmental Health Pest Surveillance
8	RADIATION (IONIZING AND NON-IONIZING)	<ul style="list-style-type: none"> • DODI 6055.08, Occupational Ionizing Radiation Protection Program • JP 3-11, Operations in Chemical, Biological, Radiological and Nuclear Environments • AR 385-24, Army Radiation Safety Program • AR 385-10, Army Safety Program • TB 43-0197, Instructions for Safe Handling, Maintenance, Storage and Transportation of Radioactive Items Under License • TB MED 521, Occupational and Environmental Health Management and Control of Diagnostic, Therapeutic, and Medical Research Systems and Facilities
		<ul style="list-style-type: none"> • TB 43-0133, Hazard Criteria for CECOM Radiofrequency and Optical Radiation Producing Equipment • TB 385-4, Safety Requirements for Maintenance of Electrical and Electronic Equipment, Chapter 4.
9	AIR QUALITY	<ul style="list-style-type: none"> • NTRP 4-02.8 / AFTTP 3-2.82_IP / ATP 4-02.82, Occupational and Environmental Health Site Surveillance.
10	GENERAL SANITATION	<ul style="list-style-type: none"> • ATP-4-25.12, Unit Field Sanitation Teams. • TB MED 531, Facility Sanitation Controls and Inspections. • TB MED 577 / NAVMED P-5010-10 / AFMAN 48-138_IP, Sanitary Control and Surveillance of Field Water Supplies.
11	OEH SITE SURVEILLANCE	<ul style="list-style-type: none"> • NTRP 4-02.8 / AFTTP 3-2.82_IP / ATP 4-02.82, Occupational and Environmental Health Site Surveillance. • DD Form 2993, Environmental Baseline Survey (EBS) Checklist. • DD Form 2994, Environmental Baseline Survey (EBS) Report.
12 - 16	MEDICAL TREATMENT FACILITY AND OTHER CONCERNS	<ul style="list-style-type: none"> • JP 4-02, Joint Health Services