



**DEPARTMENT OF THE NAVY**

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October 5, 2017

**CERTIFIED NO: 7015 0640 0002 4677 9992**

Mr. Bob Pallarino  
U.S. Environmental Protection Agency, Region IX  
75 Hawthorne Street  
San Francisco, CA 94105

**CERTIFIED NO: 7015 0640 0002 4678 0004**

Mr. Steven Y.K. Chang, P.E., Chief  
State of Hawaii Department of Health  
Solid and Hazardous Waste Branch  
919 Ala Moana Boulevard, Room 210  
Honolulu, HI 96814

Dear Mr. Pallarino and Mr. Chang:

SUBJECT: ADMINISTRATIVE ORDER ON CONSENT STATEMENT OF WORK SECTION 4.5 NEW  
RELEASE DETECTION ALTERNATIVES SCOPE OF WORK CONDITIONAL APPROVAL  
LETTER, RED HILL BULK FUEL STORAGE FACILITY (RED HILL), JOINT BASE PEARL  
HARBOR-HICKAM, OAHU, HAWAII

The Department of Navy and the Defense Logistics Agency (DLA) received a conditional approval letter for the subject scope of work from the U.S. Environmental Protection Agency (EPA) and the Hawai'i Department of Health (DOH) on July 26, 2017. The Navy/DLA acknowledges the conditions set forth in the letter.

Subsequent to our scope of work submission and conditional approval, we became aware of an issue with the scope of work and federal procurement regulations. As written, the approved SOW would have prohibited certain vendors from participating in the release detection selection process. The resolution of this issue resulted in a modification to the scope of work by adding a new "Background" paragraph, section B. The enclosed revised SOW includes this new background section.

If you have any questions, please contact Mark S. Manfredi, the Red Hill Regional Program Director/Project Coordinator at (808) 473-4148 or at mark.manfredi@navy.mil.

Sincerely,

R. D. HAYES, III  
Captain, CEC, U.S. Navy  
Regional Engineer  
By direction of the  
Commander

Enclosure: Administrative Order On Consent Section 4.5 New Release Detection Alternatives Scope Of Work At Red Hill, Hawaii

**ADMINISTRATIVE ORDER ON CONSENT**

**SECTION 4.5**

**NEW RELEASE DETECTION ALTERNATIVES SCOPE OF WORK  
AT RED HILL, HAWAII**



**OCTOBER 2017**

**Administrative Order on Consent  
New Release Detection Alternatives [Report] Scope of Work**

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New Release Detection Alternatives [Report]  
Scope of Work**

**SECTION A – Purpose**

The purpose of this Scope of Work (SOW) is to establish the steps and identify the work items required to fulfill the requirements of Section 4.6 of the Administrative Order on Consent (AOC); “New Release Detection Alternatives Report”. This SOW also serves as the overall outline of the same report. The Contractor shall execute the requirements of this SOW that will result in the Contractor completing the “New Release Detection Alternatives Report”. A copy of the AOC has been provided to the contractor; all work performed under this SOW shall be conducted, monitored and performed in compliance with the terms and conditions of the AOC.

**SECTION B – Background**

Due to the complexity, capacity, size, and uniqueness of the tanks at Red Hill, few vendors are known to have demonstrated an ability to perform, conduct or execute the release detection tasks that will ultimately be required for compliance with the AOC. Market research completed in 2008 (will be discussed in section 1.a.ii.2) indicated that Mass Technology Corporation (MTC) and Vista Precision Solutions (VPS) were both capable of achieving the required leak detection rate set forth by federal and state regulators. Gauging Systems Inc. (GSI) was also discussed in the 2008 market research as a tank gauging system vendor since their product was integrated into every tank at Red Hill.

MTC is the current leak detection system vendor at Red Hill, responsible for conducting release detection testing that meets federal compliance requirements. VPS has conducted leak detection system evaluations on two tanks at Red Hill, both evaluations were completed in 1999 and will be discussed in sections 1.a.5 and 3.c.ii. GSI is the current tank gauging vendor utilized to meet inventory control requirements. As indicated below, information on all prior market research, including information on these vendors, will be provided to the contractor for use in completing the tasks assigned under this order.

**SECTION C- Outline of the New Release Detection Alternatives Report**

As stated in Section 4.6 of the AOC the New Release Detection Alternatives Report shall include the following:

- a. Description of existing practices
- b. Static and Dynamic release detection alternatives
- c. Tank tightness [testing] alternatives
- d. Comparison of the effectiveness of existing and alternative technologies
- e. Decision Matrix

The following Sections (1-5) are the detailed outline of the New Release Detection Alternatives Report.

**1. SOW Section a. “Description of Existing Practices”**

- a. Authors will research and detail the following:

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- i. Existing Industry Practices for selecting appropriate Leak Detection Systems (LDS)
  1. Required selection criteria is established (Minimum Detectable Leak Rate (MDLR), Probability of False Alarm (PFA), Probability of Detection (PD), frequency, etc.)
  2. Vendor Claims to meet criteria
  3. Environmental Protection Agency (EPA) established protocols
  4. Third party evaluations
  5. Listing on National Work Group On Leak Detection Evaluations(NWGLDE)
    - a. Who/what is the work group
    - b. The benefit – evaluation of the evaluation.
  6. State approvals
    - a. None for Hawaii
- ii. Existing practices – Analysis of approach for Red Hill Leak Detection alternatives
  1. Identify requirements
    - a. 40 CFR 280 deferral
    - b. No state requirements
    - c. Biennial Best Management Practice (BMP) selected
  2. Market Survey to establish potential systems – 2008
    - a. Identified MTC, VPS and GSI
    - b. Market Survey update determine other potential sources
  3. Revised BMP to Annual in 2015
  4. Compliance with 40 CFR 280 (revision July 2015)
  5. VPS evaluation 2016
- iii. Existing Practices – GSI Multifunction Tank Gauge (MTG) Automatic Tank Gauging (ATG)
  1. What is it
  2. What can it do
  3. What can't it do
  4. Not an LDS
- iv. Existing Practices – Automated Fuel Handling Equipment (AFHE) Inventory Control
  1. What is it
  2. What can it do
  3. What can't it do
  4. Not an LDS
- v. Existing Practices – Other Environmental Sampling
  1. Soil Vapor Monitoring
    - a. Effectiveness
    - b. Limitations
  2. Water Interface Monitoring
    - a. Effectiveness
    - b. Limitations
  3. Groundwater Monitoring
    - a. Effectiveness
    - b. Limitations

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- vi. Decommissioned Practices – Tell-tale Monitoring
  - 1. What is it
  - 2. What can it do
  - 3. What can't it do
  - 4. Effectiveness
  - 5. Limitations

**2. SOW Section b. “Static and Dynamic Leak Detection Alternatives”**

- a. Authors will research and detail the following:
  - i. Summary of Static Leak Detection Systems
    - 1. Examples (ATG based, Mass Based, Volumetric, Leak Manager)
    - 2. Pros
    - 3. Cons
    - 4. Limitations posed by Red Hill system
  - ii. Summary of Dynamic Leak Detection
    - 1. Examples (Double Wall (DW) Tank Interstitial, Tracer, Vapor, Groundwater (GW) monitoring, and updated Tell-tale system )
    - 2. Pros – DW finds leak without release to environment
    - 3. Cons
    - 4. Limitations posed by Red Hill system
  - iii. Industry Standards
    - 1. Systems used on Small Underground Storage Tanks (UST)s
    - 2. Systems used on Bulk Fuel Field Constructed Underground Storage Tanks (BFCUST)s
  - iv. Limitations and Challenges created by construction and operations at Red Hill
    - 1. Must be considered when selecting LDS
    - 2. Limitations listed on the NWGLDEs
    - 3. Other limitations (limited attention by industry)
  - v. Summary of Static and Dynamic Options analyzed.
    - 1. Static Options
      - a. MTC
      - b. VPS
      - c. GSI ATG MTG w/ AFHE
      - d. Other systems as may be identified in 1.a.ii.2
    - 2. Dynamic Options
      - a. DW Tank with Interstitial Monitoring
        - i. Limitations
        - ii. Not considered further for this evaluation, since this will be discussed after TUA decision is made.
      - b. Tracer Testing
        - i. Limitations
        - ii. Not considered further for this evaluation
      - c. Vapor and GW monitoring

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- i. Limitations
- ii. Not considered further for this evaluation since not allowed in new 40 CFR 280 regulation

**3. SOW Section c “Tank Tightness [Testing] Alternatives”**

- a. Referring to SOW Section 2 the authors will identify and discuss Tank Tightness Testing/Release Detection Systems for technical evaluations and comparison in SOW Section 4 (below).
- b. In order to detail the approach of a “new” conceptual ATG LDS the authors will need to meet with the representatives of GSI, the ATG manufacturer and possibly the AFHE systems designers/operators to identify the technology approach, vendor claims of LDS performance, and potential challenges.
- c. The LDS/Tank Tightness Testing Methods will be discussed are as follows:
  - i. MTC SIM-1000
    - 1. Technology summary
    - 2. Vendor Claims and applicability to Red Hill
    - 3. Third Party Evaluated (attachment)
      - a. Which EPA protocol was used and describe
      - b. How was it altered
      - c. Doesn’t get into evaluation of nut/bolts of the system only results versus claims and statistics of PD/PFA NWGLDE Listed (attachment)
    - 4. Prior use at Red Hill
      - a. CBU-1000
      - b. Technology upgrade to SIM-1000
        - i. When/Why the need for improvements
        - ii. Improvements
        - iii. Applicability to initial 3<sup>rd</sup> party and NWGLDE
    - 5. Previous evaluation at Red Hill (provide previous report with Ken Wilcox Association)
  - ii. VPS Low-Range Differential-Pressure (LRDP)
    - 1. Technology Summary
      - a. Two different types Tank 9 and Tank 16
    - 2. Vendor Claims and applicability to Red Hill
    - 3. Third Party Evaluated (attachment)
      - a. Which EPA protocol was used
      - b. How was it altered
      - c. Doesn’t get into evaluation of nut/bolts of the system only results versus claims and statics of PD/PFA
    - 4. Not listed on NWGLDE
      - a. Vendor explanations of why
      - b. Potential concerns
    - 5. Prior use at Red Hill

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- a. Prototype and third party evaluation
    - i. Two Tanks Only
  - b. Never implemented for use
    - i. Why not by Navy prior to 2008
    - ii. Why not by DLA after 2008
      - 1. Constructability
      - 2. Costs
6. 2016 Evaluation
- a. Only performed to see if systems would work
    - i. Not evaluated to see if results were accurate
  - b. Two tanks attempted
  - c. Results - One system was able to run a test
  - d. Reason why second one didn't work is unknown
  - e. Calls into question long term reliability and inability to maintain
- iii. Conceptual GSI MTG ATG/AFHE improvements to invent a "alternative technology" LDS
- 1. Currently no actual LDS exists so defined as a "alternative technology"
  - 2. Currently only an ATG coupled with AFHE used for inventory control
  - 3. Summary of Technology approach
  - 4. Vendor claims of Leak Detection System capabilities
  - 5. Challenges of inventing a new LDS based on the ATG/AFHE system
    - a. Evaluation of Vendor claims
    - b. Need for a true Third Party Evaluation to meet typical EPA requirements
      - i. Which EPA protocol to use
      - ii. How to modify
      - iii. Who does Third Party Evaluation
        - 1. Independent Third Party evaluator
      - iv. How will Third Party Evaluation be obtained
    - c. Potential conflict between AOC approval for use and EPA UST Headquarters regulatory requirements
    - d. Concerns for long term maintenance
    - e. Other challenges
- iv. Other market research technologies
- 1. Technology summary
  - 2. Vendor Claims and applicability to Red Hill
    - a. Challenges of inventing a new LDS
    - b. Evaluation of Vendor claims
    - c. Need for a true Third Party Evaluation to meet typical EPA requirements
      - i. Which EPA protocol to use
      - ii. How to modify
      - iii. Who does Third Party Evaluation
        - 1. Independent Third Party evaluator
      - iv. Who pays for Third Party Evaluation

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**4. SOW Section d. “Comparison of effectiveness of existing and alternative technologies”**

- a. The author shall perform confirmation tests to compare LDS measured results versus actual field measured confirmation results at the Red Hill facility.
- b. Work shall include the following
  - i. Select an independent Third Party Evaluator to perform the actual field efforts for the Confirmation Tests.
  - ii. With the consultation of the Third Party Evaluator, develop applicable protocols for confirmation testing events. The author shall include a statistical evaluation to demonstrate the developed protocol is acceptable.
    1. How many tests?
    2. At what tank product levels (varying levels will be proposed)?
    3. How many tests under “leak” condition (various leak conditions, i.e. 0.25 gph, 0.5 gph, 1 gph)?
    4. How many tests under “no leak condition”?
    5. How long is each test?
  - iii. Submit for approval to the Regulators the protocols for the field confirmation testing. As indicated in Section D, Milestones and Proposed Schedules, the initial discussion for this effort will take place 120 days after the SOW’s approval.
  - iv. Perform Confirmation testing of the selected systems utilizing the approved protocols.
    1. MTC SIM-1000
    2. VPS LRDP
    3. GSI MTG ATG/AFHE LDS
    4. Other systems as may be identified in 1.a.ii.2
  - v. Prepare a report detailing the effectiveness of each of the three technologies relating to equipment measured leak rate results versus field measured confirmation leak rate results.
    1. Provide comparison of all technologies tested versus each other.
    2. Ensure all calculations executed to run these tests are available for EPA/DoH to review.

**5. SOW Section e. “Decision Matrix”**

- a. The author shall develop and populate a decision matrix relating all relative information acquired during the preparation of Sections a-d.
- b. Items proposed to be included:
  - i. MDLR
  - ii. PD/PFA
  - iii. Third Party Evaluation utilizing EPA protocol
  - iv. Listing of method on NWGLDE or other evaluation of Third Party evaluation.
  - v. Meets requirements of 40 CFR 280
  - vi. Results of confirmation testing of effectiveness of predicted leak rate results versus field measured results.

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- vii. Challenges to implement on all tanks
  - viii. Timeline to implement on all tanks
  - ix. Cost considerations
  - x. Long term maintenance
  - xi. Long-term System operations (who operated and how)
- c. The authors will prepare a draft of the Decision Matrix and selection criteria currently proposed to the Regulators for approval prior to inclusion of the New Release Detection Alternatives Report.

**SECTION D- Data Gathering, Meetings & Field Work**

The following Data Gathering and Meetings are proposed to occur:

- i. Kickoff Meeting (Author and Gov't)
- ii. Existing Practices Data Gathering (Author and FLC Pearl Harbor)
  - a. See SOW Section a. "Description of Existing Practices" for topics
- iii. Technology Data Gathering (Author and technology providers)
  - a. MTC
  - b. VPS
  - c. GSI
  - d. AFHE
  - e. Tell-tale system
  - f. Other potential technologies identified
  - g. See SOW Section c "Tank Tightness [Testing} Alternatives" for topics of discussion
- iv. Progress Review Meeting (Authors and FLC Pearl Harbor)- Existing Practices and Technology Data Gathering
  - a. Meeting to review the information found during the data gathering associated with SOW Sections a-c
- v. Confirmation Testing Protocols Meeting (Authors, Regulators, Third Party Confirmation Testing Evaluator)
  - a. Contractor will propose testing protocols and submit these protocols through the Navy to EPA/DoH. Then meeting(s) will be held to discuss and approve the specific protocols to be used during the Confirmation Testing.
  - b. The goal is to get consensus on the protocols within two week so the Navy and contractor can continue to meet their Milestones and deliverables.
- vi. Decision Matrix Coordination Meeting (Authors and Regulators)
  - a. Meeting to discuss a draft of the decision Matrix (previously provided to the Regulators) for approval prior to inclusion of the New Release Detection Alternatives Report.

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The following Field Work is proposed to occur:

- i. Technology Confirmation Testing – MTC SIM-1000
- ii. Technology Confirmation Testing – VPS LRDP
- iii. Technology Confirmation Testing – Alternative Technology – GSI MTG ATG LDS
- iv. Technology Confirmation Testing – Alternative Technology – pending outcome of market research

**SECTION E- Milestones & Proposed Schedule**

<b>ITEM</b>	<b>DATE</b>	<b>COMMENTS</b>
Submittal of this SOW to the Regulators	19 June 2017	
Approval of the SOW by Regulators	TBD	
Internal Kickoff Meeting	Within 5 days of SOW approval	Author and Gov't
Existing Practices Data Gathering	Within 30 days of Kickoff Mtg.	Author, FLC Management and Operators
Check-in Meeting with Regulators to discuss selection criteria for companies below	Within 60 days of Kickoff Mtg.	Author, Gov't and Regulators
Technology Data Gathering - MTC	Within 60 days of Kickoff Mtg.	Author and MTC
Technology Data Gathering - VPS	Within 70 days of Kickoff Mtg.	Author and VPS
Technology Data Gathering - GSI	Within 80 days of Kickoff Mtg.	Author and GSI
Technology Data Gathering - AFHE	Within 90 days of Kickoff Mtg.	Author and Gov't
Check-in Meeting with Regulators to discuss Red Hill test protocols	Within 120 days of Kickoff Mtg.	Author, Gov't and Regulators
Progress Review Meeting- Existing Practices and Technology Data Gathering	Within 150 days of Kickoff Mtg.	Author and Gov't
Confirmation Testing Protocols Meeting	Within 180 days of Kickoff Mtg.	Author, Regulators, 3rd Party Confirmation, Testing Evaluator
Confirmation Testing – MTC	Within 240 days of Kickoff Mtg.	
Confirmation Testing – VPS	Within 240 days of Kickoff Mtg.	
Confirmation Testing - GSI MTG ATG/AFHE LDS	Within 240 days of Kickoff Mtg.	
Check-in Meeting with Regulators	Within 240 days of Kickoff Mtg.	Author, Gov't and Regulators
Progress Review Meeting – Confirmation Testing Results	Within 270 days of Kickoff Mtg.	
Decision Matrix Coordination Meeting	Within 300 days of Kickoff Mtg.	Author, Gov't and Regulators
Draft Report to Navy/DLA	Within 330 Days of Kickoff Mtg.	
Final Report to Regulators	Within 365 days from Approval of the SOW	

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**SECTION F- Submittals**

The following submittals are required in support of this SOW

- i. Kickoff Meeting – Minutes.
- ii. Progress Review Meeting- Existing Practices and Technology Data Gathering – Meeting Minutes.
- iii. Proposed Confirmation Testing Protocols.
- iv. Confirmation Testing Protocols Meeting Minutes.
- v. Confirmation Testing Results Report.
- vi. Progress Review Meeting – Confirmation Testing Results – Meeting Minutes.
- vii. Proposed Decision Matrix.
- viii. Decision Matrix Coordination Meeting Minutes.
- ix. Draft New Release Detection Alternatives Report.
- x. Final New Release Detection Alternatives Report.